

Unsettled Issues in Advanced Air Mobility Certification

Bob McQueen

Unsettled Issues in Advanced Air Mobility Certification

Bob McQueen

Bob McQueen and Associates

EDGE DEVELOPMENT TEAM

Chris Haraway, *Honeywell Aerospace*

Nick Hoffman, *Honeywell Aerospace*

David Webber, *Federal
Aviation Administration*

Ammar Safi, *Ministry of Energy and
Infrastructure (United Arab Emirates)*

Shafia Alkheyaili, *Ministry of Energy and
Infrastructure (United Arab Emirates)*

William Goodwin, JD, *Joby Aviation*

Timothy Ravich, JD, *University of
Central Florida*

Neil Johnstone, *CONSULT-NJ LTD*

Eric Hill, *MetroPlan Orlando*





About the Publisher

SAE International® is a global association of more than 128,000 engineers and related technical experts in the aerospace, automotive, and commercial-vehicle industries. Our core competencies are lifelong learning and voluntary consensus standards development. Visit sae.org

SAE EDGE™ Research Report Disclaimer

SAE EDGE™ Research Reports focus on topics that are dynamic, in which knowledge is incomplete, and which have yet to be standardized. They represent the collective wisdom of a group of experts and serve as a practical guide to the reader in understanding unsettled subject matter. They are not meant to provide a recommended practice or protocol. The experts have assembled as a community of practitioners to contribute and collectivize their thoughts and points of view. These are not the positions of the institutions or businesses with which they are affiliated, nor is one contributor's perspective advanced over others. SAE EDGE™ Research Reports are the property of SAE International and SAE alone is responsible for their content.

About This Publication

SAE EDGE™ Research Reports provide state-of-the-art and state-of-the-industry examinations of the most significant topics in mobility engineering. Contributors to SAE EDGE™ Research

Reports are experts from academia, government, industry, and research who have come together to explore and define the most critical advancements, challenges, and future direction in areas such as vehicle automation, unmanned aircraft, cybersecurity, advanced propulsion, advanced manufacturing, Internet of Things, connectivity, and quantum technology.

Related Resources

SAE EDGE™ Research Report: Unsettled Topics Concerning the Field Testing of Automated Driving Systems by Bob McQueen

<https://saemobilus.sae.org/content/EPR2019009/>

SAE EDGE™ Research Report: Unsettled Issues Regarding Policy Aspects of Automated Driving Systems by Bob McQueen

<https://saemobilus.sae.org/content/EPR2020016/>

SAE Team

Frank Menchaca, Chief Growth Officer

Michael Thompson, Director of Standards, Information and Research Publications

Monica Nogueira, Director of Content Acquisition and Development

Beth Ellen Dibeler, Product Manager

William Kucinski, Managing Technical Editor

Copyright © 2021 SAE International. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, distributed, or transmitted in any form or by any means without the prior written permission of SAE International. For permission and licensing requests, contact SAE Permissions, 400 Commonwealth Drive, Warrendale, PA 15096-0001 USA; e-mail: copyright@sae.org; phone: +1-724-772-4028; fax: +1-724-772-9765.

Printed in USA

Information contained in this work has been obtained by SAE International from sources believed to be reliable. However, neither SAE International nor its authors guarantee the accuracy or completeness of any information published herein and neither SAE International nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information. This work is published with the understanding that SAE International and its authors are supplying information but are not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be sought.

EPR2021014

ISSN 2640-3536

e-ISSN 2640-3544

ISBN 978-1-4686-0345-3

To purchase bulk quantities, please contact: SAE Customer Service

E-mail: CustomerService@sae.org

Phone: 877-606-7323 (inside USA and Canada)

+1-724-776-4970 (outside USA)

Fax: +1-724-776-0790

<https://www.sae.org/publications/edge-research-reports>

About the Editor



Bob McQueen is an internationally recognized expert in the application of advanced technology to transportation. He has provided expert-level consulting advice to central and local governments in the Middle East, Asia-Pacific, Europe, and North America. He has also advised global companies when entering or improving positioning in the market for advanced transportation solutions. McQueen specializes in the concise communication of complex technology concepts, matching user needs to technology capabilities and constraints. McQueen has had the privilege of gaining in-depth experience in technology planning, interactive requirements analysis, international standardization, and the application of big data and analytics. He is Chief Executive Officer for Bob McQueen and Associates based in Orlando, Florida.

contents

About the Editor

Unsettled Issues in Advanced Air Mobility Certification **3**

Introduction **4**

What Is AAM? **4**

Overview of the Emerging Market for AAM **5**

Stakeholders **6**

 Smart City Practitioners **6**

 Technology, Industrial, and Service Sectors . . . **6**

 Aviation **6**

 AAM Service Providers and Operators **6**

 Standards Bodies **6**

 The General Public **7**

Overview of AAM Certification **7**

Unsettled Issues in AAM Certification **7**

 Authority **7**

 Organization **9**

Pilot **10**

Air Traffic Management **10**

Infrastructure **11**

Aircraft **11**

Standardization **15**

Multimodal Agreement **16**

Sandboxes, Showcases, and Demonstrations . . **19**

Summary **19**

SAE EDGE™ Research Reports **19**

Next Steps for Unsettled Issues in AAM

Certification **20**

Recommendations **20**

Definitions **21**

Acknowledgments **21**

References **21**

Contact Information **22**

Unsettled Issues in Advanced Air Mobility Certification

Abstract

Advanced air mobility (AAM) refers to urban transportation systems that move people and goods by air. This has significant implications for reducing traffic congestion in cities and providing an integrated approach to urban mobility. With the emergence of drone technology and the possibility of more autonomous aircraft, interest has grown considerably in AAM. The topic impacts private sector solution providers including aerospace and technology companies. It is also of considerable concern to urban planners and transportation professionals seeking solutions to urban transportation problems by better integration across all modes. This is one of the crucial aspects of AAM.

NOTE: SAE EDGE™ Research Reports are intended to identify and illuminate key issues in emerging, but still unsettled, technologies of interest to the mobility industry. The goal of SAE EDGE™ Research Reports is to stimulate discussion and work in the hope of promoting and speeding resolution of identified issues. These reports are not intended to resolve the challenges they identify or close any topic to further scrutiny.

BOB MCQUEEN

Bob McQueen and Associates

EDGE Development Team

Chris Haraway, *Honeywell Aerospace*
Nick Hoffman, *Honeywell Aerospace*
David Webber, *Federal Aviation Administration*
Ammar Safi, *Ministry of Energy and Infrastructure (United Arab Emirates)*
Shafia Alkheyaili, *Ministry of Energy and Infrastructure (United Arab Emirates)*
William Goodwin, JD, *Joby Aviation*
Timothy Ravich, JD, *University of Central Florida*
Neil Johnstone, *CONSULT-NJ LTD*
Eric Hill, *MetroPlan Orlando*

ISSN 2640-3536