



The National Transportation Systems Center

Tower Information Display System (TIDS): the System Architecture

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May 6, 2008



U.S. Department of Transportation
Research and Innovative Technology Administration

Project Sponsor

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Agenda

- Overview: What is SNT and TIDS?
- SNT Feasibility Analysis, August 2007
- Prototype TIDS HW & SW Configuration
- TIDS Enhancements beyond prototype
- Future Plans to meet NextGen needs
- Conclusion

Overview

- What is the Staffed NextGen Tower (SNT) concept?
 - Creating equivalent visual operations capabilities for tower controllers without the requirement of costly physical towers.
- What is the Tower Information Display System (TIDS)?
 - Cornerstone of SNT, providing a display of terminal traffic and electronic flight strips to controllers

Feasibility Analysis of SNT

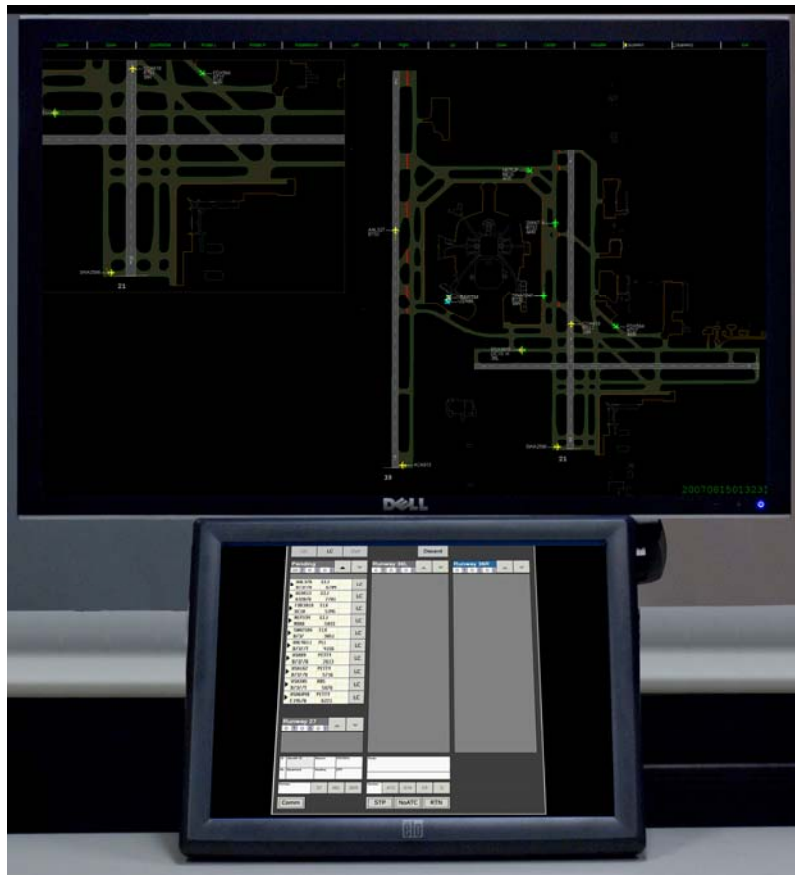
- Goal: Test the SNT concept by building a prototype TIDS system and compare its performance to traditional out-the-window based operations
- Performed at the FAA's Airport Facilities Terminal Integration Laboratory (AFTIL) in Atlantic City, NJ in August 2007

