

**ARP7122:**

# **A Process for Utilizing Integrated Vehicle Health Management Systems for Airworthiness Credit**

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# Current Work Across Different SAE Committees

## *Related to the Broad Area of Continued Airworthiness*

### IVHM Steering Group

- Steering group initiative on Airworthiness Credits
- Liaisons with FAA / EASA / MPIG / etc.

### E-32: Propulsion Health Management

- ARP5987A: A Process for Utilizing Aerospace Propulsion Health Management Systems for Airworthiness Credit (being updated)

### AISC-SHM: Aerospace Industry Steering Committee on Structural Health

- **ARP6461A: Guidelines for Implementation of Structural Health Monitoring on Fixed Wing Aircraft**

### HM-1: Integrated Vehicle Health Management

- **JA6268: Design & Run-Time Information Exchange for Health-Ready Components**
- ARP7122: Utilizing Aircraft IVHM Systems for Airworthiness Credit
- JA1013: Condition Based Maintenance (CBM) Recommended Practices

### G11: Probabilistic Methods & Uncertainty Quantification / Maintainability

- **JA1010: Maintainability Program Standard**
- **JA1011: Evaluation Criteria for RCM Processes**
- **JA1012: A Guide to the RCM Standard**

Documents in bold already published

In addition, many documents discuss requirements, design, V&V, etc., related to IVHM systems

# ARP5987A

## *A Process for Utilizing Aerospace Propulsion Health Management Systems for Airworthiness Credit*

- First version published in 2018.
- New version incorporates major terminology change: “Airworthiness Credits” replacing “Maintenance Credits,” to emphasize both initial airworthiness and continued airworthiness.
- Has input from major engine OEMs and regulators.
- First ballot in Feb 2022; final ballot by end of Jul 2022.
- Is the basis for ARP7122.
- Emphasizes the end-to-end nature of the HM function involving onboard and offboard elements.
- Presents guidelines for HM systems that are certified during initial type certification and for systems that are approved for retrofit.

### Health Management & Airworthiness Credits

#### Retrofit design (modify existing ICA)

##### Examples

- Replace a manual task with automated one.
- Reduce/remove a scheduled task.
- Make tasks condition-based.
- Support in-service issue with monitoring instead of mandated inspections.
- AMOC for an airworthiness directive (AD).

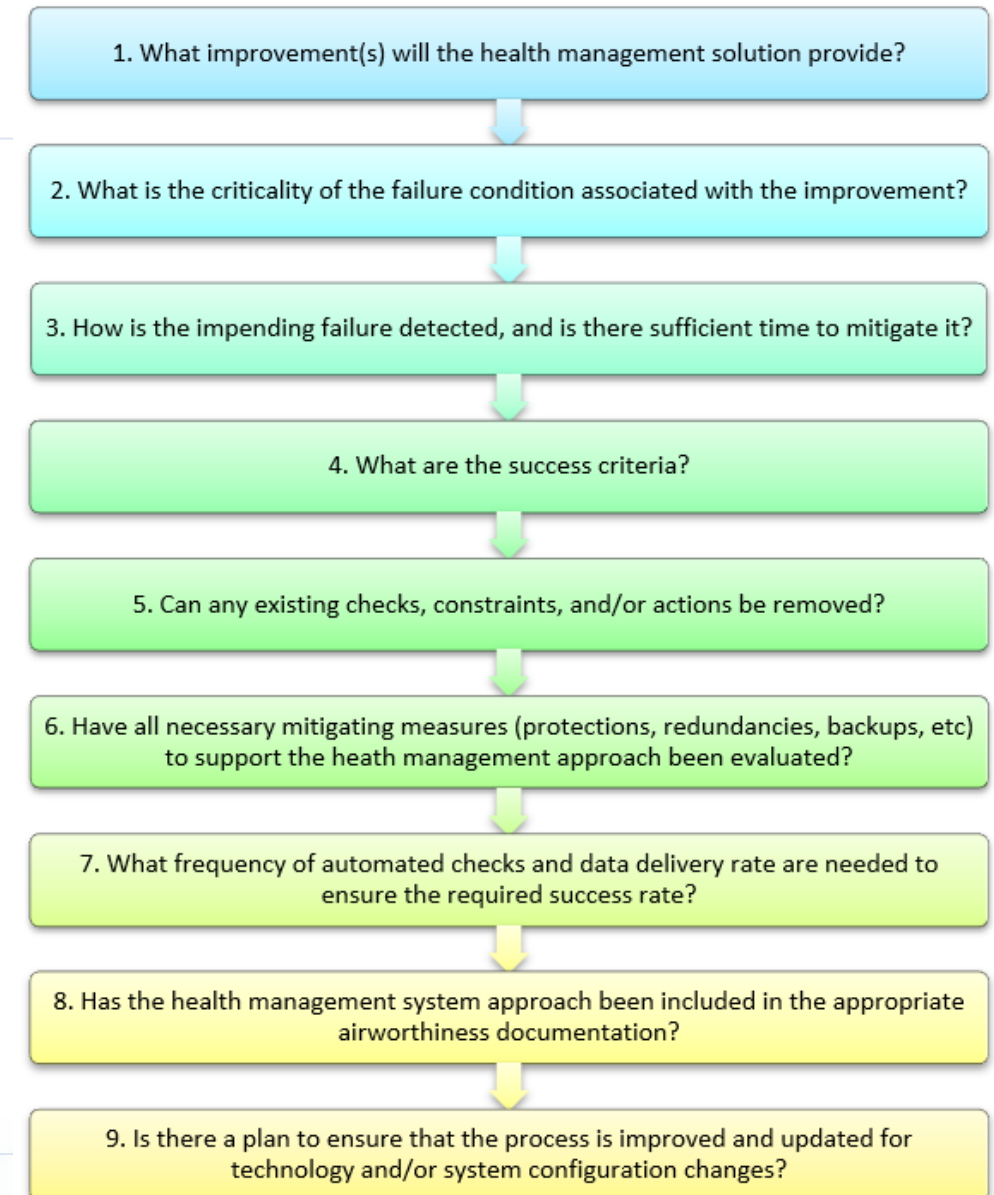
#### New design (develop novel ICA)

