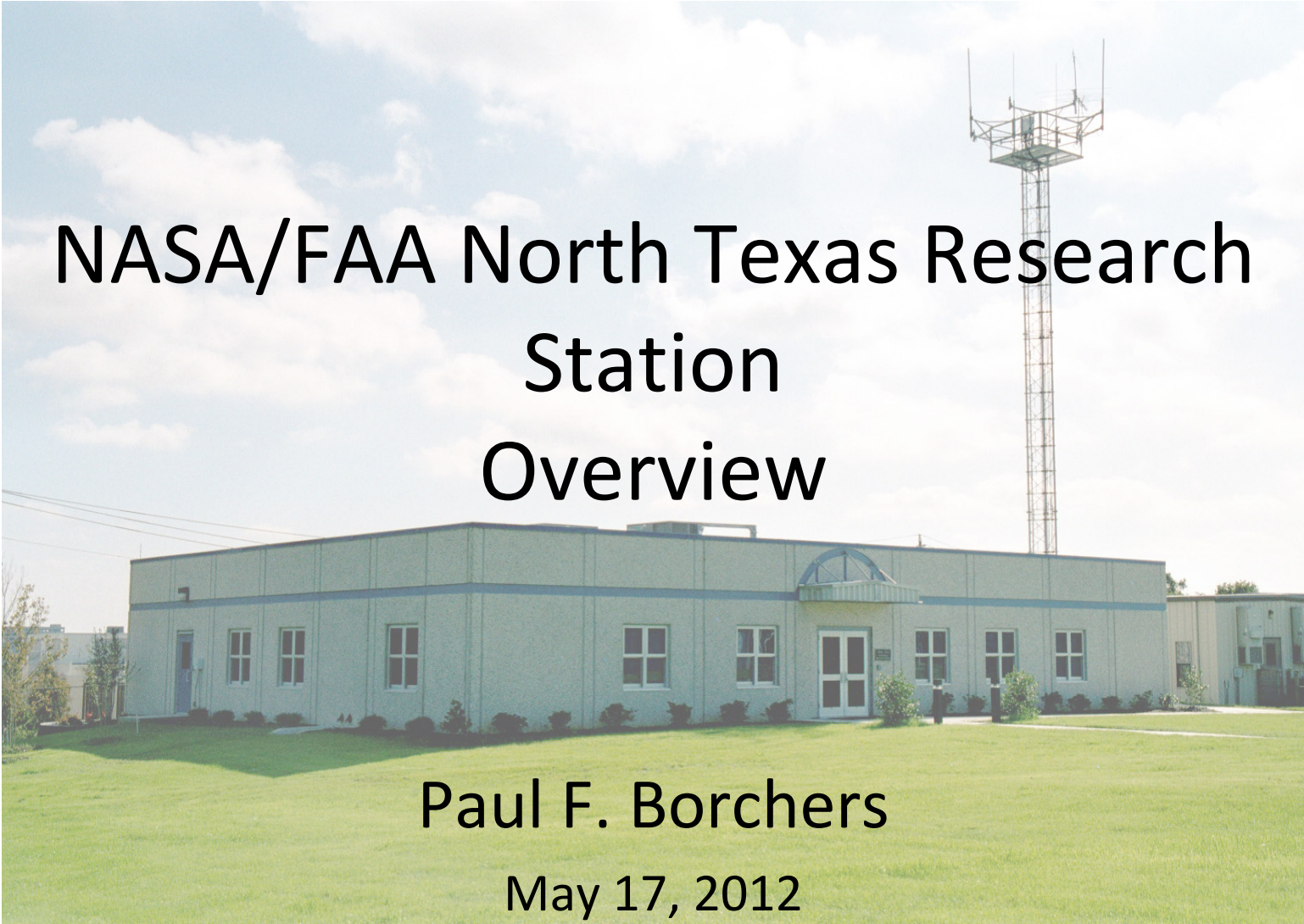


A photograph of the NASA/FAA North Texas Research Station. The main building is a long, single-story structure with light blue horizontal siding and a dark blue horizontal stripe. It has several windows and a central entrance with a small arched roof. To the right of the main building is a tall, slender metal tower with a platform at the top. The scene is set on a green lawn under a blue sky with white clouds.

NASA/FAA North Texas Research Station Overview

Paul F. Borchers

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)

Collaborative Arrival Planning (1998, 2000)

Conflict Prediction and Trial Planning (1998)

Direct-To (2001)

En Route Descent Advisor (simulation) (2004)

Boeing Direct Routes (2008)

