Emerging Weather Tools in the Cockpit

Friends and Partners in Aviation Weather
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A STAR ALLIANCE MEMBER

UNITED

Emerging Weather Tools in the Cockpit Panel

- Rocky Stone, United Airlines
- Mark Phaneuf, Air Line Pilots Association
- Debbie Kowalewski, Airline Dispatch Federation
- John Kosak, National Business Aircraft Association

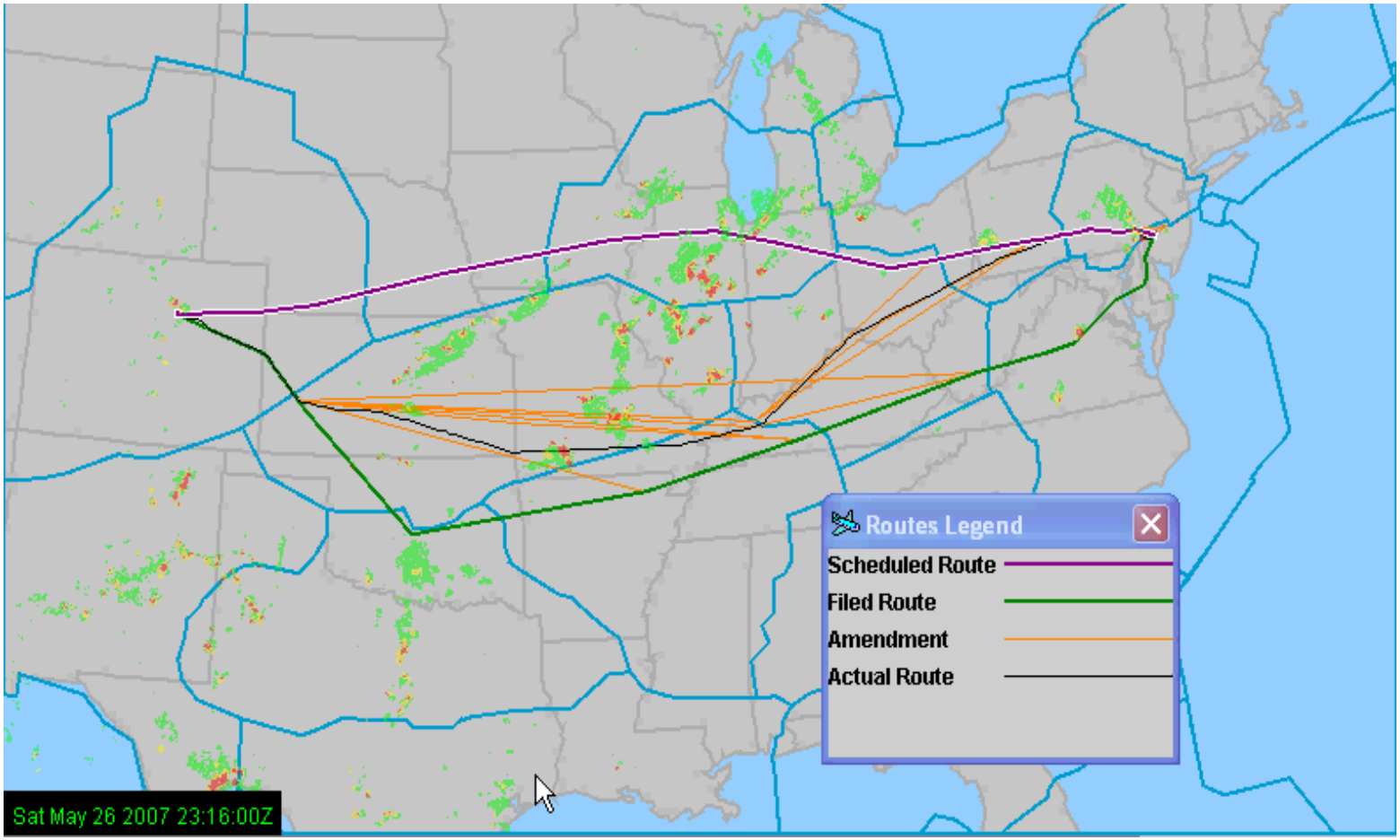
Cockpit participation in CDM initiatives

- Are systemic and individual flight efficiencies possible by allowing cockpit inputs to deviate from Collaborative Decision Making (CDM) Traffic Management Initiatives (TMIs)?
- Currently CDM is “ground centric” with primary participation from Air Traffic Control (ATC) and Airline Operations Centers (AOCs)
- Cockpit participation in reroutes is mostly limited to tactical avoidance along the current route of flight
- With the advent of aircraft connectivity, information flow to the cockpit including real-time graphical weather updates could be a “game changer”

Cockpit CDM participation

- Would it be helpful to have Minimum Aviation System Performance Standards (MASPS) specifying a minimum set of information needed to allow for cockpit inputs to deviate from TMIs?
- If aircraft are in compliance with this MASPS, their flight paths should be more predictable, potentially allowing them to receive priority handling in Traffic Flow Management (TFM) initiatives?
  - Relief from playbook routings?
  - Preferential treatment in an Airspace Flow Program (AFP), either excluded or included at a higher rate than non-equipped aircraft

