

Performance Analysis System (PAS)

Dynamic Query Tool: The primary tool for analysts on the TMA site is the dynamic query tool. This tool allows the user to select from various parameters relative to TMA performance analysis and have it presented quickly in various graphical and statistical formats as well as retrieve the tabular data used to build the charts. The selectable parameters are easily adaptable and can be tailored to individual requirements. Other automated tools access flight data and log information identified for thorough and efficient performance analysis system.

The Performance Analysis Suite: The processes and capabilities developed in support of TMA Performance Analysis evolved into an analysis system, known as PAS, that can help analysts quickly retrieve and analyze data and report results to interested FAA executives. JTA maintains an on-demand database acquired from various sources that are stored in a GIS (Geographical Information System) Data Base. The primary data sources are:

ATA OFFLOAD

HOST data acquired daily and stored in the JTA GIS Database.

NFDC

Aviation data updated on a 56 day cycle and stored in the JTA GIS DB. Data includes fixes, CDRs, Standard Arrival/ Departure routes, Playbook routes, etc.

ACES

Airspace data updated every 56 days and stored in the JTA GIS DB. Data includes sectors, routes, transition points, etc.

ETMS

ETMS data acquired daily and stored in the JTA GIS DB, including scheduled flights, flight plans including amendments and ETMS track data (on-demand since offload data is used as base line real traffic data).

NOAA

Weather mosaic (composite weather radar picture)

Actual weather data acquired daily consisting of GIF images which are then converted into JTA GIS DB elements.

Weather forecasts

ASPM

ASPM data acquired daily and stored in the JTA GIS Database.

NTML

National Traffic Management Logs, (Restrictions).

User defined airspace elements:

Portals are used as basic elements for assessment/modeling of air traffic in the NAS.

They are “doors” or “gates” placed by the user at locations such as significant enroute points, TRACON metering points, runway thresholds, airport gates or any other location significant to air traffic in the NAS. The tool is used to study traffic passing through each “door” or “gate”.

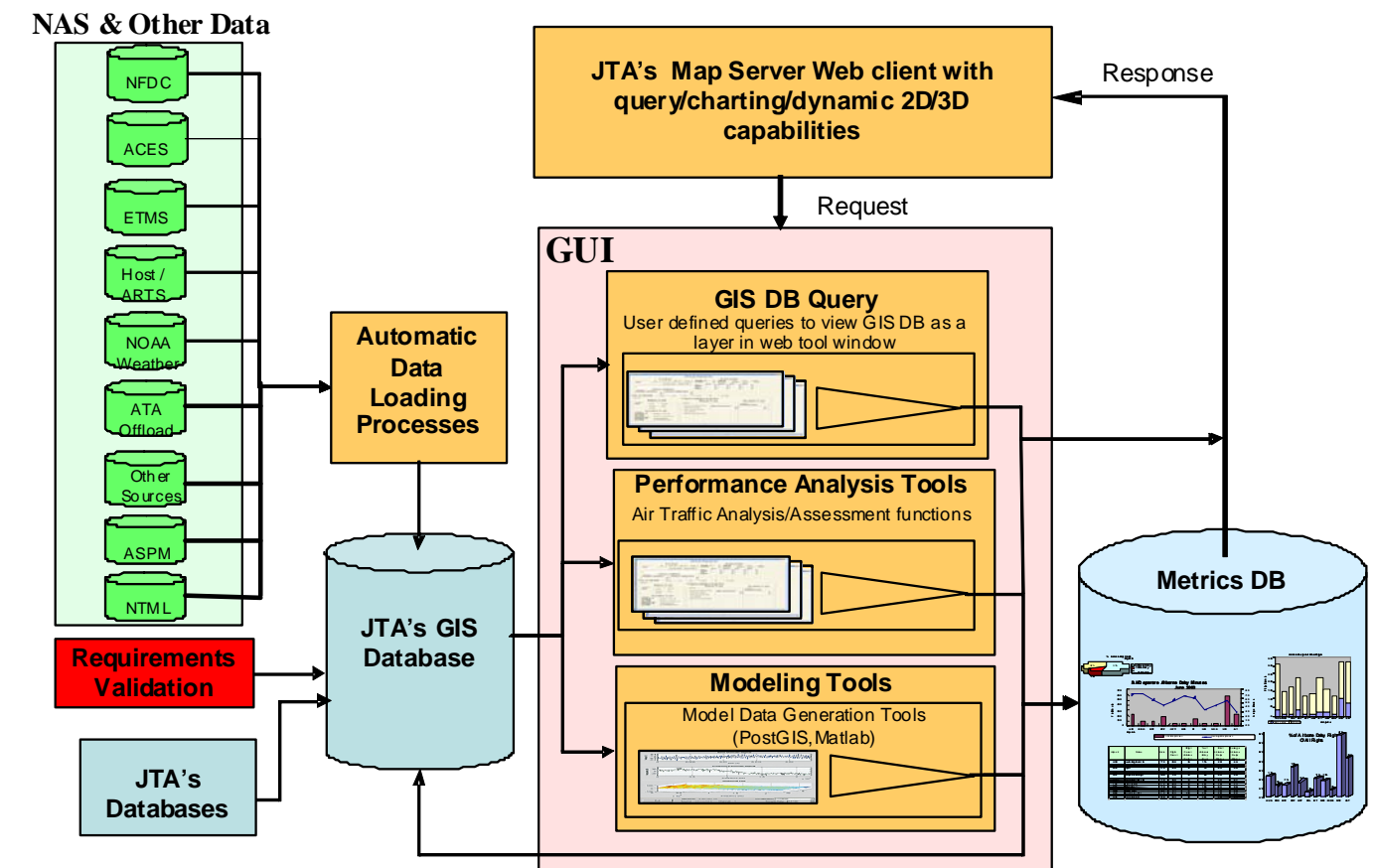
Cube used as a volume element for assessment/modeling of air traffic through NAS. It represents user defined volume in airspace such as sectors, weather impact volume, etc.