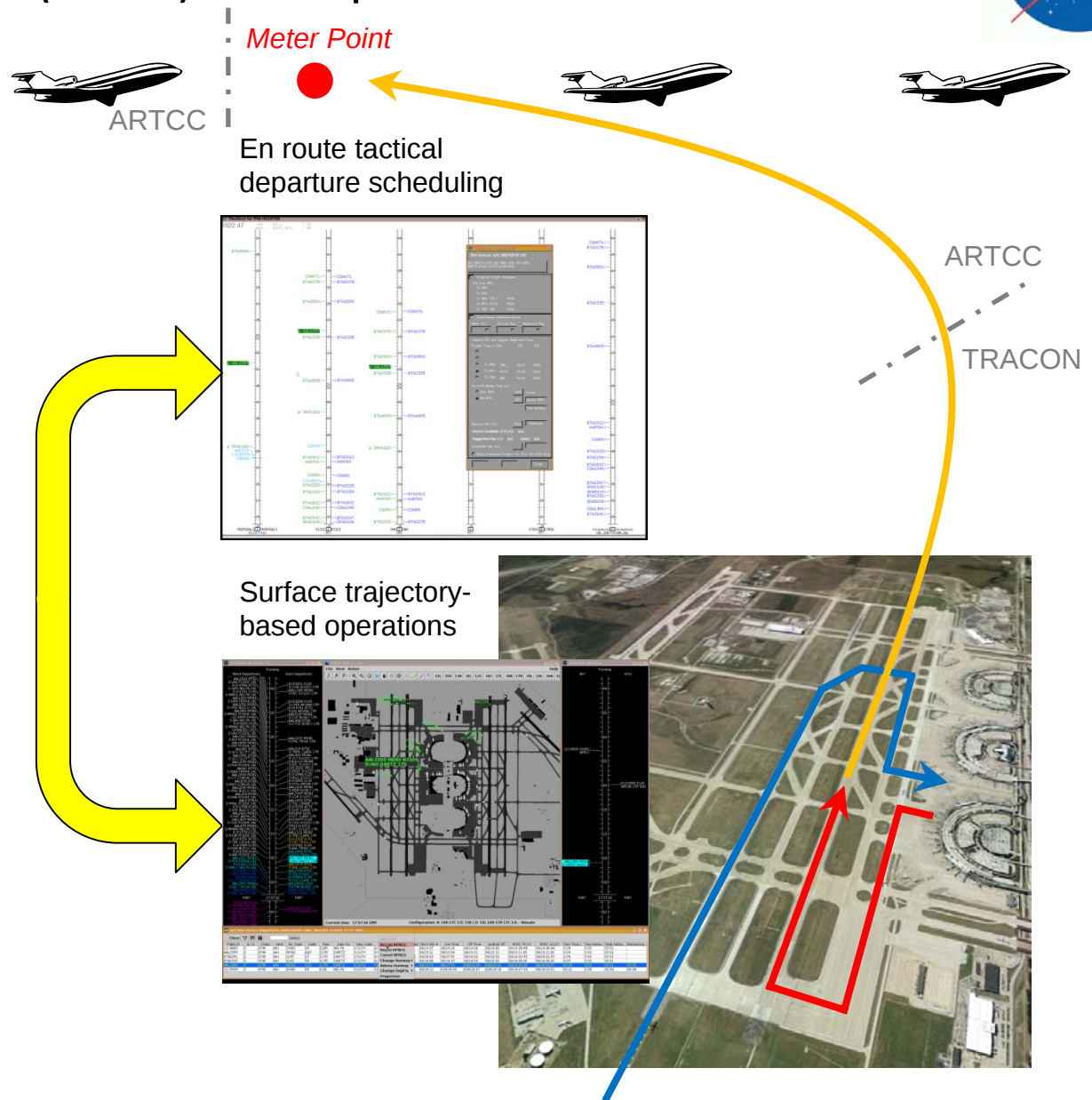
Precision Departure Release Capability (PDRC) Concept Overview



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.



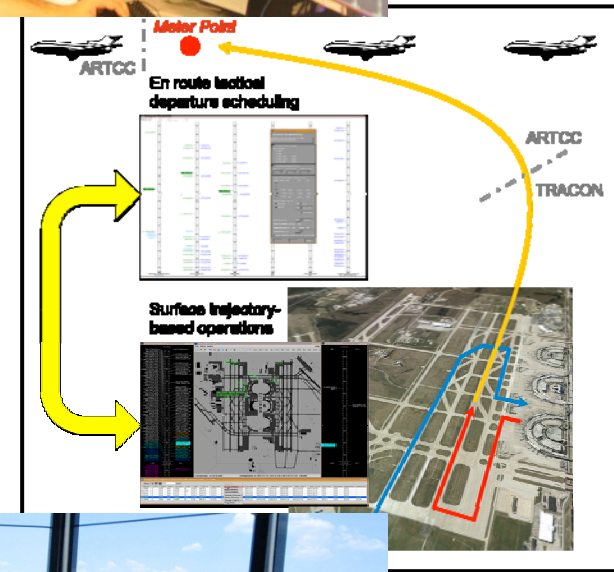
Precision Departure Release Capability Spring 2012 Field Evaluation



- 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



ZFW



DFW

Dynamic Weather Routes (DWR)



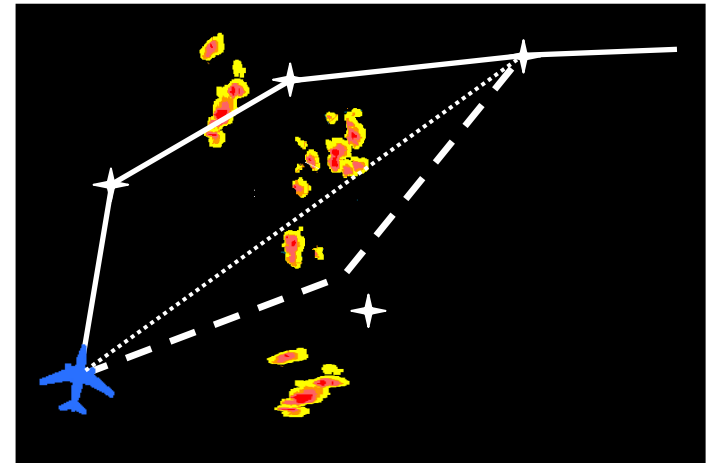
Overview

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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