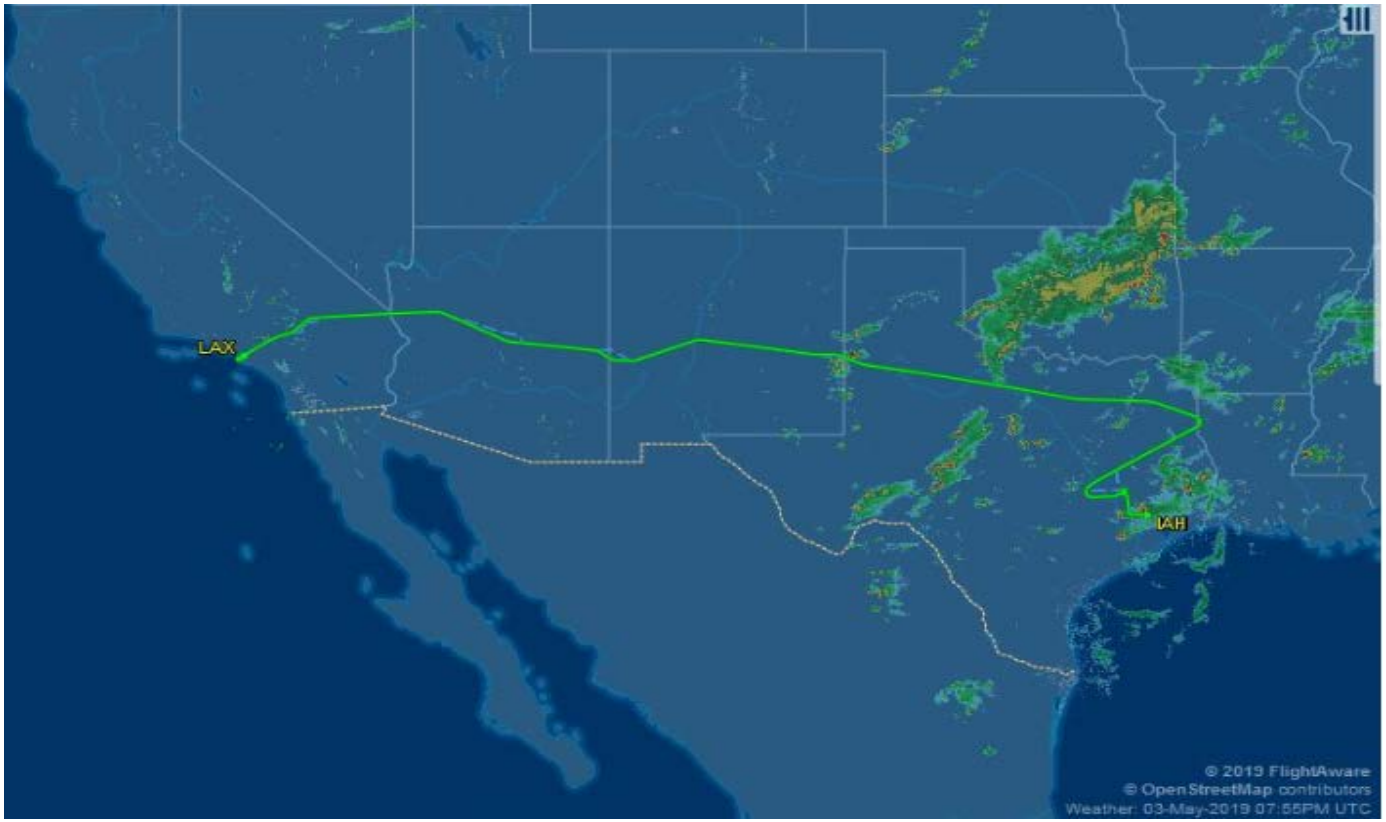
Playbook routing example



DEN-PHL

- Normal flight time = 3:00
- Improved flexibility results in savings
- Play book flight plan time = 3:45
- Actual flight time = 3:20

Playbook routing example



LAX-IAH

- Normal flight time = 3:15
- Play book flight plan time = 3:59
- Actual flight time = 4:15
- Lack of flexibility to have reroute considered leads to much longer flight time

Cockpit CDM participation

- What is the minimum set of weather and TFM information needed to create a more predictable flight path?
- What coordination is required between the cockpit and AOC?
- What are the ground rules for deviating from a TMI?
  - Ground rules must clearly state criteria for cockpit inputs to deviate from a TMI
    - Higher probability of a predicable flight path around convective weather
    - Avoidance of congested sectors

Cockpit CDM participation

- Broadband graphical weather to the cockpit is here, whether we plan for it or not! Airlines are equipping with:
  - Broadband pipelines to aircraft for passenger Wi-Fi
  - EFBs in the cockpit with connectivity to graphical weather
- New weather information in the cockpit could be disruptive if ground rules are not established for how it is to be used
  - Training needed for differences between airborne weather radar, NextRad, and short term convective forecasts
- RTCA SC-206 is working to specify the attributes of a minimum information set required to participate in “cockpit CDM”