##### Examples

- Reduce design conservatism with health management.
- Use data to drive new maintenance procedures.

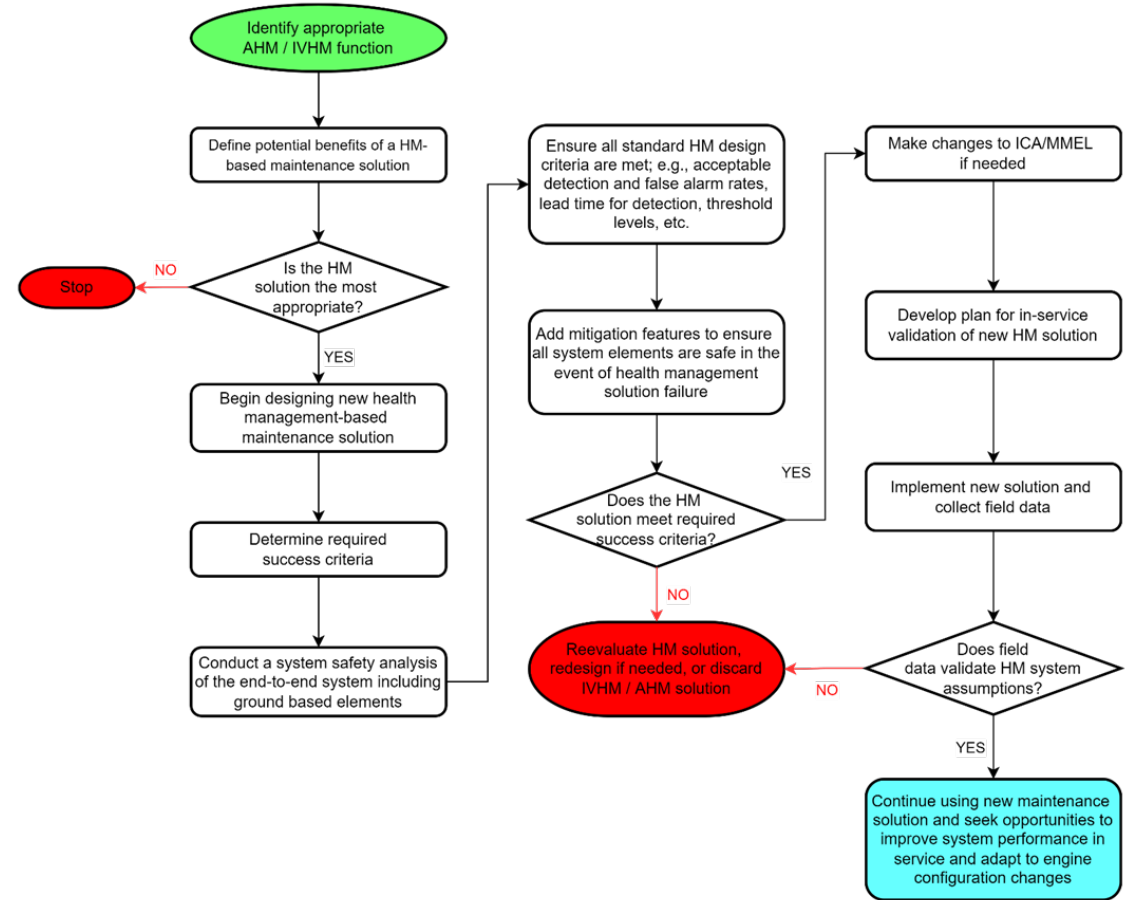
# ARP7122: Status

- *First draft ready for review by the HM-1 committee by **end of June 2022**. Final publishing target: **Oct 2022**.*
- Considers an Integrated Vehicle Health Management (IVHM) system as an end-to-end process with on- and off-board elements.
- Outlines a high-level process for obtaining approval for any IVHM system.
- Leaves the details of the guidance steps up to the applicants and their dialog with regulators.
- Extends the IP-180 Level 3 analysis from non-safety critical failure effects categories to all categories (FEC 5-9).
- Provides 5 examples in the appendix to guide applicants on various kinds of IVHM systems.



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Thank You

Questions?