

# Integrated Terminal Weather System (ITWS)

## Friends/Partners in Aviation Weather

*Orlando, Florida*  
*October 9, 2008*

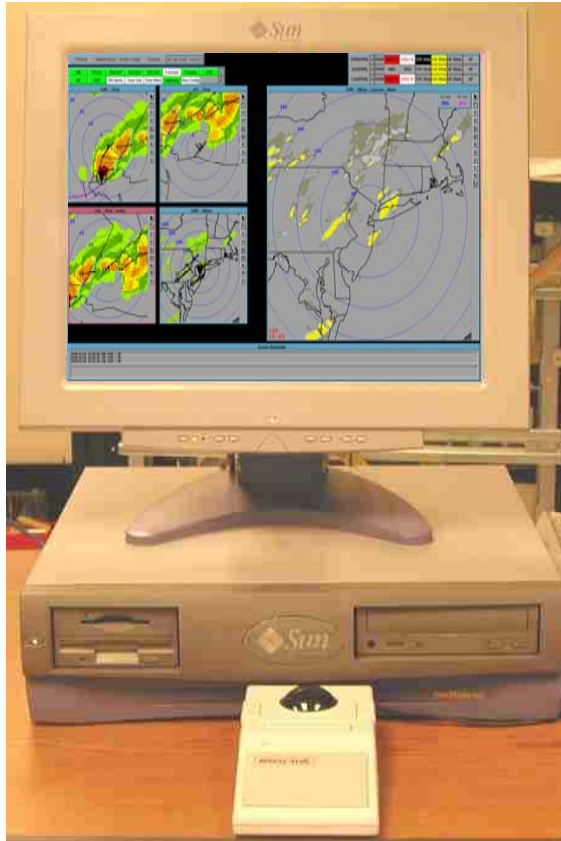
Presented by: Benn Deans  
FAA Weather Processors Manager



