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Insuring Quality and Safety in a Cost Constrained Environment: Which Trade-Off? (1)

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TECHNOLOGY OF THE SPACE STATION HEALTH MANAGEMENT INTEGRATED  
ENGINEERING ENVIRONMENT AND VIRTUAL TEST

**Abstract**

The technology of supporting and maintaining of the space station in-orbit is an important research topic. In recent years, as the Prognostics and Health Management (PHM) technology can realize the function of fault detection, diagnosis, prediction, state assessment and integrated decision-making, it has gained more and more attention. Meanwhile, PHM technology can also reduce the cost of spacecraft maintenance use and improve the readiness rates, safety and availability of the space station. Based on the analysis of space station research status, it puts forward the design idea of building the open platform for space station prognostics and health management integrated engineering. At the same time, the components of the function of development environment, operating environment, virtual verification environment of the PHM have been described in order to realize the multi-level integration and verification of the space station health management in the design and demonstration phase. The results of the research can provide the effective verification for testing the performance of space station PHM system, thereby reducing the various types of accident risk of the space station in the long-term process, and providing the support of the fault prediction and process for the future manned spacecraft, including the space station and the space laboratory.