Airports

The MITRE Corporation’s Center for Advanced Aviation System Development (MITRE/CAASD), a research and development center that supports, among others, the United States Federal Aviation Administration (FAA), has extensive and global aviation experience.

Our state-of-the-art laboratory facilities makes use of modeling, simulation, and rapid prototyping to analyze the many complex problems facing today’s airport administrators, operators, planners, and designers. MITRE/CAASD is a global leader in the provision of innovative solutions for new and existing airports.

Airport Analysis

Our sophisticated laboratory analytical tools allow the evaluation of some of the most complicated issues facing airports today, as well as the analysis of key airport and airspace operational relationships. MITRE/CAASD has the capability to design integrated processes to support future airport concepts and enhance capacity, while keeping noise impact to a minimum. We also conduct comprehensive “greenfield” airport siting feasibility studies that have assisted in the planning of numerous new airports. MITRE/CAASD’s staff includes engineers, airport planners and designers, operations and safety experts, air traffic controllers, pilots, and procedure design specialists.

Airport Capacity, Delay, and Noise Modeling

Estimating capacity is an extraordinarily complex problem. This is due to the numerous variables that need to be considered in the process of determining the maximum capacity of a runway system. Variables such as aircraft fleet mix, interarrival times, runway occupancy times, and the physical layout of multiple runways have been successfully incorporated into our models. Incorrectly determining capacity can affect other planning efforts, such as timing the construction of a new runway. MITRE/CAASD has been the original developer of many models that the FAA uses today to perform analyses.

MITRE/CAASD has created methodologies that assist existing airports to best utilize available resources, such as the development of procedures for simultaneous approaches to parallel runways that permit reduced separation between the runways without sacrificing safety. We have also developed new procedures for simultaneous approaches to converging runways, as well as simultaneous triple-parallel approaches. Naturally, all of these solutions integrate, whenever appropriate, satellite-based navigation procedures and concepts, which have become an important pillar of modern aviation in recent years. MITRE/CAASD has played a key role in the development and implementation of these concepts. These capacity enhancements often minimize delay and resolve environmental issues. MITRE/CAASD has extensive experience with the use of models that analyze and predict aircraft noise. Our studies include long-term noise contour predictions for alternative air traffic demand scenarios. We also work on procedural and operational solutions to diminish the severity of noise impacts. One such example was a comprehensive analysis for Aéroports de Paris (ADP) to evaluate the impact of new runway construction and future traffic at Paris Charles de Gaulle Airport.

Summary

MITRE/CAASD is uniquely qualified to support a great variety of airport and associated airspace projects, including developmental, operational, environmental, and technical feasibility studies.
For over half a century we have demonstrated our capabilities through numerous successful projects in the United States, which have included major airports such as Dallas/Fort Worth and Chicago O’Hare.

MITRE/CAASD has worked with over 50 nations, including Argentina, Armenia, Australia, Belgium, Brazil, Canada, Ecuador, France, Germany, India, Italy, Japan, Korea, Mexico, The Netherlands, Singapore, Spain, Switzerland, Taiwan, Thailand, and the United Kingdom.