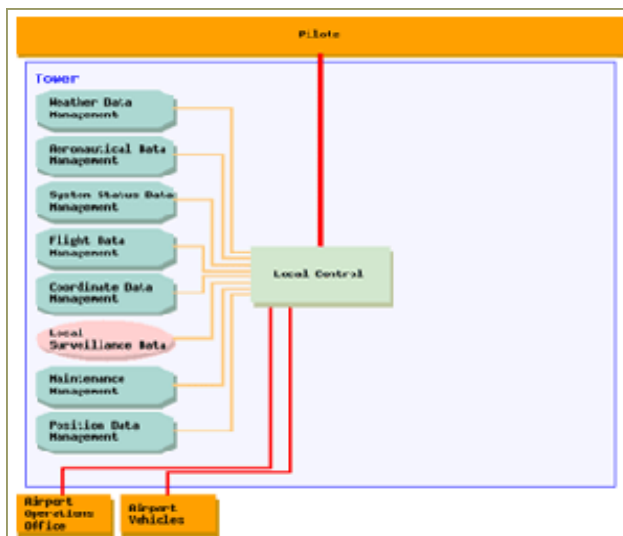


# National Airspace System *DESIGN TOOL*™

**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

JTA's technical staff employ a sophisticated set of tools that allow us to complete every job thoroughly, efficiently, and expertly. We continuously enhance our toolset to take maximum advantage of emerging commercial capabilities, as well as the evolution of the aviation industry.

## JTA's ASET™ Benefits the Customer

JTA takes full advantage of state-of-the-art System Engineering and Program Management processes, procedures, and tools. JTA has created a family of models and tools, the Aviation System Engineering Tools (ASET), which have been selected from the best commercially available tools and supplemented with JTA developed software products. ASET is a powerful set of tools used internally by the JTA technical staff and it is the foundation for JTA's ability to provide outstanding systems engineering and program management services to the customer at a reasonable cost. ASET functionality includes:

**Master Mapper:** The Master Mapper is a highly accurate map of the physical world. Hundreds of possible political and aviation information layers can then be added: sovereign and delegated airspace assigned by the International Civil Aviation Organization (ICAO); the world's flight information regions; great circle routes between selected city pairs; airport locations; air routes; and, communication, navigation, and radar facility coverage. Operational and technical details can also be added.

**ANS Design Tool:** The Air Navigation Service (ANS) Design Model traces ICAO-defined or national identified services through an Operations Concept Design and a Technical Concept Design to specific equipment, procedural, and personnel requirements.

**Demand/Capacity Analysis Model:** The 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 Mapper, detailed airspace analysis based on demand and capacity projections can be conducted.

## Excellence through Innovation and Hard Work

### Jerry Thompson & Associates, Inc.

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**Performance Analysis Suite (PAS):** The PAS provides the capability to analyze and report on the performance of the National Air-space System through a dynamic set of processes and automated tools

**GATOR™:** The Global Air Traffic Operations Research (GATOR) tool uses repetitive flight plans, airline schedules, actual flight data and overflight and landing fees for detailed analysis of air traffic operations on a global scale.

**Staffing Analysis Models:** The Air Traffic Control (ATC) Staffing Model projects the air traffic staffing required to support the projected demand using the planned sectorization scheme. The Technical Staffing Model plans the number of maintenance and operations personnel and their base locations.

## Fully Configurable ATC Lab

JTA has developed a fully configurable air traffic control laboratory on its premises. This laboratory is designed to support both developmental work and test and evaluation tasks. JTA's engineering staff uses the ATC Lab to support its software development, system integration, and design work. JTA's air traffic controller and aviation technician staff uses the lab for the development of operational procedures, training packages, and technical alternatives. Additionally, JTA is able to test and evaluate new systems, operating concepts, procedures, training, or any number of scenarios, whether developed by JTA or another entity. JTA uses its ATC Lab for training and human factors evaluation as well. The lab can be configured to emulate any part of the U.S. airspace system or any international airspace.

