Airline Operation Center’s Access to Integrated Terminal Weather System (ITWS) Products

Orlando NBAA Meeting

November 2005
ITWS Currently Being Deployed

- 11 ITWS sites, covering 19 major airports, already operational
  - Potomac (IAD, ADW, BWI, DCA)
  - Atlanta (ATL)
  - Miami (MIA, PBI, FLL)
  - Houston (IAH, HOU)
  - Kansas City (MCI)
  - St. Louis (STL)
  - Chicago (ORD, MDW, MKE)
  - Boston (BOS)
  - Denver (DIA)
  - Charlotte (CLT)
  - Minneapolis/St. Paul (MSP)

- NY ITWS (LGA, JFK, EWR) coming late Summer / early Fall 2006
  - First production ITWS site to feature 1-hour forecast
Products Available in Two Forms

- A digital data feed, for those users wanting to integrate ITWS data into their own TFM tools
  - Requires development of application software to interpret and process binary data
  - Bandwidth depends on number of ITWS sites

- A Web site
  - Designed in collaboration with the users to serve the majority of their needs
  - User interface, allowing simultaneous access to all ITWS sites, is easy to use
  - Requires only a standard browser
  - Bandwidth depends on number of simultaneous users on the line

- Both product streams operational – but AOC user access continues to be a problem!
ITWS Website Interface (top-level map)
### ITWS Website Interface (top-level text)

**Integrated Terminal Weather**

**Interface Version 1.6**

**Map Version**

**Page updated:** 02/15/2005 15:36:17 GMT

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**Legend:**
- Active Alerts
- Operational
- TRACON Storms Tracked
- Not Available

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**ORD TRACON**

**Time (GMT):** 15:38:24

**DISPLAY**

**ORD/TRACON Valid Until:** 02/15/2005 15:38:33 GMT

**UNAVAIL:** NONE

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NBAA 5
ERD11/9/05

MIT Lincoln Laboratory
Options for ITWS Web Access

AWOS, ASOS, TDWR, RUC, ASR-9, LLWAS, NEXRAD, Lightning, MDCRS from Aircraft

FAA TRACON

ITWS Product Generator

TCP/IP Server Software

FAA Network

FAA ITWSWeb Users (e.g., ATCSCC)

Volpe Center

ITWS Digital Data Server

ITWS Web Server

AOCNet

Airline users

Leased Network

• AOCNet Option
  - On hold due to bandwidth concerns
  - Requires network modifications by ARINC to prevent conflicts with CDMNet usage

• Leased Network Option
  - Either private (single airline) or shared
  - Being worked – but requires MOA between airlines and FAA (drafted but not signed)
Could Products Other Than ITWS Be Included?

• In theory, WSP products could be provided on the ITWS Web display
  – WSP products are subset of ITWS, with similar display concepts
    Six-level weather (AP-corrected)
    Microburst and gust front alerts/alarms
    Storm motion vectors
    Runway advisories
  – WSP products are made available via a comm server at the WSP-equipped TRACON

• In practice, would require
  – Connectivity from WSP sites to Volpe hubsite (lower bandwidth than ITWS)
  – Software modifications to ITWSWeb software
    Translate the WSP products into ITWS-compatible form
    Adjust the web interface to include WSP airports and product availability logic
SWIM will provide key services for all distributed applications on the network (saves duplication and $$$)

Data providers publish data on SWIM using *standard interface and data formats* without needing details about consumers

Data consumers ingest data from SWIM network via standard interface without needing details about providers

Architecture slide adapted from Boeing, Corp.
Summary

• ITWS Web and digital data distribution are operational
  – Web used currently by ATCSCC
  – Web and digital products not yet available to airline community (except in test mode)

• Access to products still stalled
  – Issues not technical
  – Obstacles due to process roadblocks and financial concerns

• Adding products from systems such as WSP feasible, but not likely
  – New requirements would need to be justified and accepted
  – FAA business case would have to be made

• Recommend approaching FAA ITWS program office to request resolution of access issues
BACKUP
TWIP Availability

• TWIP messages provided to airlines through arrangement with ARINC
  – Currently, both Production ITWS and TDWR TWIP (where ITWS not yet available) messages are sent
    Common format used
    ITWS messages similar in structure to TDWR, but with more elements
  – WSP also has a TWIP product generator, but messages not acquired by ARINC for distribution

• WSP TWIP distribution proposed at one time, but insufficient market identified
  – Would need development by ARINC
  – Would require FAA/ARINC testing, which was not done earlier
CIWS Architecture

Data Ingest Domain (Subscribe Support)

NEXRAD
ASR-9
TDWR
Satellite
Lightning
MDCRS
Model Data
Surface Obs

Sensor Ingest #1

Data and Product Output Domain (Publish Support)

Web-based tools for information discovery & data retrieval

Interim CIWS Situation Display (SD)

TFM tools and other apps. using real-time CIWS digital data feeds

Web / Display Server

Web / Display Server

Archive

Playback / Development Support

CIWS Real-time

Precipitation Cluster

Forecast Cluster

Algorithm #1

Algorithm #2

CIWS Digital Output Processing

CIWS Internal Domain

Internal & External users

CIWS Offline

Precip domain

CWF domain

Subscribe

Publish

pub

sub

pub

sub