Feasibility Analysis TIDS Set-up

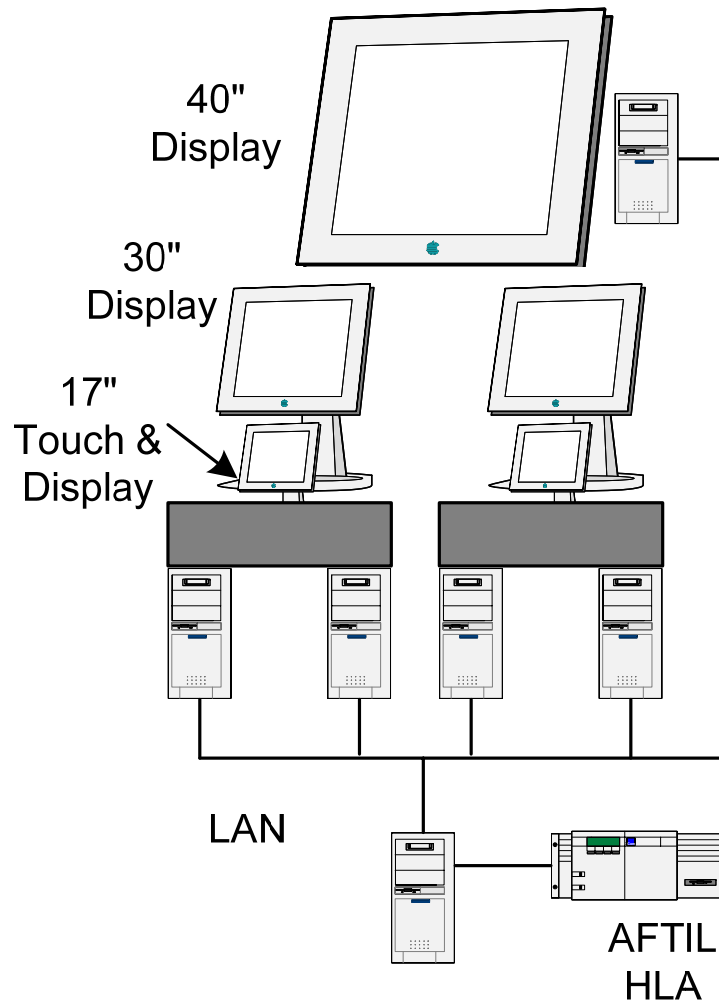


