NASA’s
Airspace Systems Program

NExTNAS CNS Workshop

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Goal:
Enable major increases in the capacity and mobility of the air transportation system through development of revolutionary concepts for operations & vehicle systems.

Objectives:

- Improve throughput, predictability, flexibility, collaboration, efficiency, and access of the NAS
  - Enable general aviation and runway-independent aircraft operations
- Maintain system safety, security and environmental protection
- Enable modeling and simulation of air transportation operations
Current Airspace Systems Projects

**AATT Project ‘96-’04**
- Improve gate-to-gate air traffic management to increase capacity & flexibility

**VAMS Project ‘02-’06**
- Explore advanced concepts & model/simulate the NAS

**SATS Project ‘01-’05**
- Improve public mobility & community access with small aircraft/airports

**NExTNAS Project ‘04-’09**
- Technologies to enable future conops for a more flexible & efficient NAS

**AOS Project ‘00-’06**
- Understand & model human/systems
Advanced Air Transportation Technologies

Improve the capacity of transport aircraft operations at, and between, major airports in the National Airspace System by:

– Developing decision support tools to help air traffic controllers, airline dispatchers, and pilots improve the air traffic management and control process from gate to gate

– Defining, exploring, and developing advanced shared-separation ATM concepts
Small Aircraft Transportation System

Develop and demonstrate technologies to enable increased utilization of local & regional airports to enhance mobility

Expanded Accessibility to several times more destinations

5400 Public Use Airports

Near all-weather accessibility to 5,400 public-use airports?

Airports today with “near all weather” availability

Of 5,400 public-use airports, only 715 (13%) have precision instrument approaches (ILS)
SATS Operating Capabilities

- **Higher Volume Operations (HVO)** in Non-Radar Airspace and at Non-Towered Airports
- **Lower Landing Minimums (LLM)** at Minimally Equipped Landing Facilities
- **Increase Single-Pilot Performance (SPP)** Crew Safety & Mission Reliability
- **En Route Procedures & Systems for Integrated (ERI)** Fleet Operations
Virtual Airspace Modeling & Simulation

- Provide the technologies and processes for conducting trade-off analyses amongst future air transportation system’s concepts and technologies.
- Model and simulate behavior of air transportation system concepts and their elements.
- Develop advanced air transportation operational concepts.
- Conduct assessments of advanced air transportation concepts.
Airspace Operations Systems

Research on ground, satellite, vehicle systems, and their human operators that determine the operational safety, efficiency, and capacity of the National Airspace System

Air traffic management systems, interfaces, and procedures

Communication, navigation and surveillance systems

Operational human factors and error mitigation

Cockpit systems, interfaces and procedures
Develop and demonstrate NASA exploratory technologies for the National Airspace System to meet projected growth in passenger demand beyond 2010

Advanced Communications, Navigation & Surveillance

Wake Vortex Solutions

Distributed Traffic Management

Human Measures & Performance

ATM Automation Technology