MCATS (Monte Carlo Air Taxi Simulator)

“Air Taxi: A personalized, on-demand air transportation option for the business traveler, vacationer, and air cargo carrier.”

“MCATS can be used as a ‘living business plan’ to help you make the right decisions for your Air-Taxi service – so you can stay ahead of your competitors…”

**Key Features/Benefits:**

- Identify passenger ticket cost or business’ profit margin
- Optimize fleet size or service area to maximize revenues
- Identify service denials & lost revenue areas
- Detailed passenger and aircraft data
- Detailed cost input & cost/profit output metrics
- Assess how (real recorded) weather impacts your business
- Conforms to Part 135 regulations (weather, pilot hours, etc).
The MCATS (Monte Carlo Air-Taxi Simulator) Program is a Microsoft Windows-based PC application for analyzing feasibility and business aspects of an air-taxi service throughout multiple regions of the U.S. In order to more closely model system uncertainties, MCATS utilizes a Monte Carlo analysis approach to statistically vary parameters throughout the simulation.

The major parts of the program include:

• **An input section**
  Specifying system parameters: profit margins desired or ticket price required, simulation duration, airports and aircraft used, fleet sizes and specifications, passenger demand/travel data, weather modeling, and operational, pilot related, insurance and inventory costs

• **An analysis section**
  For numerically simulating the user-specified service

• **A visualization section**
  For animating portions of the simulation and tracking system problems.

• **An output section**
  For tabulating and plotting results: profits or ticket costs, individual airport data (trips, deadheading to/from, delays, cancellations, etc.), aircraft utilization (flight times/distances, idle times, loading, etc.), relevant passenger data (nominal flight distances flown, denial statistics and classifications, etc.), total costs (broken down into individual items & percentages or converted into hourly costs), and relevant pilot/crew flight statistics.

The MCATS tool can be used to create an air-taxi network, to analyze the various components of service or to refine an existing operation. The operator can use the program to gain a better understanding of how various price/system uncertainties can impact their business and then analyze how different configurations might make their service more cost-effective.

This business case analysis tool was developed in part to help better project the impact that various SATS technologies can have on an air-taxi service. It has been used to evaluate the potential reliability increases and price decreases that SATS Lower Landing Minima (LLM) goals would fulfill. It has been used to model the price reductions that Single Pilot Performance (SPP) goals would enable. Simulated air-taxi services have been analyzed throughout different geographical regions to better understand how an air-taxi service might be impacted by regional costs and weather effects.

The MCATS program is an excellent tool for air-taxi service providers to better refine and understand the potential impacts to their business. It is also an effective tool for transportation network analysts to better understand new traffic patterns and flows in the NAS produced through new/expanding air-taxi businesses. MCATS can also be used by potential investors to evaluate the business risks.

For more information, please contact Michael Heck or Jason Brindel at RTI’s Center for Aerospace Technology in Hampton, VA at (757) 827-8450.