

Integrated Vehicle Health Management Implementation and Lessons Learned

Edited by Ian K. Jennions

Integrated Vehicle Health Management:

Implementation and Lessons Learned





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Summary: "SAE International formed an IVHM (Integrated Vehicle Health Management) Steering Group in the fall of 2010. The idea reflected the large number of groups, 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). The newly formed group, through the IVHM HM-1 technical group, proceeded to organize an IVHM technical track for the SAE AeroTech meeting in Toulouse in October 2011 and also had the idea for a book on IVHM that could be handed out to participants to promote engagement in this exciting new field. The book: Integrated Vehicle Health Management: Perspectives on an Emerging Field [Jennions 2011] was the result and, surprisingly, it spawned a trilogy of books, of which this is the fourth! This current book, the fourth and (maybe) last in the series, covers the broad area of implementation and lessons learned. It endeavours to draw upon the experience that has been gained by fielding the technologies that have been discussed through the first three books. By its very nature, the insight in fielding these technologies comes not only from the aerospace sector but from a number of other interesting and challenging areas. As such, this book has sought out authors from sectors such as computer forensics and biotech, as well as rail. It is also important that some of the lessons to be learned are not purely technical but involve human factors and issues such as trust in data and IVHM systems, issues that will also be covered here. It is hoped that through books such as this, time and cost can be taken out of the implementation of new systems and IVHM can realize its true value in the marketplace"--Provided by publisher.

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Edited by **Ian K. Jennions**



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Acknowledgments

SAE International is pleased to present its fourth title in the series of Integrated Vehicle Health Management (IVHM), this time introducing a variety of case studies, lessons learned, and insights on what it really means to develop, implement, or manage an integrated system of systems.

Integrated Vehicle Health Management: Implementation and Lessons Learned brings to the reader a wide set of hands-on stories, made possible by the contribution of twenty-three authors, who agreed to share their experience and eventual wisdom on how new technologies are developed and put to work.

This effort was again coordinated by Dr. Ian K. Jennions, Director of the IVHM Centre at Cranfield University (UK).

Here are the authors listed in alphabetical order. Their biographies and pictures can be found at the end of this book:

- Andre Lafon, Airbus
- Charles E. Dibsedale, Optimized Systems and Solutions (OSyS)
- Christine Veron, Airbus
- David K. Jennions, Axxam SpA
- David Webster, University of Leeds
- Dashiell Kolbe, GE Aviation
- Dinkar Mylaraswamy, Honeywell International Inc.
- Emre Civan, Turkish Airlines
- Frank Kramer, Airbus
- Frederic Martinez, Airbus
- Ian K. Jennions, Cranfield University
- Ian Mitchell, Middlesex University
- Jacob Bortman, Ben Gurion University
- Joao Pedro Pinheiro Malere, Embraer
- Mervyn Floyd, Meggitt PLC
- Michael J. Augustin, IVHM Inc.
- Michael J. Provost, Intelligent Energy Ltd.
- Murat Yukselen, Turkish Airlines
- Ravi Rajamani, Meggitt PLC
- Rhonda Walthall, UTC Aerospace Systems
- Robert O'Dell, Gulfstream Aerospace Corporation
- Sean Barker, BAE Systems
- Sukhvinder Hara, Middlesex University

Yet, the quality of the final product couldn't be guaranteed without the prompt and candid input from very busy reviewers, who took the time and lent their expertise in making this book as accurate and clear as it could be.

To them, our recognition and gratitude:

- Ian K. Jennions, Cranfield University
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- Tim Wilmering, The Boeing Co.
- Ginger Shao, Honeywell International Inc.
- Matt Greaves, Cranfield University

SAE International will continue to publish the new developments in the area of Integrated Vehicle Health Management as they become available.

Our goal and hope is that this contribution will make such a unique body of knowledge ever more useful to those interested in it.

SAE International

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CHAPTER 1 Introduction

Ian K. Jennions, *IVHM Centre, Cranfield University*

“ Choose a job you love and you will never have to
work a day in your life. ”

—Confucius