

# SWIM Connect 2015

*SWIM Enabling the  
Trajectory Based  
Operations Concept:  
4D Trajectory  
Demonstration*

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**SWIM**  
connect 2015

# Transformation of Methods

## Procedural Based Control:

*Control on Where We Think the Aircraft Is*



Landmark Navigation  
Radio Beacons  
Position Reports

## Surveillance Based Control:

*Control on Where We Know the Aircraft Is*



VOR/DME  
RADAR

## Trajectory Based Control:

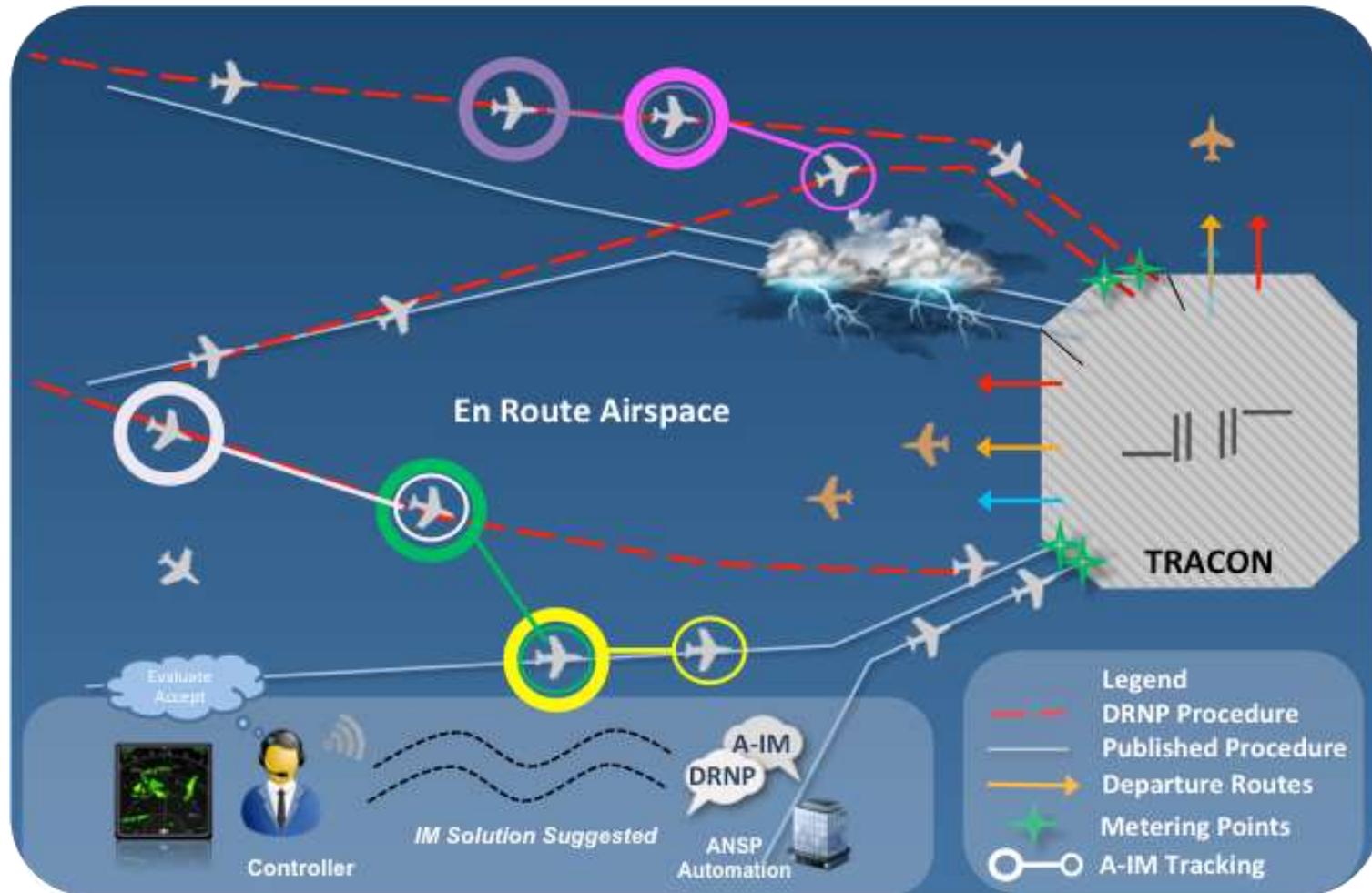
*Control on Where We\* Know the Aircraft Will Be*