Federal Aviation  
Administration

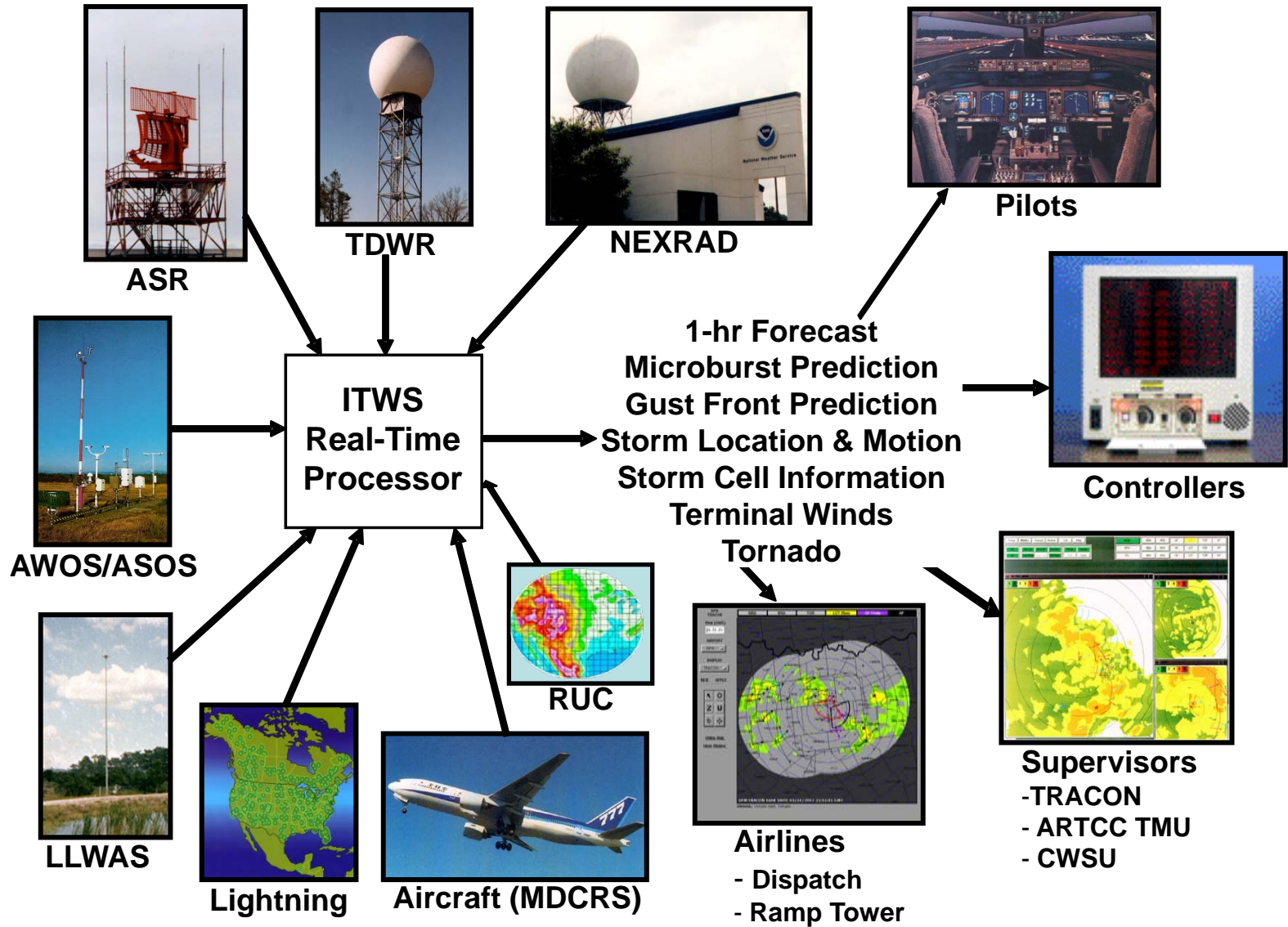


# ITWS Program Description



- Provides air traffic managers and controllers current and forecasts (up to 60 minutes) of terminal weather
- Accurate, easy-to-understand, and immediately useable graphical weather information on a single color display for decision support, collaboration, and common situational awareness
- Uses sophisticated algorithms to integrate data from FAA and NWS sensors, radars, and weather models, and from aircraft in flight
- Used at TRACONs, towers, ARTCCs and the Command Center, and by the airlines, during adverse weather
- Authorized FAA and non-FAA users have internet access to ITWS products via the External User 2 website

