

FactSheet

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-2199



FS-2004-07-95-LaRC

Small Aircraft Transportation System Technology development could transform public air travel



This illustration shows an artist's concept of what a Small Aircraft Transportation System plane might look like.

NASA, the Federal Aviation Administration and the National Consortium for Aviation Mobility and its SATSLabs across the country are developing integrated airborne systems, cockpit displays and operating procedures for advanced four to ten passenger aircraft.

SATS research is focusing on four operating capabilities that may help people and goods travel faster and farther, anywhere and any time. These technologies would allow:

- higher volume operations at airports that don't have control towers or terminal radar
- pilots to land safely in low visibility conditions at minimally equipped airports
- increased single pilot performance
- better understanding of how SATS operations will impact the national airspace

Imagine being able to hail a plane at your neighborhood airfield much like you do a taxi in a city.

It may not be quite as simple as stepping off the curb and waving your hand, but technology being developed by NASA's Langley Research Center in Hampton, Va., could help make air taxi service available and convenient to more people.

The Small Aircraft Transportation System or SATS project is a public-private partnership working to create technology and operating capabilities that could help planes safely fly into underused rural and suburban airports, in almost all kinds of weather. That includes many airfields that don't have radar or air traffic control towers.

Nearly all of the people in the U.S. live within a 30-minute drive of at least one of these 5,400 airports.

Turning up the volume

Many small airports, especially those without radar or an air traffic control tower, allow only one plane to fly into and around the airfield during bad weather. That means only about three aircraft can land every hour.

Technologies being developed could increase how many planes can safely enter or operate simultaneously in the air space around a small airport, before and during landing.

Those technologies include cockpit displays that show traffic; enhanced systems that display where each plane is, where it's headed and how fast it's going; data-link communications; and computer software that can help pilots safely fly and land.

Airports would also be equipped with a system that could receive the planes' broadcast signals and then assign a logical sequence for arriving aircraft and send that information back to the planes.

Lowering landing criteria

Bad weather can severely restrict the ability of planes to land at airfields. Today expensive ground- based equipment is required at each airport to let aircraft fly in low visibility conditions.

Cockpit display technologies already being tested could give the pilot a clear electronic 3D perspective of the real world outside, even in bad weather, and offer guidance information.



Graphical cockpit displays could help more planes land at small airfields.

Improving pilot performance

Making flying easier could mean that one pilot could operate as safely as two. New on-board systems can provide better weather information as well as improved navigational and landing tools to help the single pilot fly safely and easily even in the larger complex airspace. The cockpit technologies would also give pilots oral and visual alerts.

Integrating en route

Researchers are working to establish procedures to enable more small planes to better fit into the flow of air traffic in the national airspace system. Many of the technologies that support the other three capabilities could also help track small planes in flight. The SATS/NCAM/FAA team plans to demonstrate the four operating capabilities and



New cockpit displays can paint a picture of the outside world so pilots can land safely even in bad weather.

their benefits in flights and simulations in Danville, Va. in 2005. NASA and a number of SATSLabs aircraft hope to prove that emerging aviation technologies can be integrated into operations in an airport environment. The team also hopes to demonstrate that this new capability may some day enable more small aircraft and airports to be used safely and reliably for routine, affordable and efficient public air travel.

For more information please check the Internet at:
<http://sats.nasa.gov>
or call NASA Langley Public Affairs at: (757) 864-6124