Composite wind chart BADA and NOISE model 3rd Party Tool Assessment:

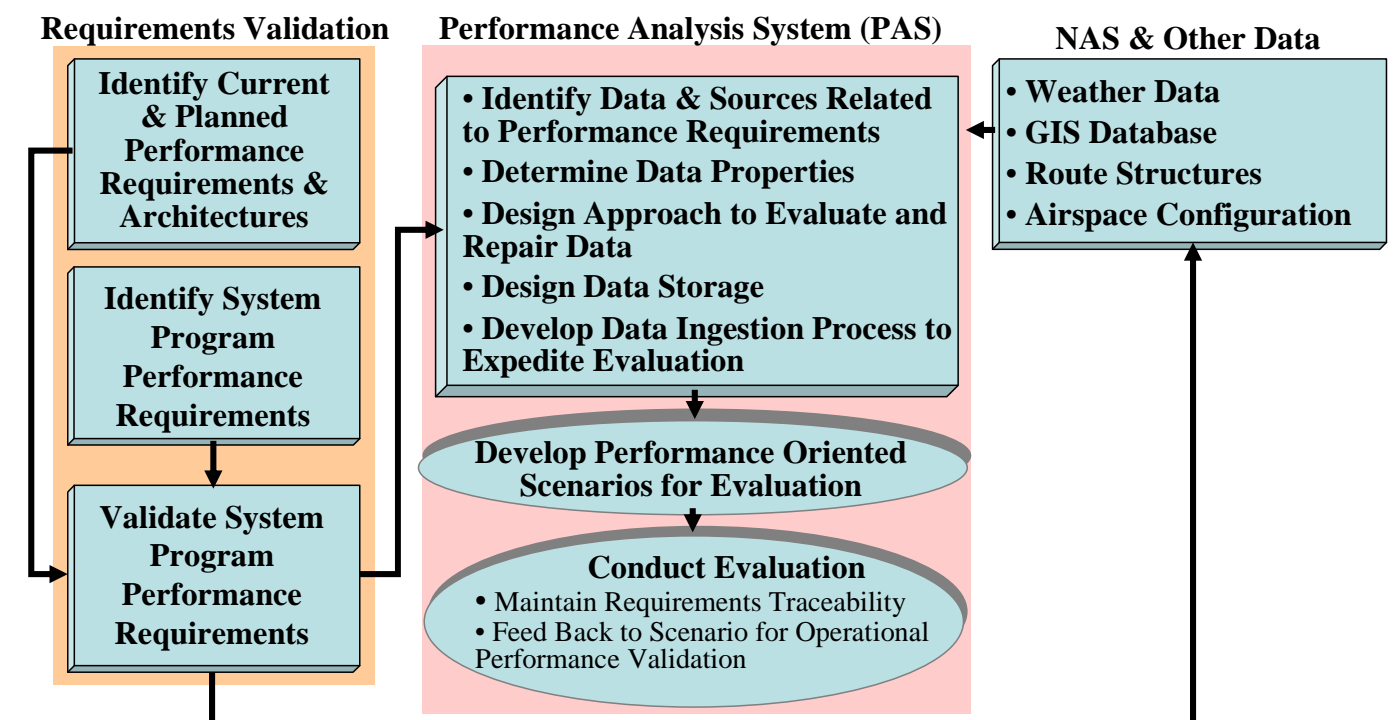
Results of third party tool (treated as one of the inputs) stored in the JTA GIS DB for analysis of the impact on air traffic compared to real/predicted events.

