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.

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.

...
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.
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 ...

<table>
<thead>
<tr>
<th>Technology Maturity</th>
<th>Applied</th>
<th>Research</th>
<th>Development</th>
<th>Demo &amp; Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Start: 7</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>Current: 7</td>
<td>5</td>
<td>6</td>
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<td>8</td>
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<tr>
<td>At End: 9</td>
<td>9</td>
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</table>

<table>
<thead>
<tr>
<th>Performance Metrics</th>
<th>Metric</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Usage</td>
<td>% of available CPU time</td>
<td>Exec. time / avail time x 100%</td>
<td></td>
</tr>
<tr>
<td>End-to-End Response Time</td>
<td>Milliseconds</td>
<td>Internal component to external</td>
<td></td>
</tr>
<tr>
<td>Throughput</td>
<td>Messages per second</td>
<td>Message traffic on IHM Bus</td>
<td></td>
</tr>
<tr>
<td>Internal Response Time</td>
<td>Milliseconds</td>
<td>IHM bus point to point</td>
<td></td>
</tr>
</tbody>
</table>
TECHNOLOGY DETAILS

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

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.