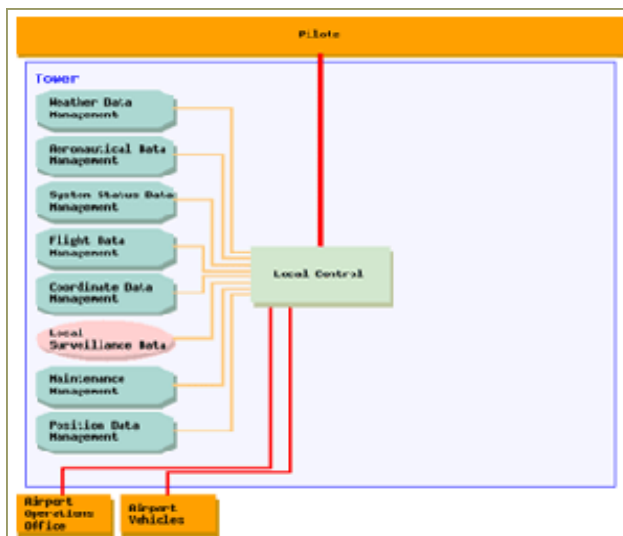


# National Airspace System *DESIGN TOOL*™

**The National Airspace System (NAS) Design Tool traces ICAO-defined or national identified services through an Operations Concept Design and a Technical Concept Design to specific equipment, procedural, and personnel requirements.**

The JTA National Airspace System (NAS) Design Tool is a computer-aided system engineering tool for airspace system design and engineering. The Design Tool enables airspace designers to derive specific, detailed operational procedures and functional requirements from a broad operations concept. In the 1980s, system engineering practices were applied to the NAS systems for the first time. Today, the Design Tool extends the application of system engineering practices to NAS personnel and NAS procedures. For the first time, the entire operational NAS can be characterized in a structured manner. It facilitates the application of sound system engineering principles to manage the evolution of the NAS. Operational procedures and system specifications for emerging air traffic concepts can be quickly and methodically derived. Simulation, training, and requirements validation scenarios can be identified from the output of the NAS Design Tool.



The Design Tool is built on a series of databases with varying levels of information that can be manipulated to systematically develop alternative states of the NAS. The Tool describes the people, procedures, and machine functions necessary to provide the required services. The Tool establishes an operational design, provides traceability between provided services and equipment requirements, and includes an analysis function to compare alternative NAS designs. The designer is able to navigate through the Tool, become familiar with the baseline design information contained in the existing databases, and manipulate that information to create, modify, or eliminate alternative designs. The Design Tool gives the NAS designer the capability to define a new operations concept and derive the associated procedures and equipment requirements.

The NAS Design Tool characterizes the NAS through a structured system engineering process. By decomposing the NAS into its fundamental operational primitives, the NAS Design Tool gives the designer a powerful CASE tool for the development and evaluation of alternative NAS designs. The designer is able to assemble the procedural, machine-functional, and communication requirements associated with a given Operations Concepts.

**ASET** Aviation System Engineering Tools

**Jerry Thompson & Associates, Inc.**

**AIRPORT and AVIATION SYSTEMS Planners, Designers, Engineers**



# At JTA, the Tools Make the Difference

## **ASET Aviation Systems Engineering Tools:**

**Master Mapper** - The Master Map begins with an accurate map of the physical world. Hundreds of political and aviation information layers can be added: sovereign and delegated airspace assigned by the International Civil Aviation Organization (ICAO); the world's flight information regions (FIRs); great circle routes between selected city pairs; airport locations; air routes; communication, navigation and radar facility coverage. Operational and technical details for a country or region can be added as required and the map can be projected in any traditional view.

**Communication, Navigation, Surveillance (CNS) Coverage Tool** - CNS Coverage Tool calculates the theoretical coverage of ground-based CNS facilities. The CNS Coverage Tool compensates and adjusts for elevation of the site, height of the antenna, and screening angles.

**NAS Design Tool** - NAS Design Tool enables the traceability of procedural, communication, and machine-functional requirements from an Operations Concept. The tool describes how people, procedures, and machines provide the required air navigation services to aviation users.

### **Air Traffic Analysis Models**

*Demand/Capacity Model* determines the current scheduled traffic through a selected airspace, as well as other traffic that would benefit by gaining access to that airspace. When this tool is used with the Master Map, detailed airspace analysis based on demand and capacity projections can be conducted.

*Revenue and Cost Model* projects operating revenues and costs attributed to the levels of Air Navigation Services provided.

*Air Traffic Control (ATC) Staffing Model* projects the air traffic staffing required to support the projected demand using the planned sectorization scheme.

*Technical Staffing Model* helps in planning for the number of maintenance and operations personnel and their base locations.

**The Performance Analysis System (PAS)** - The processes and capabilities developed in support of TMA Performance Analysis evolved into a system that helps analysts quickly retrieve and analyze data, and report results in customized formats. PAS provides the capability to analyze and report the performance of the National Airspace System (NAS) utilizing relational GIS and Oracle data bases and dynamic processes that can deliver results world-wide through the use of web based automation.

**Flight Plan Management and Billing (FPM+B)<sup>®</sup>** - Automatically "captures" flight data from sources and generates flight progress strips and invoices for airspace use and communications charges.

## **Excellence through Innovation and Hard Work**

### **Jerry Thompson & Associates, Inc.**

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