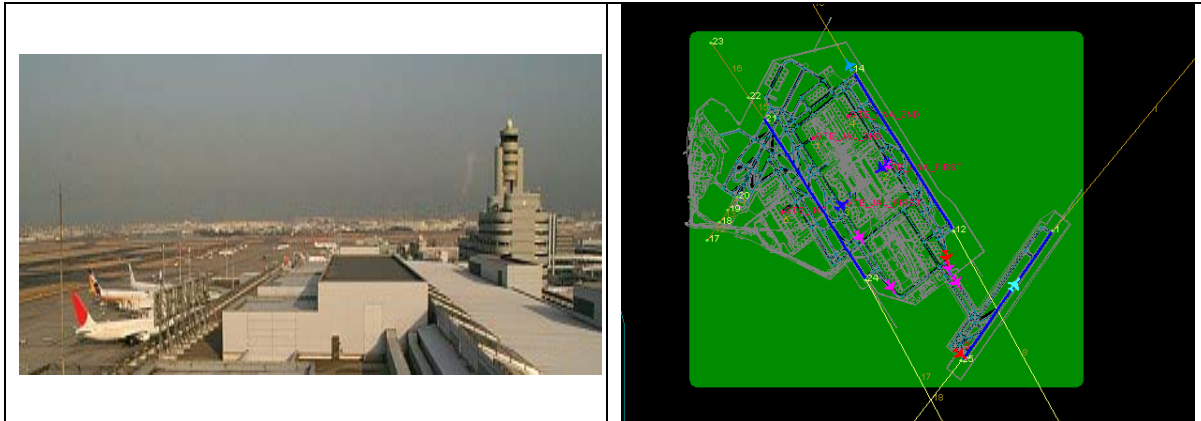




Taxiway Flow and Congestion Simulation Analysis



Haneda International Airport

Client Name: Mitsubishi Research Institute (MIRI)

Date Started: February 2007

Date Completed: May 2007

TransSolutions was retained by Mitsubishi Research Institute, Inc. (MIRI) to conduct a simulation analysis of the taxiway flows at Haneda International Airport to assist in determining whether the planned taxiway flows with the new runway will result in acceptable congestion and delays. The overall objectives of the simulation study are to quantify the performance of the airfield under the proposed aircraft flows in the year 2009. To reach this objective, the simulation model will be used to evaluate average delays in taxi-in and taxi-out times under the proposed taxiflows.

With the data and information MIRI provided, aircraft movements in Aquilo-flow operations will be modeled by TransSolutions using *Simmod PLUS!*®. Based on data provided by MIRI, only operations when the airport is operating Runways 34L and 34R and Runway 05 will be modeled. The model will include arriving aircraft while on final approach to HND, landing, exiting the runway, and taxiing until reaching the ramp area of their respective terminal. Departures will be modeled from leaving the ramp area of their respective terminal, taxiing to the runway, takeoff, and on initial departure heading.

Since aircraft movements in the airspace and on the airfield can affect congestion and delays at seemingly unrelated parts of the airfield, the model will include procedures for all runways in use under the north and west flow operations and aircraft movements throughout the entire airfield. The runways and taxiways will be modeled in detail, with the terminals and ramp areas modeled at a higher level.

The scope of the study did not allow for on-site data collection of airport operations. Instead, MIRI provided TransSolutions with data such as earliness and lateness distributions for arriving and departing flights (dependability data), taxi speeds, aircraft final approach speeds, landing and takeoff roll distances, preferred taxiflows, terminal locations and airline assignments, and interactions between adjacent or nearby runways.

MIRI provided TransSolutions a 2009 flight schedule which will be used to create operational commercial demand. This commercial demand will not be augmented by any general aviation, cargo, or military traffic that uses the airfield. MIRI's dependability data will be applied to each scheduled flight to represent variation in actual arrival and departure times.

The model will be calibrated by determining the simulated maximum hourly capacity of the runways (arrivals and departures) under the flow conditions modeled. The simulated maximum hourly capacity of the airfield will be compared to the observed maximum hourly capacity of the airfield, as determined by MIRI, under the same flow conditions. The model will be considered calibrated when the simulated maximum hourly capacity is within 10% of the maximum hourly capacity provided by MIRI.