# Integrated Terminal Weather System (ITWS)

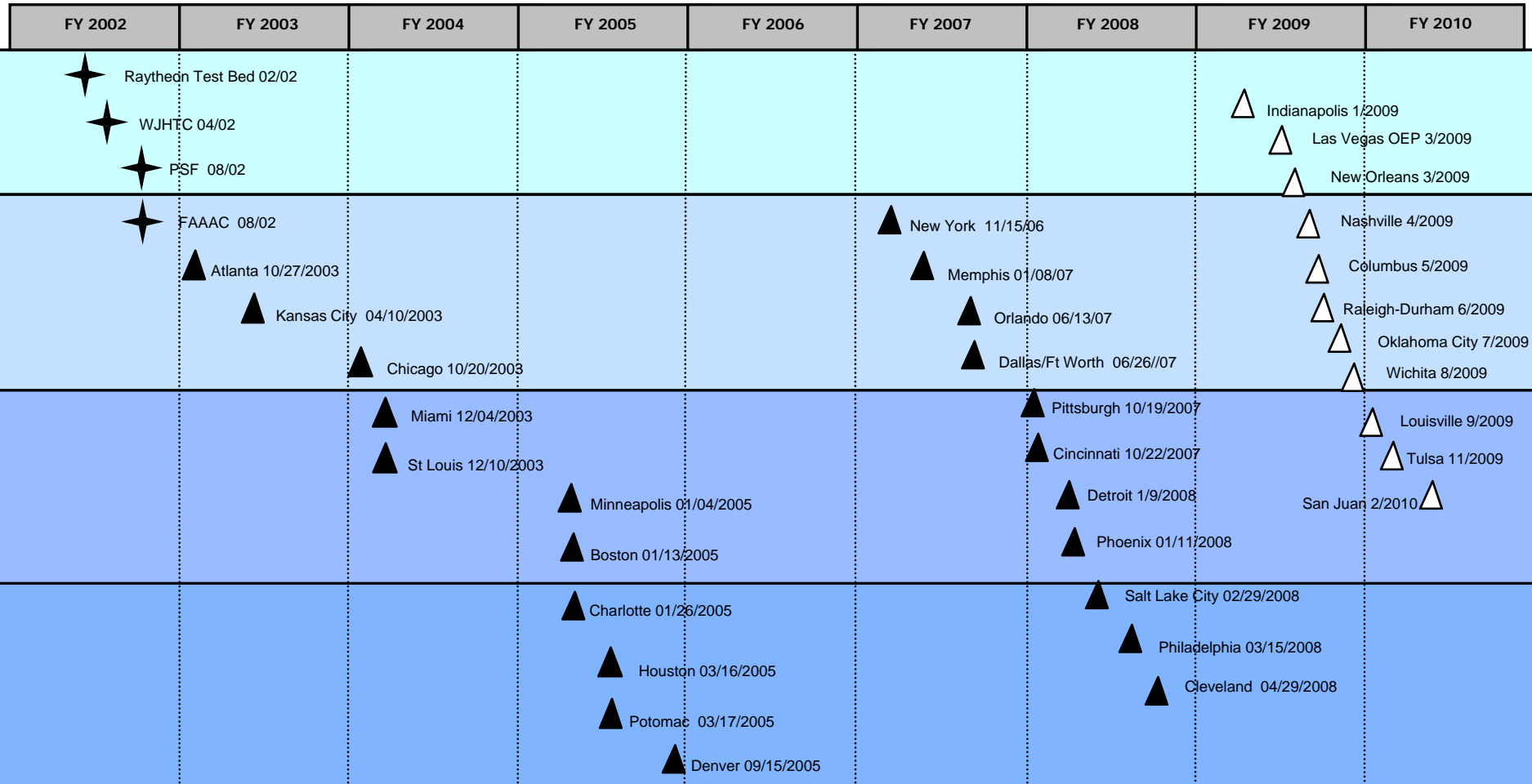


# ITWS Products

- **Wind shear products**
  - Microburst detection/prediction
  - Gust front detection/forecast
  - Wind shift estimate
  - Timers
- **Storm Products**
  - Precipitation
  - Storm Cell Information
    - Hail
    - Echo Tops
    - Lightning
    - Mesocyclone
    - Severe Storm Circulation
  - Storm Motion
  - Storm Extrapolated Position
- **Terminal Convective Weather Forecast (TCWF)**
  - Standard 1 hour forecast
  - Winter 1 hour forecast
  - Forecast quality metrics
- **Other**
  - ASR-9/11 AP editing
  - Tornado signature detection/alert
  - Airport lightning warning
  - Terminal winds profile
  - Pilot text/character graphics message