RNP  
ADS-B  
DataComm

\* Shared Trajectory

# 4DT Concept



# Preference Submissions



- **Weather**
- **NOTAMs**
- **Flight Information Update**
- **Electronic PIREP Submission**
- **Aircraft Preference Publication**
- **4DT Preference Submission**
- **Security**



# 4DT Demonstration Project

- Objective
  - Demonstrate the technical feasibility and investigate the value of advanced TBO services, specifically: Dynamic-RNP, A-IM, and ATC Winds
- Timeline
  - Targeting early 2017 for demonstration
- Benefits
  - Maintain optimal flow

# SWIM Product Portfolio

## Aeronautical Data

### Aeronautical Information Management (AIM) Special Use Airspace (SUA) Data Exchange: Provides notification and status regarding airspace

- ✓ SUA data, dynamically provided in the Aeronautical Information Exchange Model (AIXM) standard
- ✓ AIXM SUA definitions

### Notices to Airmen (NOTAM) Distribution Service

- ✓ Digital NOTAMs AIXM 5.1

## Flight and Flow Data

### Time Based Flow Management (TBFM): Provides metering information

- ✓ Scheduled Time of Arrival (STAs)
- ✓ Estimated Time of Arrival (ETAs)
- ✓ Meter Reference Elements (MREs) Assignments
- ✓ Airport configuration information
- ✓ Satellite airport configurations

### Traffic Flow Management System (TFMS): Provides flight data and flow information

- ✓ Flow Constrained Area (FCA) / Flow Evaluation Area (FEA)
- ✓ Airspace Flow Program (AFP)
- ✓ Aeronautical Situational Display to Industry (ASDI)
- ✓ Ground Delay Program (GDP) / Unified Delay Program (UDP)
- ✓ Ground Stops (GS)
- ✓ Reroutes
- ✓ Advisories
- ✓ Collaborative Trajectory Options Program (CTOP)

### SWIM Terminal Data Distribution Systems (STDDS): Collects and publishes data from 100+ airports

- ✓ Airport Surface Detection Equipment, Model X (ASDE-X) streaming data service and Runway visibility data
- ✓ Surface Movement Events (SME)
- ✓ Runway Visual Range (RVR) Data
- ✓ Tower Departure Events (TDE)

### SWIM Flight Data Publication Service (SFDPS)\*: Provides flight data and updates to clients for filed and active flight plans

- ✓ Flight Plan information
- ✓ Flight Amendment Information
- ✓ Converted Route Information
- ✓ Cancellation Information
- ✓ Departure Information
- ✓ Aircraft Identification Amendment Information
- ✓ Hold Information
- ✓ Progress Report Information
- ✓ Flight Arrival Information
- ✓ Flight Plan Update Information
- ✓ Expected Departure Time Information
- ✓ Position Update Information
- ✓ Tentative Flight Plan Information
- ✓ Tentative Aircraft identification Amendment Information
- ✓ Tentative Flight Plan Removal
- ✓ Tentative Flight Plan Amendment Information
- ✓ Track Information
- ✓ Drop Track Information
- ✓ Interim Altitude Information
- ✓ Automated Radar Terminal System (ARTS) Flow Control Track/Full Data Block Information
- ✓ Beacon Code Reassignment
- ✓ Beacon Code Restricted
- ✓ Flight Plan Data Bank (FDB) Fourth Line Information
- ✓ Point Out Information
- ✓ Inbound Point Out Information
- ✓ Handoff Status

### Airspace Data Publication Service\*: Published by SFDPS

- ✓ Sector Assignment Status
- ✓ Route Status
- ✓ Special Activities Airspace (SAA)
- ✓ Altimeter Setting

