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RESEARCH REPORT

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Jeff Hemphill

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SAE EDGE™ Research Reports provide state-of-the-art and state-of-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.

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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.

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

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 activation 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 solve the challenges they identify or close any topic to further scrutiny.

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