# ITWS Waterfall - Working Schedule



As of 8/12/2008



ITWS Support Systems Installed



Projected Installation/CAI Date



Installed/CAI Complete



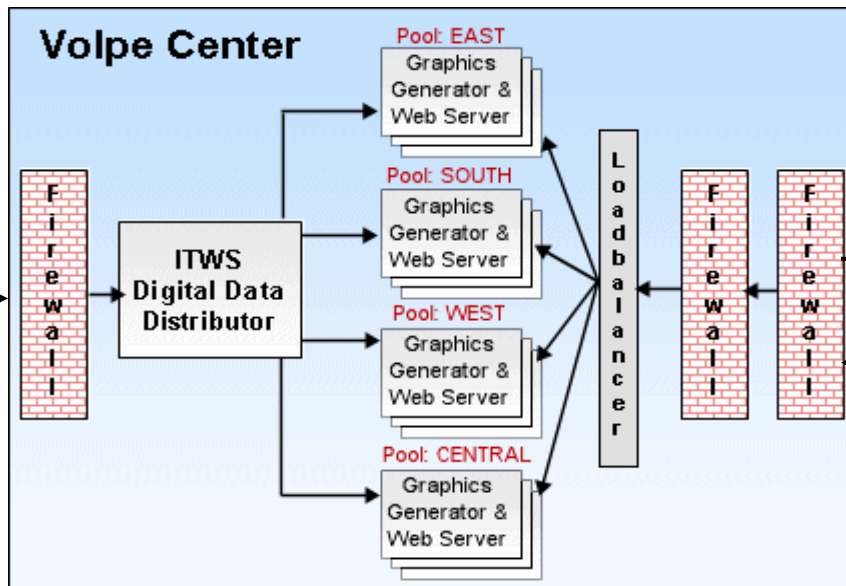
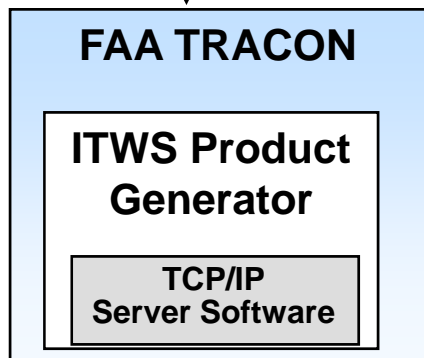
Commissioned



# ITWS External User Website at the Volpe Center

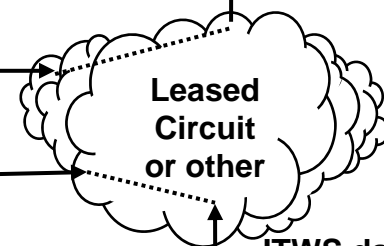
(Managed by the ITWS Program Support Facility (PSF) in Oklahoma City)

AWOS, ASOS, TDWR,  
RUC, ASR-9/11,  
LLWAS, NEXRAD,  
Lightning, MDCRS  
(from Aircraft)



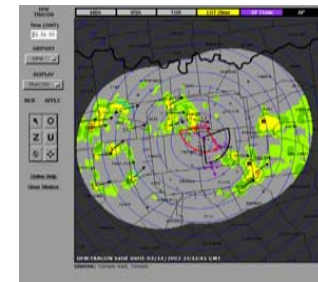
Client at FAA, Air Carrier, or Other

ITWS data



ITWS data as HTML and images

Web browser at FAA, Air Carrier, or Other



# Features of the ITWS External User Website

## (Currently operational at the Volpe Center)

- **What does ITWS Website provide?**
  - **ITWS Weather Products for any or all of the ITWS-supported airports (selected by user while logged into the Website)**
    - **ITWS weather products currently available for the following airports:**  
Atlanta, Miami, Ft. Lauderdale, West Palm Beach (FL), Kansas City, Springfield (MO), St. Louis, Houston (IAH & HOU), Chicago (ORD & MDW), Milwaukee, Washington DC (DCA, IAD, & ADW), Baltimore, Boston, Charlotte, Denver, Minneapolis, New York (JFK & LGA), Newark, Teterboro (NJ), Dallas (DFW & DAL), Orlando, Daytona Beach (FL), Tampa, Memphis, Detroit, Cincinnati (CVG), Pittsburgh, Phoenix, Philadelphia, Salt Lake City, Cleveland
    - **ITWS products to be available for the following airports by the middle of CY2010:**  
Indianapolis, Las Vegas, New Orleans, Nashville, Columbus, Dayton, Raleigh-Durham, Oklahoma City, Wichita, Louisville, Tulsa, San Juan, Little Rock (AR), Jackson (MS)
    - **ITWS products planned for the following Secondary Reliever Airports (SRAs) by the end of CY2010:**  
Lafayette Regional (LA), Akron-Canton Regional (OH), Laurence G. Hanscom Field (MA), Manchester (NH), Theodore Francis Green (RI), Southwest Florida Intl (FL), Orlando-Sanford (FL), Chicago (IL), Capital City (MI), City of Colorado Springs Municipal (CO), St. Paul Downtown Holman Field (MN), Dekalb-Peachtree (GA), Columbia Metropolitan (SC), Charles B. Wheeler Downtown (MO), St. Louis Downtown (MO), Spirit of St. Louis (MO)



