

Unsettled Issues in Drive- by-Wire and Automated Driving System Availability

Jeff Hemphill

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Jeff Hemphill
Schaeffler

EDGE DEVELOPMENT TEAM

Jan Becker, PhD, *Apex.AI; Stanford University*

Sven Beiker, PhD, *Silicon Valley Mobility*

Paul Choin, *Zoox*

Jennifer A. Dukarski, *Butzel Long*

Prof. Li Jing, PhD, *Yanshan University*

Seung Hwa Kim, *Hyundai Mobis*

Noel Marshall, *Schaeffler*

Edward Straub, *SAE International*

Shaun Tate, *Schaeffler*

Chad Zagorski, *General Motors*





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Printed in USA

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EPR2022002

ISSN 2640-3536

e-ISSN 2640-3544

ISBN 978-1-4686-0426-9

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About the Editor



As Chief Technical Officer for Schaeffler in the Americas, **Jeff Hemphill** is responsible for research and new product development for automotive eMobility, transmissions, engines, chassis, as well as industrial components and systems.

Hemphill started his career at Schaeffler as a machinist and co-op student while earning a BSME from the University of Akron. He also holds an Executive Certificate in Strategy and Innovation from the Massachusetts Institute of Technology. Hemphill has over 30 years of experience in automotive and industrial product development, including manufacturing, product design, testing, and vehicle development.

To date, Hemphill has 79 patents filed or issued to his name. He served as President of SAE International in 2021.

contents

About the Editor

Unsettled Issues in Drive-by-Wire and Automated Driving System Availability 3

 Introduction 4

State of the Industry 4

Unsettled Issues in Drive-by-Wire and Automated Driving System Availability 5

 Uncertainty over Driver Controls. 6

Recommendations. 7

 Low-volume Trials and Production 8

Recommendations. 9

 Talent Sourcing 10

Recommendations. 10

 Challenges of Software-defined Vehicle and System Design 11

Recommendations. 12

 Lagging Regulations and Standards. 13

Recommendations. 13

Undeveloped Regulatory Landscape and Consumer Uncertainty 13

Recommendations. 14

Lack of Safety and Availability Standardization at the System Architecture Level 14

Steering Feel and Communication after First Fault 16

How Many and What Kind of Redundancies Are Needed? 16

Recommendations. 16

Summary 17

SAE EDGE Research Reports 17

Next Steps for Unsettled Issues in Drive-by-Wire and Automated Driving System Availability 17

Recommendations. 18

Definitions 18

Acknowledgments. 18

References 19

Contact Information 19



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Abstract

While many observers think that autonomy is right around the corner, there are many unsettled issues. One such issue is availability, or how the vehicle behaves in the event of a failure of one of its systems such as those with the latest “by-wire” technologies. Handling of failures at a technical actuation level could involve many aspects, including time of operation after first fault, function/performance after first fault, and exposure after first fault. All of these and other issues are affected by software and electronic and mechanical hardware. Thus, a systems approach is necessary, as—in every system—changes to one component affects the functionality of others. Establishing an industry path forward for these topics will simplify system development and provide a framework for consistent regulation and liability, which is a necessary enabler for the launch of autonomous vehicles.

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.

JEFF HEMPHILL
Schaeffler

Edge Development Team

Jan Becker, PhD, *Apex.AI; Stanford University*
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ISSN 2640-3536