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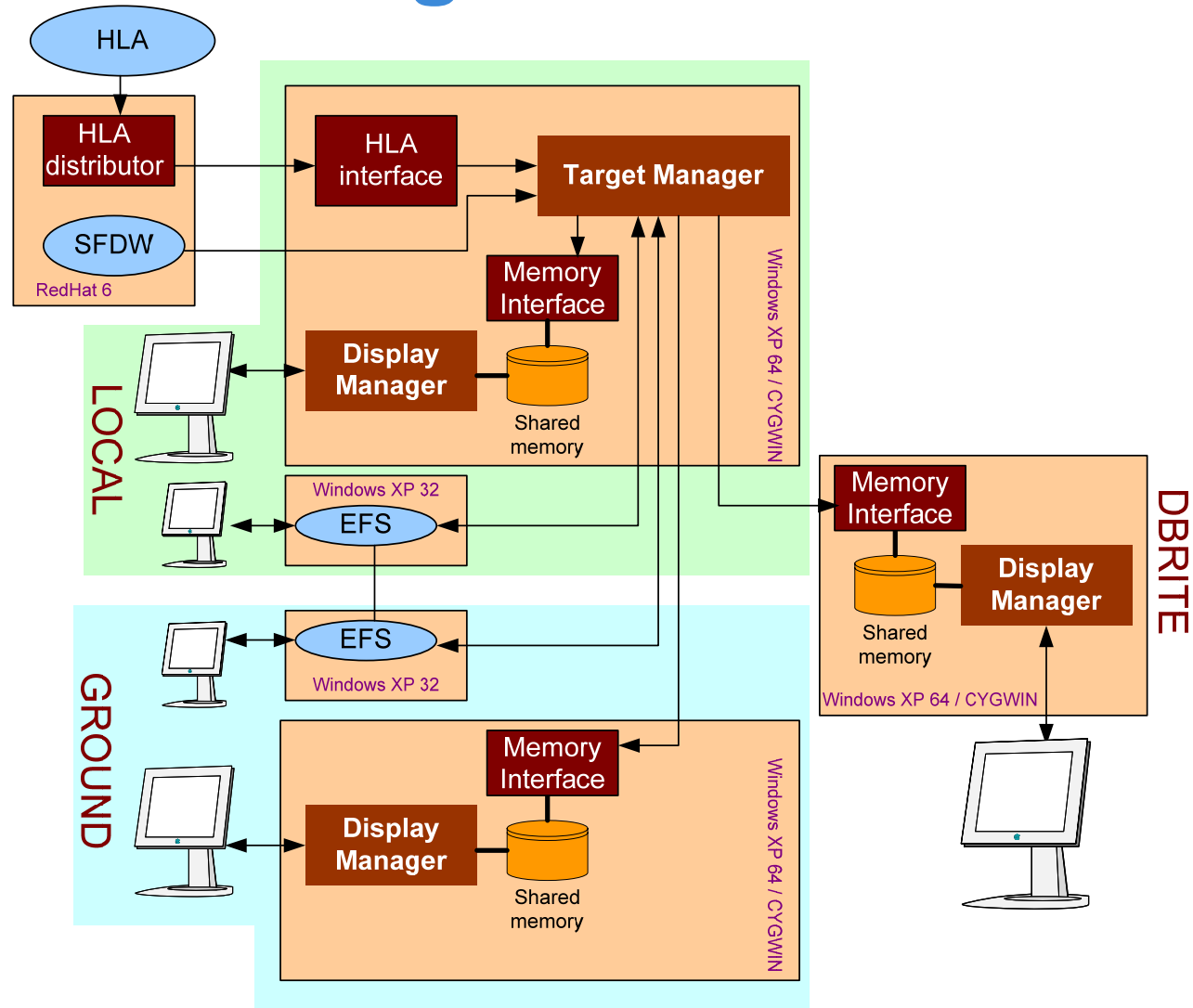
Ground and Local Positions