“See Diagram Next Page”

Performance Analysis System (PAS)



Assessing System Performance Requirements



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Map window

- Map Server based client window (GNU free license).
- Visual representation of all JTA GIS objects.
- All capabilities for GIS client such as zoom in/out, selection/info of the displayed object, etc.
- Connection with 2D+t (GIF animated) or 3D/4Dt dynamic representation of traffic (GoogleEarth).

Layer window

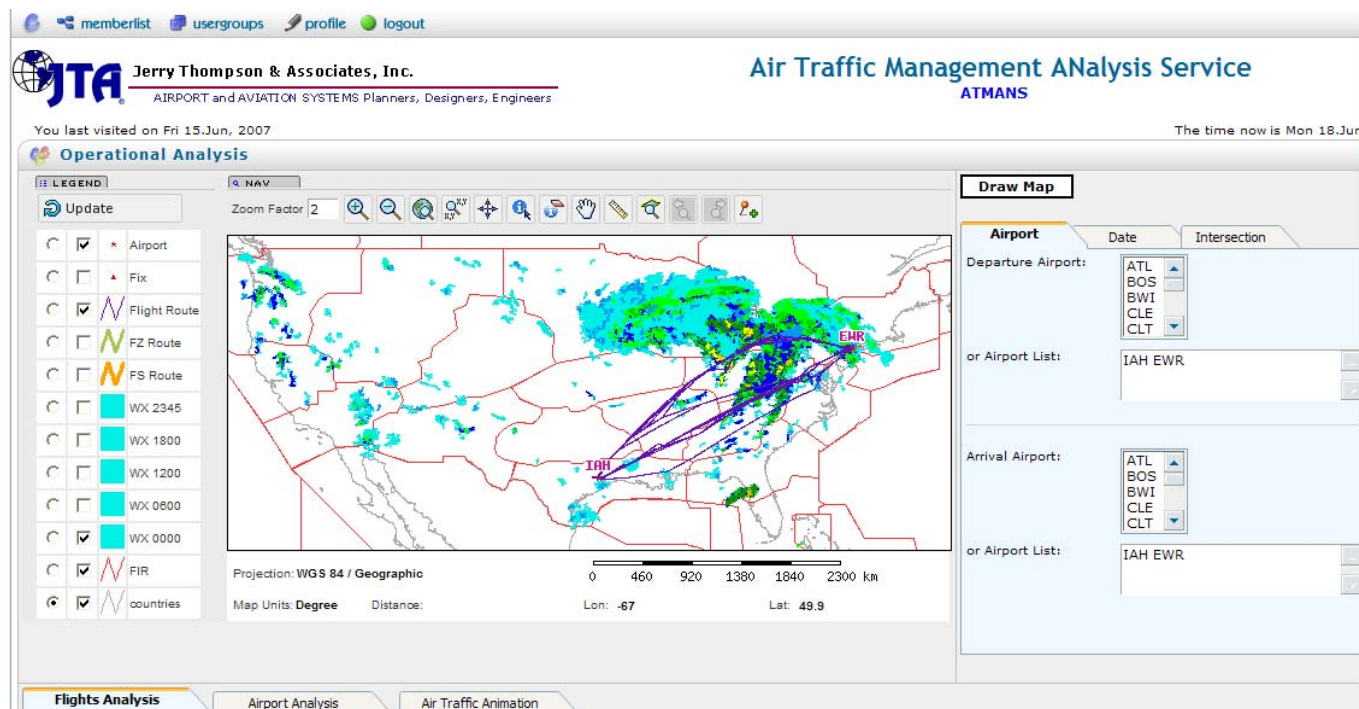
- Main function is to give connection between query results (as a map object) and map window in form of layer and its related info from JTA GIS DB.

