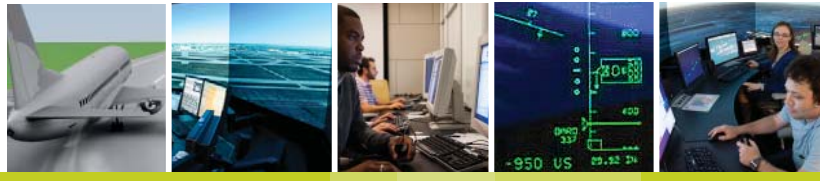


## MITRE Aviation IDEA Lab

CAASD

The newly renovated **MITRE Aviation IDEA Laboratory** in McLean, Va., has been instrumental in the ongoing development and deployment of air traffic management systems. This integrated environment can support the assessment of many capabilities. (IDEA stands for Integration Demonstration and Experimentation for Aeronautics.)



### Our Consensus-Building Process—an Integrated Approach

Air traffic management (ATM) concepts are often described using reports and briefings; and regardless of how well written or presented, these methods may fall short in clearly explaining complex concepts to key stakeholders. In the MITRE Aviation IDEA Lab, pilots, controllers, airlines, and other key stakeholders can work with and view simulated concepts individually, side-by-side, or in an integrated format. These concepts can evolve along a path from lower fidelity storyboards through the development of prototypes, demonstrations, and evaluations to field implementation. The lab provides an environment for all parties to share the experience of a proposed concept change, discuss concerns on work-load, communication, safety, security, and roles and responsibilities, as well as help formulate common views.

### Simulation Testing Leads to ATM Advances

The MITRE Aviation IDEA Lab provides an extensive, real-time, distributed simulation environment to explore and develop future concepts. It gathers a broad set of integrated ATM assets for modeling, simulation, and visualization of gate-to-gate operations. Assets are designed to foster interoperability in simulations. Through the lab framework, asset capabilities can be used in specific domains or brought together for multiple domain studies.

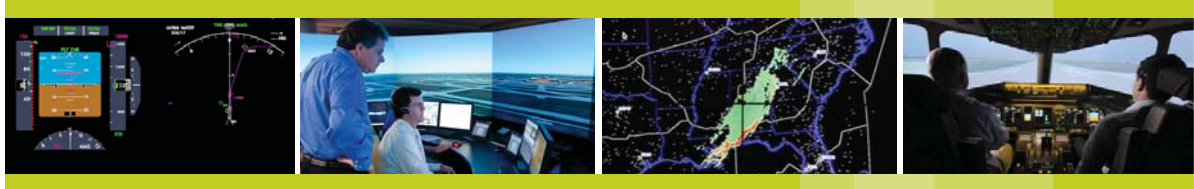
### Integrated Concepts for Far-Reaching Results

In cooperation with the Federal Aviation Administration (FAA), National Air Traffic Controller's Association, Airline Pilots Association, civil aviation authorities in countries outside the United States, and other aviation-related organizations, MITRE has helped improve ATM systems through demonstrations and experiments in these key areas:

- Runway safety
- Airspace redesign
- Traffic Flow Management (TFM)
- En route decision support
- Definition and assessment of proposed area navigation (RNAV) routes
- Applications of the Automatic Dependent Surveillance-Broadcast/Cockpit Display of Traffic Information (ADS-B/CDTI) to procedural applications
- Evaluating sites for new and reconfigured airports

## “In the MITRE Aviation IDEA Lab,

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### Demonstration and Experimentation Capabilities

The Aviation IDEA Lab offers many integrated capabilities:

- **Cockpit simulation software** has high-resolution flight dynamics that enable pilots to experience lifelike demonstrations with environmental effects like wind, turbulence, runway contamination, and strut and tire effects.
- **En route simulation sector suite software** enables air traffic controllers to experiment with new and enhanced concepts and tools, such as emulated radar display, flight plan processing; and strategic-planning and decision-support tools, including conflict detection, trial planning, flight information management, and problem resolution.
- **Terminal simulation software** is used to devise navigation routes and redesign airspace for publication and aircraft navigation. Users can easily define and assess proposed RNAV routes to allow controller familiarity with new procedures.
- **Tower/surface simulation software** drives the new airport tower simulator by providing surface movement of aircraft flying on approach, landing, and taxiing phases. Additionally, this capability can be used to look at future airport configurations or procedures.
- **TFM simulation software** has high-fidelity traffic management decision support capabilities, which allow for the investigation of aircraft demand on an airspace volume and to perform an impact assessment of specific traffic management initiatives.
- **Airspace security simulation software** is used to experiment with improved airspace security situational awareness. The capability provides a vehicle to evolve airspace security capabilities within the FAA and across other government agencies that share responsibility for the airspace security mission.

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