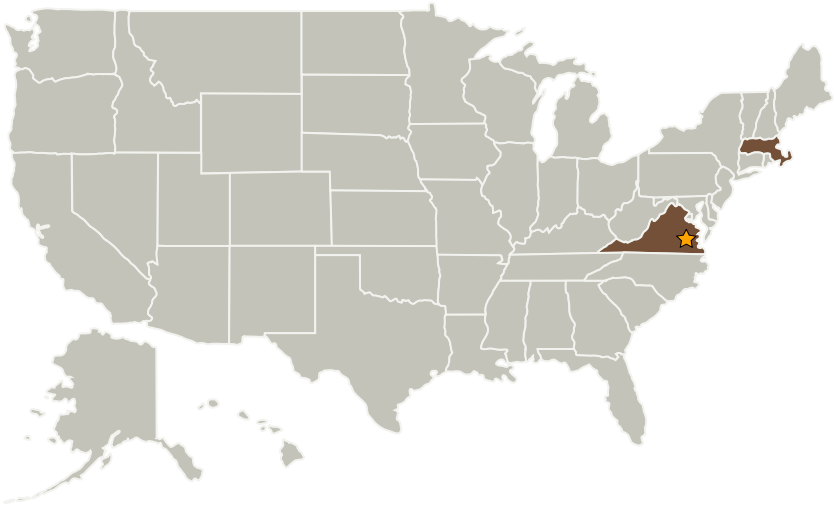
Safe and Efficient Dynamic Airportal Traffic and Resource Planner, Phase I

Completed Technology Project (2009 - 2009)

Project Introduction

The Next Generation Air Transportation System (NextGen) strives to transform the existing National Airspace System (NAS) into the safest, most efficient system feasible. This proposal addresses the automated surface traffic and resource planning for the NextGen Airportal concept. Current system is primarily reliant on manual planning and human decision making with minimal computer support. The proposed Collaborative Aircraft Planning System (CAPS) will implement advanced evolutionary algorithms to achieve Airportal usage optimality in real-time while maintaining the required safety margins in aircraft separation and conflict resolution. CAPS will be designed to be flexible to accommodate future aircraft capabilities and equipage, modeling of arbitrary pre-requisite and post-requisite resource requirements, weather driven changes in Airportal constraints, and will be scalable to larger metro-plexes of multiple airportals while maintaining real-time planning capabilities. CAPS will also provide intuitive graphical operator interfaces with enhanced visualization and safety alert capabilities. SSCI will leverage its expertise and past experience in implementing evolutionary algorithms for large planning problems in designing the CAPS software tool. Phase II will lead to a CAPS software package delivery that can be integrated with NASA's FACET and ACES software for evaluation and demonstration.

Primary U.S. Work Locations and Key Partners



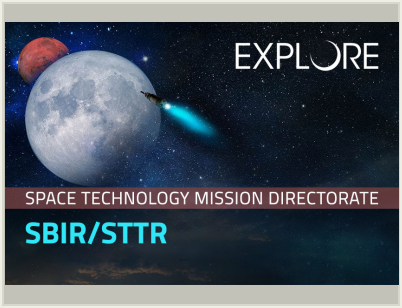


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Table of Contents

Project Introduction 1
Primary U.S. Work Locations and Key Partners 1
Organizational Responsibility 1
Project Management 2
Technology Areas 2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Scientific Systems Company, Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Woburn, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

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