Chart window

- Results of Flights Analysis.
- Rich charting capabilities.

Query window

- User defined queries of JTA GIS DB.
- Results of queries are map objects such as flights, sectors, portals, weather, flows or any type of air traffic visualization that helps users to OBSERVE the problem and relationships between objects.
- User defined online or background processes that use Performance Analysis functions.
- Quantitative values of MEASURE set of functions in form of chart such as density, occupancy, delay, Miles In Trail distance, etc.
- “What if” modeling functions Invoke scenario creation defined by user set of rules. Usually it will invoke background processes.



JTA designed the PAS assessment/modeling functions based on PostGres/PostGIS DB, MatLab, and Perl which provide complex air traffic related calculations capabilities. (See Lab chart) The PAS infrastructure consists of Oracle and GIS databases, database servers, Communications servers, a web server, Data Warehouse, VPN, and internally developed, as well as carefully selected off-the-shelf tools, that enable analysts to measure performance.

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TMA Performance Analysis Tools

Traffic Management Advisor

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The time now is Mon 21 Jul, 2008

You last visited on Tue 24 Jun, 2008

Report Type:	Report Time Period:
1. <input type="radio"/> Airport Acceptance Rate 2. <input type="radio"/> Airport Arrival Demand 3. <input type="radio"/> Arrival Rate 4. <input type="radio"/> Operations Rate 5. <input type="radio"/> Arrival Delay - Flight Plan 6. <input type="radio"/> Arrival Delay - Schedule 7. <input type="radio"/> Internal Departure - Airborne Delay 8. <input type="radio"/> Internal Departure - Gate Delay 9. <input type="radio"/> RAD	<input type="radio"/> Single <input type="radio"/> Comparison Start period: 11/01/2006 vs 11/01/2005 End period: 11/30/2006 vs 11/30/2005 Additional time options: Hour 6 ~ 22, Quarter hour 1 ~ 4 Additional options: ALL
Locations:	Graph Options:
ATL - Wm. B. Hartsfield Atlanta International BOS - Logan International CLT - Charlotte-Douglas International CVG - Cincinnati/Northern Kentucky International DEN - Denver International DFW - Dallas/Fort Worth International DTW - Detroit Metropolitan Airport FLL - Fort Lauderdale-Hollywood International All Current TMA Future TMA Clear	Graph Type: <input type="radio"/> Bar <input type="radio"/> Line <input type="radio"/> Histogram <input type="radio"/> Box Chart Resolution of presentation: <input type="radio"/> Total <input type="radio"/> Month <input type="radio"/> Day <input type="radio"/> Hour <input type="radio"/> Quarter hour Statistical tools: Mean



TMA Performance Analysis Database

Traffic Management Advisor

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The time now is 11 Oct 2005 03:03 pm

You last visited on 11 Oct 2005 03:03 pm

Recent Reports:	Analysis Tools:	Documents and Results:
Current TMA: ATL, DEN, DFW, FLL, IAH, LAX, MIA, MSP, ORD, SFO	Future TMA: BOS, CLT, CVG, DTW, IAD, LAS, MCO, MEM, PHL, PHX, SEA, SLC, STL	Data Source and Tools: Dynamic Query Tool, Flight Information Analysis (Example), Restriction Log Query, Time-Based Metering Log Query, TMA Site Status Table
	Maintenance Tools: 3D Data Request (Example) (internal use only), Flight Query (internal use only)	Modeling: Peak Algorithm System Information: Architecture, Network Connectivity, Potential Metrics Modeling Tools Analysis Results: Atlanta Fuel Consumption Analysis Charts, IAH ACM

TMA Performance Analysis Database Website: JTA developed and maintains a website for data and analysis access as well as information and published reports on TMA performance analysis. Performance analysis is based on government mandated and/or approved metrics criteria as well as internally developed measures that have been vetted by government personnel and air traffic subject matter experts. JTA has provided performance metrics to the FAA Air Traffic Organization, En-Route (ATO-E & ATO-R), Traffic Management Advisor (TMA) Program Office for several years.

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