Prototype TIDS Hardware Configuration



Software Configuration



Target Manager

- Collates all flight events from the various sources
- Performs real-time processing to provide data for TIDS visual aids
- Distributes airport / flight data to display programs and flight strip processors

Target Manager – Airport Processing

- Determines runway departure & arrival sequences
- Determines controller transitions
- Determines arrival spacing (and times)
- Tracks vortex issues for departure aircraft

Target Manager – Visual Aids

- Computes and provides seconds to landing
- Computes warnings about aircraft separation
- Generates hold bars for arriving and departing aircraft
- Generates a vortex timer

Display Manager

- Responsible for the display of target icons, data tags, TIDS visual aids, airport movement area.
- Updates once a second with data from the Target Manager.
- Includes up to three airport viewing windows
- Configurable

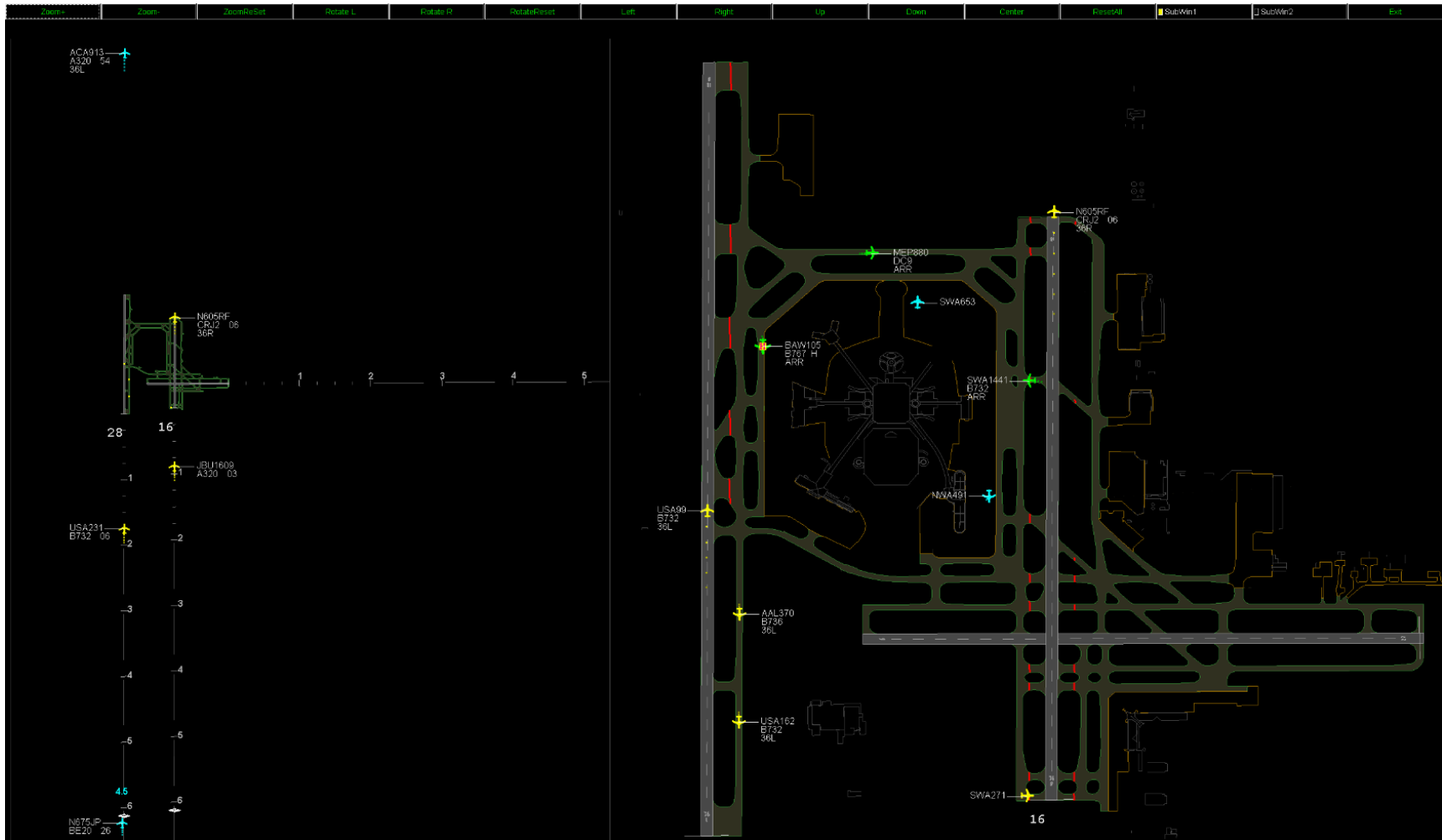
Display Manager – Target Icons

- Icons depict a plane and have three possible colors indicating control:
 - Green = Ground Control
 - Yellow = Local Control
 - Cyan = Other

Display Manager – Data Tags

- Each full target data tag includes:
 - Callsign
 - Altitude
 - Aircraft Type
 - First Fix
 - Arrival designation (ground tracks only)
 - Wake Vortex Countdown
- Data Tags have a “partial” configuration option that displays only callsign

