

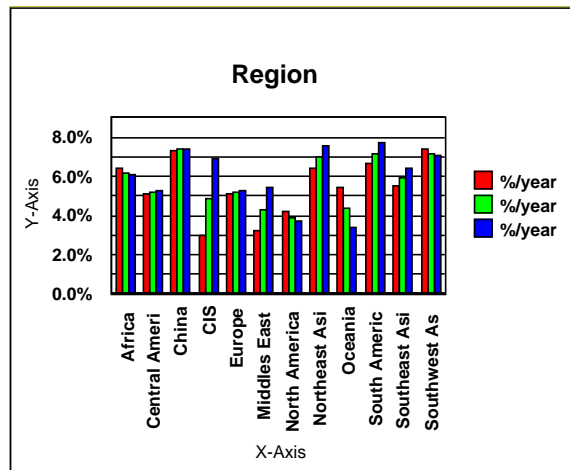
# Aviation Analysis Models

The Aviation Analysis Models provide the foundation for quantifying the underlying business case economics for air navigation and airport operation systems.

An airspace system design is incomplete without an understanding of its economic impact. JTA has developed the Aviation Statistical Analysis Models as a sophisticated suite of analytical tools specifically tailored to aviation. Using these models, JTA's economists are able to provide customers with a sophisticated analysis to support air navigation business management. The Aviation Statistical Analysis Models are used for investment analysis, air traffic analysis, trade-off studies, what-if scenarios, cost-benefit determination, and forecasting.

## Demand/Capacity 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 JTA Master Mapper, detailed airspace analysis based on demand and capacity can be conducted.



JTA has developed a set of analytical tools to form the basis for comprehensive economic analysis of aviation systems, such as this projection of annual growth rate for regional air traffic.

## 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 is used to plan the number of maintenance and operations personnel and their base locations based on an airspace system design concept.

**Cost Competition Model** The Cost Competition Model evaluates the cost for competitively procured systems and equipment. It compares software, hardware, and labor costs of each system and assesses system cost values. This model also provides the capability to compare the cost of two system design approaches.

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

**Integrated Noise Model** The Federal Aviation Administration's Integrated Noise Model is used for evaluating the impact of aircraft noise in and around airports. This tool assesses the effect that changes in runway configuration, air traffic volume, aircraft equipment, and air traffic control procedures have on perceived noise levels. JTA combines the output of the noise model with the Master Mapper to plot noise contours in the area surrounding airports.

**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, called 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. In addition to the Aviation Analysis Models, 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 (FIRs); great circle routes between selected city pairs; airport locations; air routes; and, communication, navigation, and radar facility coverage. Operational and technical details for a country or region 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.

**CNS Coverage Model:** The Communications, Navigation, & Surveillance (CNS) Coverage Model calculates the theoretical

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

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coverage of ground-based CNS facilities and is used to create coverage maps for communication, navigation, and surveillance devices. These include primary and secondary radars, air-ground communication radios, VHF Omni-directional Range (VOR) stations, and Distance Measuring Equipment (DME) navigation aids, among others.

**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.

## **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.

