INTEGRATED VEHICLE HEALTH MANAGEMENT
STEERING GROUP CHARTER

July 10th, 2017

1.0 GENERAL

The SAE International (SAE) Integrated Vehicle Health Management (IVHM) Steering Group is established within the jurisdiction of the SAE Aerospace Council.

The IVHM Steering Group activity shall be conducted according to the provisions of this charter and in accordance with the procedures established by the SAE Aerospace Council as reflected in the SAE Aerospace Council Organization and Operating Guide.

The IVHM Steering Group will strategically identify emerging technologies, and coordinate standardization activities across SAE standards committees necessary to support IVHM at the top level system, subsystem, and component levels, as well as the supporting infrastructure. The Steering Group will define the standardization landscape necessary to support and advance IVHM development, certification, and operations and propose a way forward for developing such standards. To this end, the group will solicit membership from aerospace and ground vehicle OEMs, system suppliers, engine manufacturers, certification authorities, operators and other stakeholders, and will base its work on inputs from members involved in technical committees of various standardization organizations.

2.0 BACKGROUND

SAE formed an IVHM Steering Group in the fall of 2010. The idea reflected the large number of groups, given below, within SAE’s organization, that deal with health management of systems or subsystems (but without the integrated, holistic view of the vehicle asset or fleet).

- S-18: Aircraft and Systems Development and Safety Assessment
- E-32: Aerospace Propulsion Systems Health Management
- G-11: Reliability, Maintainability/Supportability and Probabilistic Methods Group
- AISCSHM: Aerospace Industrial Steering Committee on Structural Health Monitoring
• AS-3: Fiber-Optics and Applied Photonics
• A-6: Aerospace Actuation, Control and Fluid Power Systems
• AE-5: Aerospace Fuel, Oil and Oxidizer Systems Steering Group
• A-5 Aerospace Landing Gear Systems

The IVHM HM-1 technical standards committee was also formed and has been writing IVHM standards since 2011.

Recently the Reliability, Maintainability, and Health Management Systems Group Committee has been formed, consisting of the following committees.

• G-11M: Maintainability, Supportability and Logistics
• G-11PM: Probabilistic Methods Technology
• G-11R: Reliability
• AISC:SHM: Aerospace Industrial Steering Committee on Structural Health Monitoring
• E-32: Aerospace Propulsion Systems Health Management
• HM-1: Integrated Vehicle Health Management (IVHM)

2.1 Motivation and Scope

While aerospace and ground vehicles are getting ever more complex and systems more interdependent, vehicle asset owners, operators, and maintainers are also under increasing pressure to reduce maintenance and operations costs, to maximize system and component useful life, to reduce maintenance down time, and to increase availability, while not compromising safety. At the same time, maintenance personnel need to know what component or system requires maintenance and what maintenance action must be taken. Operations personnel need to know when a vehicle can be operated reliably and when it can no longer be operated without incurring an unacceptable risk of failure. Additionally, fleet management personnel need to know when an asset should be scheduled for maintenance, what components are required in advance of a scheduled maintenance event to reduce logistics-related maintenance delays, and what impact these maintenance events will have on the availability of resources with respect to the overall fleet. All this needs to be achieved with, at a minimum, no adverse impact on safety levels. This overview provides the motivation to develop an IVHM capability which, when integrated at the vehicle level, will deliver the following:

• Transformation of system data into operational support information.
• Optimized maintenance actions.
• Improved readiness and availability.
• Enhanced safety and reliability.
• Extended system and component life
• New product improvement.

The scope of SAE’s IVHM effort is detailed in ARP 6803, ‘IVHM Concepts, Technology and Implementation Overview’, and covers: Business, System Design, Architecture, Technologies, Applications and Support. These subjects all form part of a defined multi-disciplinary taxonomy, defined in the same document, many more of which will become the subject of SAE documents in the future.

3.0 OBJECTIVES

The IVHM Steering Group will:

• Identify emerging fields and technologies that affect IVHM
• Develop matrix of existing or in progress standards
• Produce a gap analysis
• Define roadmap for new standards needed
• Task (and support) existing or new SAE committees to develop necessary standards
• Coordinate and support other SAE portfolio offerings as appropriate

The IVHM Steering Group scope does not include the development of standards or technical guidance but does include documents, in the form of requirements and recommendations, that which may be provided to the SAE Aerospace Standards Council and its Technical Committees. However, the Steering Group will recommend and support the establishment of technical committees to cover standards and technical guidance where such do not already exist. In addition, the Steering Group may coordinate, support and/or lead non-standardization IVHM activities within SAE such as technical books, conference sessions and professional development. The Steering Group will also look to SAE offerings in mobility sectors other than aerospace.

4.0 DELIVERABLES

The IVHM Steering Group will maintain the following information for both internal use and distribution to relevant stakeholders as appropriate:
• An emerging technology brief, and roadmap for defining IVHM standards.

• A “matrix” (or equivalent tool) that tracks coordination, alignment, and gaps.

• Recommendations for standards necessary to advance IVHM developments to be shared with SAE Technical Standards Committees

5.0 ORGANIZATION

5.1 Steering Group

The Steering Group will be responsible for the approval of all tasks undertaken, approval of formation of Task Groups and Task Group leaders, approval of new members, and selection of the Vice-Chair.

5.2 Task Group

Task Groups may be appointed to accomplish major projects. The Task Group Chairs will be responsible for the organization of the task group as well as presenting a schedule to the steering group for approval. The Task Group Chairs will also be required to ensure that the steering group is updated on progress and any other work associated with the task.

5.3 Steering Group – Technical Committee Liaisons

A nominated representative from each SAE technical committee with IVHM standards activities acts as the liaison between the technical committee and the Steering Group. This includes all committees in the Reliability, Maintainability, and Health Management Systems Group. Two-way communication is expected. Normally, a short report shall be made by the committee liaison to the Steering Group before each Steering Group meeting and the Steering Group will send a report of Steering Group activities to the committee liaisons.

5.4 Officers

The Steering Group shall have a Chair and Vice Chair. The normal Chair term will be 3 years and may be extended at the discretion of the Steering Group. The Vice-Chair will be elected by the Steering Group members and will normally succeed the Chair.
Secretarial duties will be handled by the Vice Chair and supported by SAE staff, including preparation and distribution of meeting agendas and minutes (in conjunction with the Chair).

5.5 Duties of the Chair

The Chair will:

- Moderate meetings
- Liaise with SAE International, Systems Group, and other technical committees
- Write technical correspondence as agreed by the group
- Act as the focal point with Steering Group stakeholders
- Provide a report to the SAE Aerospace Council on the activities of the Steering Group

5.5 Duties of the Vice Chair

- Chair the meetings in the absence of the Chair
- Assume the Chair’s responsibilities in the event of prolonged absence or resignation of the Chair
- Preparation and distribution of meeting agendas and minutes (in conjunction with the Chair)

5.6 Meetings

The IVHM Steering Group should meet 2 times per year face-to-face, with additional meetings using virtual (telephone/online) meeting facilities.

6.0 MEMBERSHIP

The IVHM Steering Group membership should contain an equitable balance of representation across the international aerospace community and ground vehicle sectors, from government, industry and academia/research. Members should have expertise in operational and technology areas related to the group’s activities. Membership is by invitation.

Members shall function as individuals dedicated to the objective of the IVHM Steering Group and not as representatives of their employers.
Regular attendance and active participation, in Steering Group and Task Groups, is required for membership. A member who is absent from three or more consecutive meetings may have his/her membership of the Steering Group revoked.