Active Project (2012 - 2017)

EDL Model Validation Project

Game Changing Development Program | Space Technology Mission Directorate (STMD)

ANTICIPATED BENEFITS

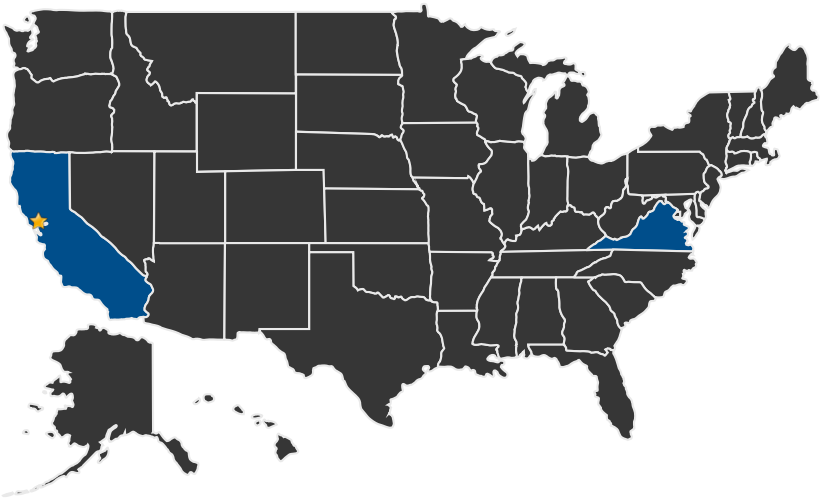
To NASA funded missions:

Improve prediction of Mars entry environments to facilitate instrumentation selection and placement and analysis of returned data for MEDLI-2. Data taken in the CUBRC LENS facility used a model with instrumentation at a superset of MEDLI locations to facilitate flight data analysis.

DETAILED DESCRIPTION

The model and tools used for EDL analysis of reentry spacecraft require careful experimental validation using ground and flight data.

U.S. WORK LOCATIONS AND KEY PARTNERS



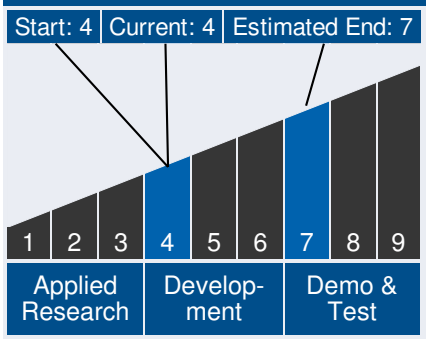
U.S. States With Work

Lead Center:
Ames Research Center

Table of Contents

Anticipated Benefits 1
Detailed Description 1
U.S. Work Locations and Key Partners 1
Technology Maturity 1
Management Team 1
Technology Areas 2
Details for Technology 1 3

Technology Maturity



Management Team

Program Executive:
- Lanetra Tate

Program Manager:
- Mary Wusk

Project Manager:
- Michael Wright

Other Organizations Performing Work:

- California Institute of Technology
- CUBRC, Inc.
- Science Mission Directorate

Technology Areas

Primary Technology Area:
Entry, Descent, and Landing Systems (TA 9)
└ Vehicle Systems (TA 9.4)
  └ Modeling and Simulation (TA 9.4.5)
    └ Aerothermodynamics Modeling (TA 9.4.5.2)

Secondary Technology Area:
Thermal Management Systems (TA 14)
└ Thermal Protection Systems (TA 14.3)
  └ Ascent/Entry TPS (TA 14.3.1)

Entry, Descent, and Landing Systems (TA 9)
└ Aeroassist and Atmospheric Entry (TA 9.1)
  └ Thermal Protection Systems for Rigid Decelerators (TA 9.1.1)
    └ High-Reliability Thermal Protection System (TPS) (TA 9.1.1.2)
  └ Thermal Protection Systems for Deployable Decelerators (TA 9.1.2)
    └ Non-Ablative Concepts for Thermal Protection (TA 9.1.2.1)

Continued on following page.

Technology Areas *(cont.)*

Thermal Management Systems (TA 14)
- Thermal Protection Systems (TA 14.3)
  - Ascent/Entry TPS (TA 14.3.1)
    - Rigid Ablative Thermal Protection Systems (TA 14.3.1.1)
    - Flexible/Deployable Thermal Protection System (TA 14.3.1.3)
  - Thermal Protection System Modeling and Simulation (TA 14.3.2)
    - Coupled Multi-Dimensional Flow/Material Response/Thermal/Struct Analysis (TA 14.3.2.1)
    - Shock Radiation Modeling (TA 14.3.2.2)

DETAILS FOR TECHNOLOGY 1