# Features of the ITWS Website (Cont'd)

- **Who currently uses the ITWS Website?**
  - **FAA Command Center (Herndon,VA), Airlines, Airport Authorities, Aviation Industry System Developers**
- **How does a potential non-FAA external user gain access to the Website?**
  - **Must sign a Memorandum of Agreement (MOA) with the FAA**
  - **Must establish dedicated telecom line to ITWS Website via commercial service provider:**
    - **Guidance given in Volpe Center document 'Technical Considerations for ITWS Website Connection'**
    - **Contact Volpe Center ITWS Website Program Office for specific guidance**





# Major Airline Users of ITWS Weather Products via Volpe Web

ITWS Website (Volpe) External User Wx Product Requests (per Hour) During Severe Wx Event	Requests Per Hour	No. of ITWS Airports
FAA Command Center	4213	(9 Airports)
Delta Airlines	7032	(4 Airports)
Fed Ex	1625	(3 Airports)
Continental Airlines	1415	(2 Airports)
Northwest Airlines	1109	(5 Airports)



**LEGEND**

- ▲ ITWS TRACON Site (Baseline 22)
- Last 11 ITWS Site
- Volpe Center
- ★ Volpe Center ITWS Users



# ITWS SWIM Segment One

- SWIM (System Wide Information Management) is the FAA's implementation of a Service Oriented Architecture (SOA) environment
  - The FAA is transitioning toward publish/subscribe technology
- ITWS is a key component of SWIM Segment One
  - ITWS requirements, schedule and funding included in the SWIM Segment One baseline
  - ITWS project endorsed by JPDO, Weather COI and NAS Architecture
- Plan to establish external access to all ITWS weather information through a SWIM interface
  - The external gateway will be located in the FAA Technical Center at Atlantic City, NJ
- ITWS SWIM Benefits:
  - SWIM provides enabling technology for future interoperability/integration of weather products and systems
    - For example, ATO-T and ATO-R are cooperating via SWIM to use the same software standards for future ITWS and CIWS projects
    - Potential cost avoidances for future integration of weather products and displays
  - Airlines want ITWS data in a format that allows them to integrate products into their weather analysis decision aid tools

