



Data Communications

Quick. Clear. Accurate.

Data Communications (Data Comm) will supplant many voice transmissions as the primary means of communication between pilots and air traffic controllers. The FAA's investment in Data Comm is critical to improving air safety, reducing delays, increasing fuel savings and protecting the environment.

Today, controllers and pilots communicate verbally using analog radios. Voice communication is labor intensive, time consuming and limits the ability of the National Airspace System (NAS) to meet future traffic demand. With controllers talking to numerous pilots over the same frequency, there is also potential for misunderstood instructions and operational errors.

Data Comm will change this by allowing controllers and pilots to communicate with digitally delivered messages. With the push of a button, controllers will be able to send routine instructions, such as revised departure clearances and weather-avoiding reroutes, directly to the flight deck.

Messages appear only on the cockpit display of the aircraft to which they apply, reducing the potential for miscommunication that can reduce operating efficiency and safety margins. Because Data Comm connects with an aircraft's flight management system, complex route instructions and procedures will be quickly loaded upon acceptance by the pilot. This will help aircraft fly more direct routes, which will save time and fuel and reduce aircraft exhaust emissions.

Data Comm Benefits

- Less reliance on voice communication
- Fewer communication errors and frequency congestion
- Reduced controller and flight crew workload

- Streamlined pre-departure and revised clearances
- Fewer weather-related departure delays
- Digital transmission of complex airborne reroutes
- Improved airspace efficiency
- Enabler of trajectory based operations and air traffic management



Data Comm Tower Trials

The first Data Comm tower trials, focusing on the digital delivery of pre-departure clearances, began spring 2013 with FedEx at Memphis International Airport. Trials at Newark Liberty International Airport with United Airlines followed closely.

The trials help identify operational, training and procedural issues. They further validate system requirements, demonstrate the benefits that encourage user equiptage and gather stakeholder feedback in advance of full-scale operations.

In fall 2014, the FAA decided to continue operating the Data Comm prototype for 15 additional months at Memphis and Newark. The FAA also agreed to

Data Communications

deploy Data Comm to towers at 56 airports by the end of 2016. Deployment will begin summer 2015 at Salt Lake City, Houston Intercontinental and Houston Hobby airports.

Initially, Data Comm will be used in conjunction with current air traffic control operations. This new digital messaging capability will also support air traffic management flow initiatives such as reroutes sent from ground automation systems to the flight deck. By automating these types of routine exchanges, Data Comm will simplify pilot and controller communications.

Phase two of Data Comm will link aircraft in flight with the 20 air route traffic control centers in the continental United States. The FAA is committed to providing initial en route services starting in 2019. These services will expand to full operational capability at all 20 centers in 2021.

In addition to serving the communications needs of pilots and controllers, en route capabilities will keep airline operations centers and dispatchers informed of the latest clearances and routes being issued.

Data Comm will also be used for transition communications as an aircraft leaves airspace controlled by one center and enters the airspace of another. About half of all radio calls between pilots and controllers now consist of pilots signing off with one controller and checking in with another. When digital messages take over this routine, radio chatter will be greatly reduced.

Avionics Equipage and Cost Savings

The FAA is working with the airline industry to encourage Data Comm equipage on the flight decks of 1,900 aircraft by 2019. Under the FAA's Data Comm equipage program, eight airlines have signed agreements to equip their aircraft with Data Comm avionics. The first aircraft was equipped in 2014.

Services to be provided by Data Comm are conservatively estimated to save operators more than \$10 billion over the 30-year lifecycle of the program and save the FAA approximately \$1 billion in operating costs.

