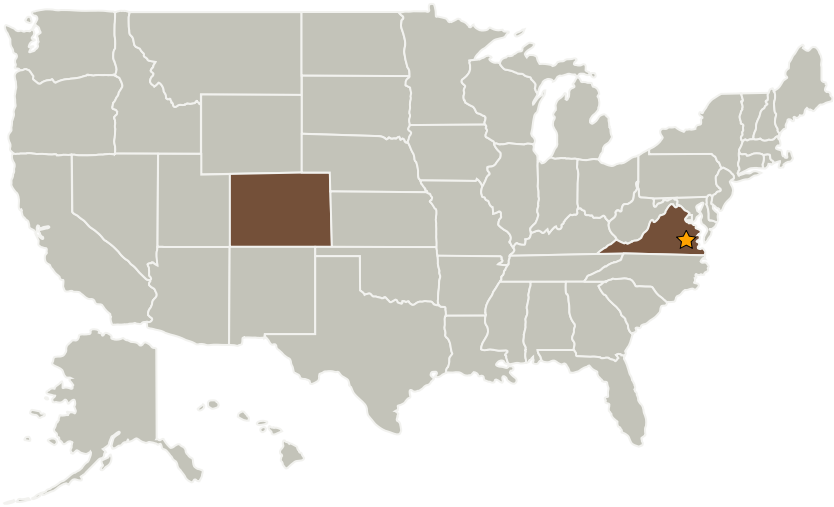
Flight-appropriate 3D Terrain-rendering Toolkit for Synthetic Vision, Phase I

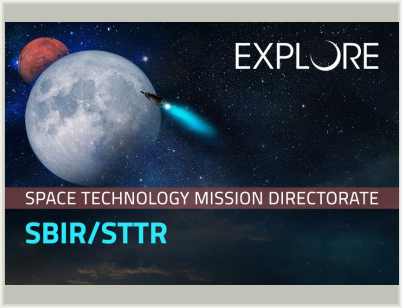
Completed Technology Project (2004 - 2004)

Project Introduction

TerraMetrics proposes an SBIR Phase I R/R&D effort to develop a key 3D terrain-rendering technology that provides the basis for successful commercial deployment of flight-qualified Synthetic Vision (SV) systems. The proposed innovation exploits the use of an encoded terrain data storage format coupled with real-time, terrain-block processing that inherently provides true, display-limited rendering accuracy and deterministic frame rates, eliminates "vertex-popping" artifacts, and supports a spherical rendering model as well as lightweight computer and data storage platform requirements. Significant preceding computer graphics research has targeted terrain rendering, but the focus has been on non-rigorous, ground-based visualization/simulation (VisSim) and gaming applications. The accuracy and performance demands of a flight-deployable, SVS terrain-rendering environment have not been adequately addressed to date, due to minimal commercial demand. The proposed innovation provides a flight-qualifiable, SV avionics 3D terrain-rendering solution to NASA?s Aviation Safety Program (AvSP) and downstream SV commercial embodiments.

Primary U.S. Work Locations and Key Partners





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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
TerraMetrics, Inc.	Supporting Organization	Industry	Littleton, Colorado

Primary U.S. Work Locations	
Colorado	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Gregory A Baxes

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  └ TX12.4 Manufacturing
    └ TX12.4.6 Repurpose Processes