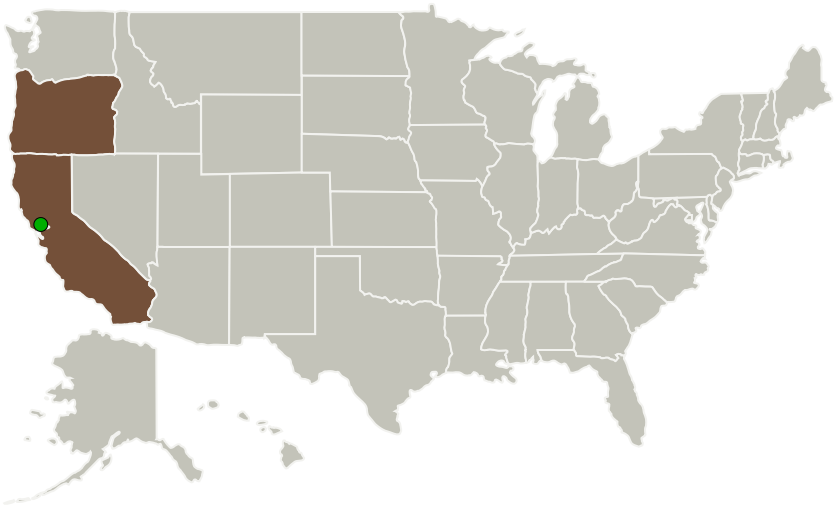
Machine Learning of Multi-Modal Influences on Airport Delays, Phase I

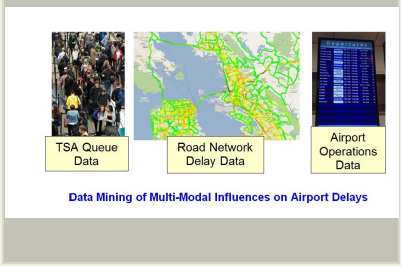
Completed Technology Project (2017 - 2017)

Project Introduction

We build machine learning capabilities that enables improved prediction of off-block times and wheels up times which are critical inputs to NAS stakeholders. NextGen will rely on machine learning techniques utilizing all sources of useful information in order to improve predictive accuracy and reliability of flight operations in the NAS. These predictive capabilities will support real-time optimization of surface operations. We use machine learning to learn from historical data and similar situations in the past in order to optimize the performance of the NAS for the current situation. The proposed Multi-Level, Multi-View (MLMV) machine learning approach takes real-time weather, demand, and other data inputs (including landside data from TSA security line queues and traffic congestion levels on highways), searches through an archived set of historical data, identifies similar situations and NAS controls used in those situations, ranks historical situations according to their effectiveness, estimates a set of Traffic Management Initiatives (TMIs) and other control strategies impacting off-block-times and wheels up times.

Primary U.S. Work Locations and Key Partners





Machine Learning of Multi-Modal Influences on Airport Delays, Phase I Briefing Chart Image

Table of Contents

Project Introduction 1
Primary U.S. Work Locations and Key Partners 1
Images 2
Organizational Responsibility 2
Project Management 2
Technology Maturity (TRL) 2
Technology Areas 3

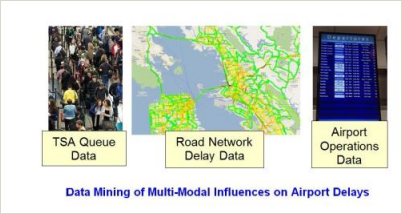
Machine Learning of Multi-Modal Influences on Airport Delays, Phase I

Completed Technology Project (2017 - 2017)

Organizations Performing Work	Role	Type	Location
The Innovation Laboratory, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Portland, Oregon
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Oregon

Images



Briefing Chart Image
Machine Learning of Multi-Modal Influences on Airport Delays, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/134442)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

The Innovation Laboratory, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

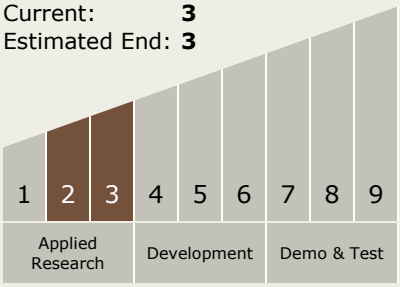
Carlos Torrez

Principal Investigator:

Jimmy Krozel

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  └ TX16.3 Traffic Management Concepts