

## Assurance Delivered for Missile Defense Safety and Mission Critical System

### Challenge

Reduce operational risks for complex system-of-systems developed as a new-technology R&D effort with multiple suppliers.

### Solution

Implemented MIL-STD-882E System Safety Program, identified hazards, and mitigated risks.

### Results

Reduced the risks of systems and software by introducing hazard-mitigating features and enhanced fault detection to meet safety regulations.

The client needed to mitigate the risks of employing new and unproven technologies for an R&D project developing a complex system featuring very safety-critical functions. Prenscia Solutions instituted a MIL-STD-882E safety program and performed hazard analyses for the system hardware, software, maintenance and used interfaces to identify and introduce key features for detecting faults, fail-safe and fail-fast behavior.



**nCode** ***ReliaSoft***

## The Challenge

The client had unknown safety ramifications of new technologies of a complex system. It featured subsystems from multiple suppliers that resulted in distributed computing and decision making, and complex subsystem interfaces. Adding to the challenge, the end-user was not being adequately trained.



## The Solution

Prenscia Solutions' hazard analyses identified the critical sections of software source code most impacting safety and risk; these were then a focus for very rigorous design, development and testing for robustness.

We generated new safety requirements and built a Hazard Tracking database to track system, hardware, software, user, and maintenance hazards to quantitatively assess the risks of the system.

## The Results

Our services identified that less than 10% of the code could cause safety hazards. This meant that the rigorous and costly development practices only applied to a small portion of the codebase.

Our introduction of additional safety features and the quantitative risk assessments allowed the client to meet safety regulatory requirements.



## About HBM Prenscia Solutions

HBM Prenscia Solutions ensures customer success through value-driven solutions for product and process development, and operational monitoring. We are a multi-disciplinary team with expertise in failure analysis; predictive analytics and modeling for reliability, durability, and deterioration; asset health and usage monitoring; prognostics; development and testing of embedded software to deliver robust solutions to our global clients. Our team of engineers, analysts, software developers, data scientists, and program managers, many holding United States Government security clearance, are readily available to provide technical expertise and deliver value-driven solutions. For more information, please visit [www.hbmprenscia.com/solutions](http://www.hbmprenscia.com/solutions)