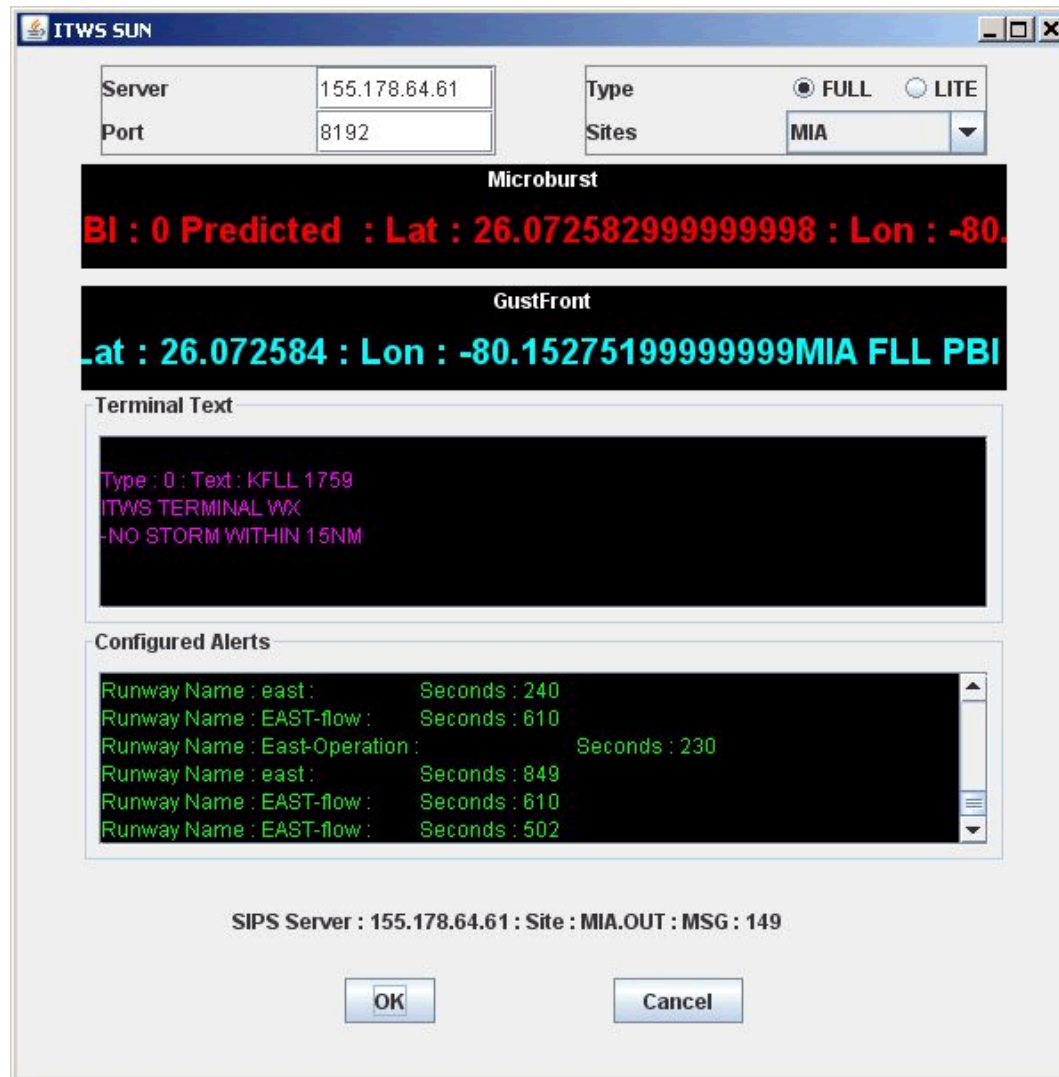


# ITWS SWIM Prototype

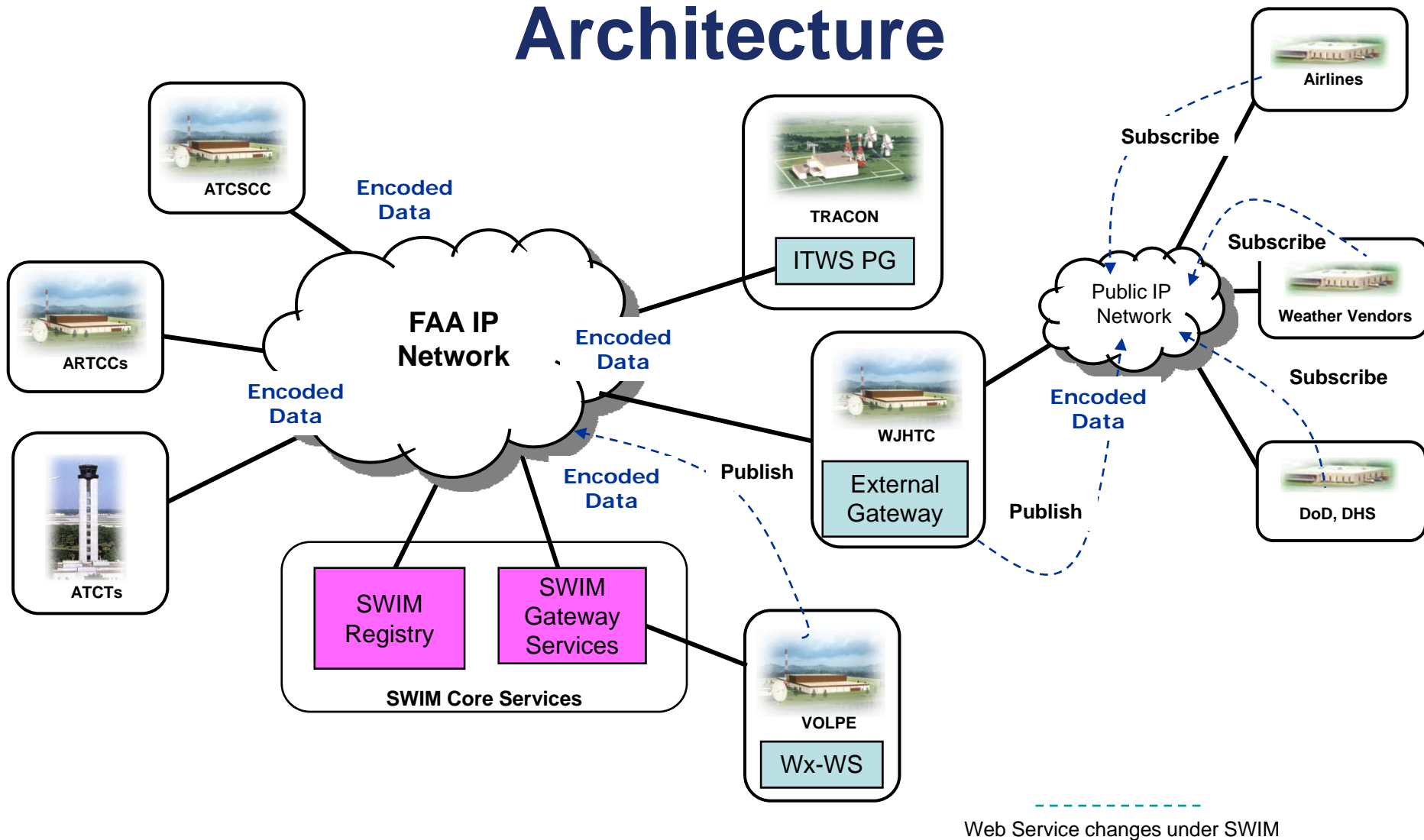
- Although ITWS SWIM Segment One is scheduled for deployment in December 2010, the ITWS SWIM prototype is available NOW
  - After performance testing is completed, a determination will be made as to how many additional users the prototype may support
  - The prototype will offer 4 ITWS weather products, from each “ITWS airport”
    - Micro Bursts; Gust Fronts; Configured Alerts; Terminal Text
- Parties interested in participating in the ITWS SWIM prototype must request application forms from the FAA (use the contact information in the SWIM.gov website)
  - Prototype participation is very limited
  - All inquiries will be documented and placed on the Segment One information distribution list
- New prototype users will require their own internet based VPN (virtual private network) to the external gateway located in the FAA Technical Center at Atlantic City, NJ
  - This same requirement will likely apply to Segment One users
- A Client Software Package and User Guide is currently being provided by the FAA to the prototype participants



# Actual Screenshot of Test Transmission from Miami (MIA) ITWS to Remote User via the ITWS-SWIM Prototype



# ITWS Notional SWIM-enabled Reference Architecture



# POINTS OF CONTACT

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