NASA/FAA North Texas Research Station Overview

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May 17, 2012
North Texas Research Station

NTX Research Station...
- NASA research assets embedded in an interesting operational air transport environment
- Seven personnel (2 civil servants, 5 contractors)
- ARTCC, TRACON, Towers, 3 air carrier AOCs (American, Eagle and Southwest), and 2 major airports all within 12 miles.
- Supports NASA Airspace Systems Program with research products at all levels (fundamental to system level)

NTX Laboratory...
- 5000 ft² purpose-built, dedicated, air traffic management research facility
- Established data links to ARTCC, TRACON, Towers, air carriers, airport and NASA facilities
- Re-configurable computer labs, dedicated radio tower, state-of-the-art equipment
Past Evaluations and Field Trials

Passive Final Approach Spacing Tool (1996)
Traffic Management Advisor (1996)
Conflict Prediction and Trial Planning (1998)
Direct-To (2001)
En Route Descent Advisor (simulation) (2004)
Boeing Direct Routes (2008)
Precision Departure Release Capability (PDRC) Concept Overview

En route system uses OFF time predictions from surface system for *tactical departure scheduling*.

PDRC technology automatically *communicates* and *coordinates* OFF times between the systems.

Surface automation system *predicts OFF times* for use by the en route tactical departure scheduler.
Precision Departure Release Capability
Spring 2012 Field Evaluation

• Field evaluation summary
  – Commenced 30 Apr 2012
  – Goal is at least 100 Call For Release flights scheduled by PDRC
  – Objectives are (1) demonstrate system performance (2) quantify sources of uncertainty
  – Fort Worth ARTCC and DFW ATCT are participating

• Key changes since July 2011 shadow evaluation
  – Surface model improvements for better OFF time predictions
  – Use departure runway knowledge to improve airborne route models
  – Enhanced air carrier data from AA to improve OUT time predictions

• Next steps
  – Evaluation results will be included in technology transfer package for FAA recipients
    • Time Based Flow Management (TBFM)
    • Tower Flight Data Manager (TFDM)
  – Lessons learned will guide next round of PDRC development and field evaluation
Dynamic Weather Routes (DWR)

Overview

Problem

• No automation to find better weather avoidance routes for aircraft in flight

Solution

• Automation continuously analyzes flights, finds simple time/fuel saving reroutes

• Interactive trial planner to visualize, evaluate, modify, implement

• Considers modeled weather, traffic, wind-corrected flying time, sector loads

• Fixed radial distance solutions for Data Comm, snap to named fix solutions for voice

• 649 min potential flying time savings, 77 flights, 4.75 hrs, 2 ZFW weather days
DWR Status

• Ongoing software development at NASA Ames
• Preparing for Initial Installation at AA SOC for training, shadow evaluation (need NASA HQ approval)
• Longer-term field evaluation would require ZFW Traffic Management Unit display (need many more approvals)
For More Information:

Website:
http://www.aviationsystemsdivision.arc.nasa.gov/facilities/ntx/

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