### Operational Data Publication Service\*: Published by SFDPS

- ✓ Traffic Count Adjustment
- ✓ Instrument Approach Count Adjustment
- ✓ Sign In Sign Out
- ✓ Beacon Code Utilization
- ✓ Geographic Beacon Code Utilization

### General Information Message Publication Service\*: Published by SFDPS

- ✓ General Information

# SWIM Product Portfolio (cont.)

## Weather Data

**Integrated Terminal Weather System (ITWS) Data Publication:** Provides specialized weather products in the terminal area

- |  |  |
|--|--|
| ✓ Airport Lightning Warning                                | ✓ Tornado Detections Wind Profile                          |
| ✓ Configured Alerts  | ✓ Anomalous Propagation (AP) Indicated Precipitation       |
| ✓ Forecast Accuracy  | ✓ AP Status  |
| ✓ Forecast Contour   | ✓ Gust Front Estimated Time to Impact                      |
| ✓ Forecast Image   | ✓ Hazard Text 5nm  |
| ✓ Gust Front TRACON Map                                    | ✓ Hazard Text Long Range                                   |
| ✓ Microburst TRACON Map                                    | ✓ Hazard Text TRACON                                       |
| ✓ Precipitation 5nm  | ✓ ITWS Status Information                                  |
| ✓ Precipitation Long Range                                 | ✓ Microburst Automatic Terminal Information Service (ATIS) |
| ✓ Precipitation TRACON                                     | ✓ Runway Configuration                                     |
| ✓ Storm Motion (SM) Storm Extrapolated Positions (SEP) 5nm | ✓ Storm Motion 5NM   |
| ✓ SM SEP Long Range  | ✓ Storm Motion TRACON                                      |
| ✓ SM SEP TRACON  | ✓ Terminal Weather Text Special                            |
| ✓ Terminal Weather Text Normal                             | ✓ Wind Shear ATIS  |
| ✓ Tornado Alert  |  |

**Corridor Integrated Weather System (CIWS) Data Publication\*:** Provides specialized 3D storm related weather information in the Enroute area

- |  |                                       |
|--|---------------------------------------|
| ✓ Vertically Integrated Liquid (VIL) Mosaic (1km resolution) | ✓ VIL Forecast Contours (Std. Mode)   |
| ✓ VIL 2-hr. Forecast   | ✓ VIL Forecast Contours (Winter Mode) |
| ✓ Echo Tops Mosaic (1 km resolution)                         | ✓ Echo Tops Forecast Contours         |
| ✓ Echo Tops 2-hr. Forecast                                   | ✓ Growth & Decay Contours             |
| ✓ Satellite Mosaic   | ✓ Forecast Accuracy: Echo Tops        |
| ✓ Storm Info: Echo Top Tags                                  | ✓ Forecast Accuracy: Std. Precip      |
| ✓ Storm Info: Leading Edges                                  | ✓ Forecast Accuracy: Winter Precip    |
| ✓ Storm Info: Motion Vectors                                 |                                       |

## Weather Message Switching Center Replacement (WMSCR)

**Publications:** Provides NWS textual aviation weather products

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|---|----------------------|
| ✓ Transmission of voice Pilot Reports (PIREPs) to WMSCR | ✓ Altimeter settings |
| ✓ Stored PIREPs   |                      |

## Enhanced Weather Information Network System

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|--|--|
| ✓ Current Icing Product (CIP)  | ✓ Airmen's Meteorological Information (AIRMET)     |
| ✓ Weather Research and Forecasting-Rapid Refresh (WRF-RR) Model Data | ✓ National Convective Weather Forecast (NCWF)      |
| ✓ North American Mesoscale (NAM)                                     | ✓ National Convective Weather Diagnostic (NCWD)    |
| ✓ Model Data   | ✓ Aviation Routine Weather Report (METAR)          |
| ✓ Global Forecast System (GFS)                                       | ✓ Significant Meteorological Information (SIGMET)  |
| ✓ Model Data   | ✓ Collaborative Convective Forecast Product (CCFP) |

## Weather and Radar Processor (WARP) Publications

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|--|--|
| ✓ WARP Maintenance and Sustainment Services (WMSS) | ✓ Next Generation Weather Radar (NEXRAD) |
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# Questions / Contacts

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