Feasibility Analysis Display Manager: Local Configuration



TIDS Improvements after Feasibility Analysis

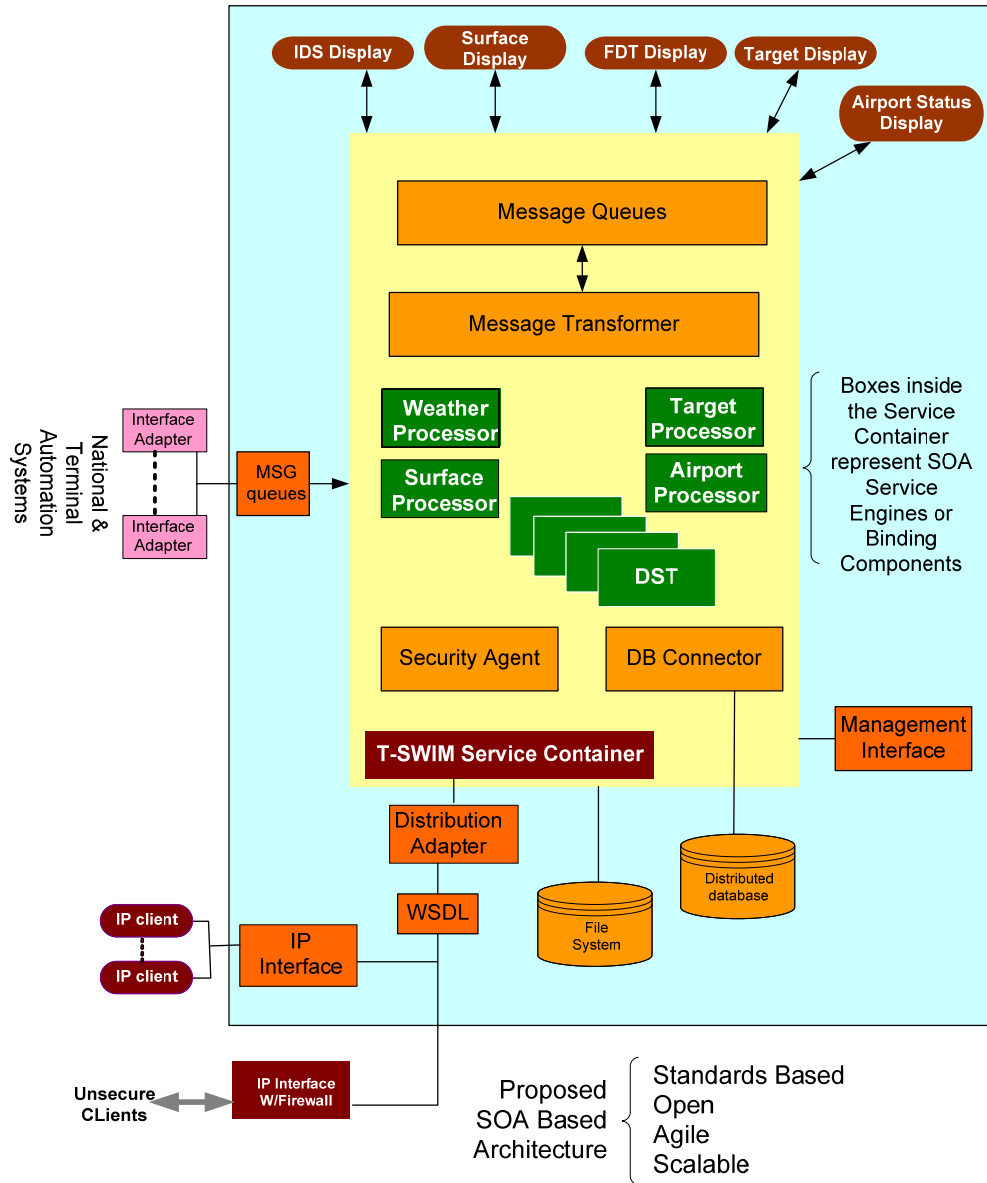
- Linux operating system
- ASDE-X feed at STL
- 24/7 automation
- Database
- New DM features
- Flight Data Reports (FDR) development

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The Future of TIDS

- Integration of more data sources:
 - RVR, TMA, ITWS, ADS-B, X-ASDI, TFMS, FDIO/ERAM and ASR-9
- Re-design system architecture to SOA
 - Provide Enterprise Integration Interface using SWIM
 - Meet NextGen goals of scalability, openness and flexibility
 - Provide security and redundancy
 - Provide clients access to data sources

Proposed SOA architecture



Conclusions

- Feasibility Study showed promise for SNT concept.
- Future plans to integrate tools, expand data sources and create SOA architecture follow the NextGen roadmap.

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Questions?



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