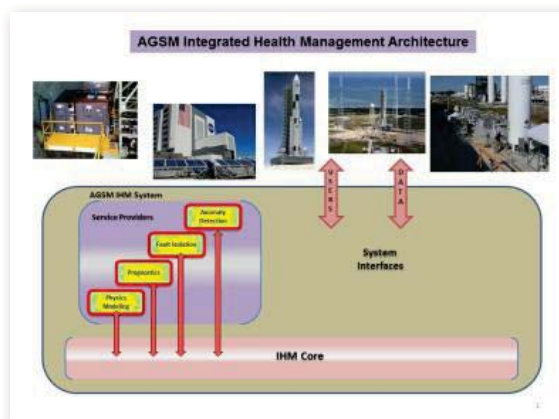


# Advanced Ground Systems Maintenance Enterprise Architecture Project

Ground Systems Development And Operations Program  
Human Exploration And Operations Mission Directorate ( HEOMD )

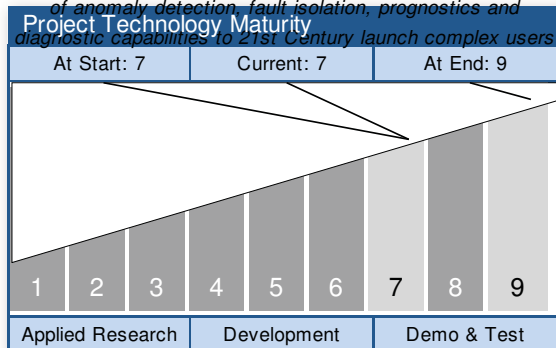
National Aeronautics and  
Space Administration



## ABSTRACT

The project implements an architecture for delivery of integrated health management capabilities for the 21st Century launch complex. Capabilities include anomaly detection, fault isolation, prognostics and physics-based diagnostics.

Integrated Health Management Architecture enables delivery of anomaly detection, fault isolation, prognostics and diagnostic capabilities to 21st Century launch complex users



Technology Area: Ground & Launch Systems Processing TA13 (Primary)  
Robotics, Tele-Robotics & Autonomous Systems TA04 (Secondary)

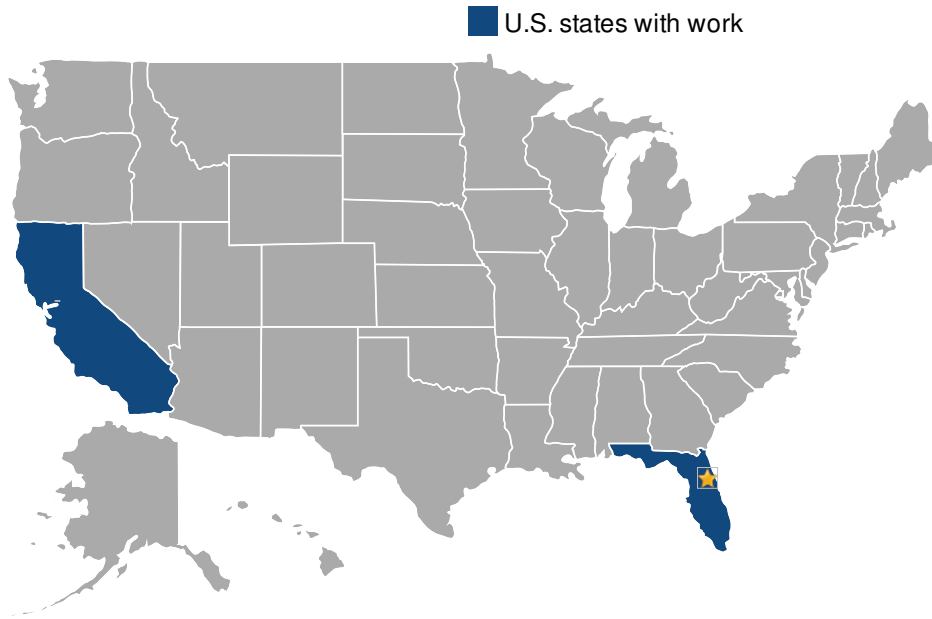
## ANTICIPATED BENEFITS

### To NASA funded missions:

The platform-independent architecture employs reusable components that minimize software development and verification testing for subsequent deployments and enable low system life cycle costs for deployment of health management applications. Enables health management components to exchange information and analyze and respond to complex problems within the system or systems being monitored.

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Read more on the last page.



## Other Organizations Performing Work

Abacus / IMCS (Baltimore, MD)  
QinetiQ North America  
Stinger Ghaffarian  
Technologies (SGT)

- ★ Lead center: Kennedy Space Center
- Supporting centers: Ames Research Center

## DETAILED DESCRIPTION

The project implements an architecture for delivery of integrated health management capabilities for the 21st Century launch complex. Capabilities include anomaly detection, fault isolation, prognostics and physics-based diagnostics.

### MANAGEMENT

**Program Executive:**  
Michael Bolger

**Program Manager:**  
Kirk Lougheed

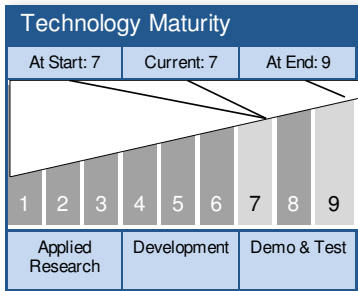
**Project Manager:**  
Barbara Brown

**Principal Investigator:**  
Barbara Brown

## TECHNOLOGY DETAILS

### Advanced Ground Systems Maintenance Enterprise Architecture

AGSM Integrated Health Management architecture consists of external interfaces, internal services, and a core capability that is reusable. The core capability will facilitate the exchange of information using a ...



Performance Metrics		
Metric	Unit	Quantity
CPU Usage	% of available CPU time	Exec. time ÷ avail time x 100%
End-to-End Response Time	Milliseconds	Internal component to external
Throughput	Messages per second	Message traffic on IHM Bus
Internal Response Time	Milliseconds	IHM bus point to point

## TECHNOLOGY DETAILS

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### TECHNOLOGY DESCRIPTION (CONT'D)

platform-independent messaging format.

This technology is categorized as an operating system for engineering, design, modeling, or analysis

- Technology Area
  - TA13 Ground & Launch Systems Processing (Primary)
  - TA04 Robotics, Tele-Robotics & Autonomous Systems (Secondary)
  - TA06 Human Health, Life Support & Habitation Systems (Additional)

### CAPABILITIES PROVIDED

The project implements the infrastructure and connectivity between internal health management services and external systems for which advisory applications provide health and status. The architecture includes core configuration for the integration of models, simulations, and application software to deliver anomaly detection, fault isolation, prognostics, and physics-based diagnostics and simulations of systems being monitored.

### POTENTIAL APPLICATIONS

The project will provide a reusable, scalable platform that can be used to provide systems health management to diverse systems (cryogenics, power, HVAC, etc).

## IMAGE GALLERY



Integrated Health Management Architecture enables delivery of anomaly detection, fault isolation, prognostics and diagnostic cap

## ANTICIPATED BENEFITS

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### **To NASA unfunded & planned missions: (CONT'D)**

The platform-independent architecture employs reusable components that minimize software development and verification testing for subsequent deployments and enable low system life cycle costs for deployment of health management applications. Enables health management components to exchange information and analyze and respond to complex problems within the system or systems being monitored.

### **To the commercial space industry:**

The platform-independent architecture employs reusable components that minimize software development and verification testing for subsequent deployments and enable low system life cycle costs for deployment of health management applications. Enables health management components to exchange information and analyze and respond to complex problems within the system or systems being monitored.

