Software Improvement Options for the H-1 Program

NPS · NAVAL POSTGRADUATE SCHOOL

Abstract

- Analysis of H-1 mission computer software architecture and options for improving speed to the fleet and decreasing cost.

- Research Questions:
  1. What is the best option for upgrading the H-1 mission computer software to better align with current software practices, decrease cost and time to test, and increase capability and speed to the fleet?
  2. How might the program office maximize utility to the fleet while minimizing cost during the transition?

AH-1Z and UH-1Y

Methods

- Comparison of current software architecture and procurement trends to those used at PMA-276 USMC Light/Attack Helicopter Program Office.
  - Agile vs waterfall
  - Comparison with other programs' architecture, history, and processes
  - Monolithic vs distributed architectures

- Questionnaires and interviews with PMA-276 software IPT, other NAVAIR software professionals, and industry partners.

- Questions on architecture type, challenges faced, upgrade timeline, procurement strategy

Results & Recommendations

Finding	Impact	Recommendation
H-1 software architecture requires restructuring	Current software is difficult to update, slow to release, and causes errors during updates	Update software to a modular monolith or microservices
Software acquisition capabilities at NAVAIR need improvement	Programs are not communicating with one another to share best practices, repeatedly making the same mistakes, and minimally using Agile methods.	Increase communications between programs and software engineers, require modularized or compartmentalized flight and mission computers for future platforms, and increase use of DevSecOps and Agile methods.

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