Exponent®
Engineering & Scientific Consulting

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Professional Profile

Mr. Harrington brings a unique perspective to his clients having worked in the automotive industry and the federal government. His accomplishments include innovative approaches in automotive engineering, technology evaluation, and the analysis and development of federal regulations, policies, and standards, including fuel economy and emissions rulemakings and motor vehicle safety standards. Mr. Harrington specializes in the analysis of complex technical and policy issues related to the development, testing, and deployment of emerging technologies, including automated vehicles, advanced driver assistance systems (ADAS), vehicle-to-vehicle (V2V) communications, and fuel economy and emissions related technologies, while fostering collaboration between industry executives, senior government officials, and engineers. He has evaluated and developed test procedures for ADAS systems; analyzed failure data and conducted root cause analyses for gasoline and diesel engines and automotive components; supported defect and recall investigations, developed prototype electric power steering (EPS) systems; performed noise, vibration, and harshness (NVH) investigations and customer acceptance evaluations; led fuel economy studies; and conducted fuel efficient driver training.

Prior to joining Exponent, Mr. Harrington was the Chief of the Technology Innovation and Policy Division at the U. S. Department of Transportation (DOT) Volpe National Transportation Systems Center. He led a cross-functional team of scientists, engineers, and analysts focused on emerging transportation technologies including automated vehicles, connected vehicles, connected/smart cities, and big data. Mr. Harrington and his team assessed alternative policy approaches to overcome technical and policy barriers impacting the deployment of advanced transportation technologies at the local, regional, and national level. He and his team also conducted a scan of Federal Motor Vehicle Safety Standards (FMVSS) to identify potential conflicts with the certification of automated vehicles; reviewed comments submitted in response to the Federal Automated Vehicles Policy (FAVP); and supported automated vehicle research and safety regulation analyses for passenger cars, commercial motor vehicles (CMV), and transit vehicles. Mr. Harrington was invited to the White House Office of Science and Technology Policy's (OSTP) Executive Leadership Retreat at Camp David to identify key priorities and challenges related to the deployment of automated vehicles.

In his previous work at the Volpe Center, as a Senior Engineer, Mr. Harrington led a team that performed engineering analyses and developed fuel-savings, cost, deployment rates and applicability assumptions for light-duty and heavy-duty vehicle technologies, which were incorporated into the National Highway Traffic Safety Administration's (NHTSA) Corporate Average Fuel Economy (CAFE) standard setting compliance and effects modeling. He presented technology analyses at senior level briefings for the White House Office of Management and Budget (OMB), the DOT, the Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and the National Academy of Sciences (NAS). He represented the DOT and participated in executive level meetings with vehicle manufacturers; engine, transmission, and component suppliers; and industry trade associations. Mr. Harrington was personally congratulated and recognized by the President in the Oval Office for his technical contributions to the

development of the model years 2017-2025 CAFE standards. Additionally in his role as a Senior Engineer, Mr. Harrington developed performance specifications, test track and on-road test procedures, and pass/fail criteria for ADAS systems and served as the U.S. DOT/NHTSA's test evaluator for the Integrated Vehicle-Based Safety Systems (IVBSS) crash avoidance program, which evaluated the independent and integrated performance of forward collision, lane departure, lane change/merge, and curve speed warnings.

As a Technical Support Manager at Cummins Inc., Mr. Harrington led Six Sigma fuel economy improvement projects, analyzed customer requirements, and proposed diesel engine/drivetrain changes to improve the fuel efficiency of long-haul trucks. He analyzed failure data and conducted field investigations to identify the root cause of diesel engine failures and brought resolution to customer product issues. In his role as a Vehicle Test Operations Manager at Environmental Testing Corporation, Mr. Harrington coordinated Federal Test Procedure (FTP) dynamometer emissions testing by interfacing with customer engineers and managing technicians. While working at Delphi Automotive Systems, as a Product Development Engineer, Mr. Harrington led the design and integration of prototype EPS systems into customer developmental vehicles. Using Shainin® Red X methodologies, he performed NVH identification and consumer acceptance evaluations of EPS systems at customer and Delphi facilities in Poland, Italy, and Germany.

Mr. Harrington's passion for motor vehicles and automotive engineering extends beyond his professional career. He is a volunteer design judge for the Formula Hybrid Competition, which is part of the SAE International Collegiate Design Series. Mr. Harrington continues to develop his vehicle dynamics knowledge and driving skills by competing in Sports Car Club of America (SCCA) and Porsche Club of America (PCA) autocross racing.

Academic Credentials & Professional Honors

M.E., Automotive Engineering, University of Michigan, Ann Arbor, 2004

B.S., Mechanical Engineering, University of Nebraska, 1999

Recipient of the U.S. DOT Secretary's Gold Medal Award (DOT's highest award), 2008

Licenses and Certifications

ISO 26262 Automotive Functional Safety Professional (AFSP)

Prior Experience

Division Chief, U.S. DOT Volpe National Transportation Systems Center, 2012-2017

Senior Engineer, U.S. DOT Volpe National Transportation Systems Center, 2007-2012

Technical Support Manager, Cummins Inc., 2004-2007

Vehicle Test Operations Manager, Environmental Testing Corporation, 2004

Design Responsible Engineer, Delphi Automotive Systems, 2000-2004

Engineering Intern, Goodyear Tire & Rubber Company, 1998-1999

Professional Affiliations

SAE International

Publications

Krake A, Jonas R, Hoyos C, Crump C, Lester B, Cades D, Harrington R. Effects of Training on Learning and Use of an Adaptive Cruise Control System. SAE Technical Paper 2020-01-1033, April 2020.

Harrington R. Government Keeps Foot Off Gas on AV Regulations. Automotive News, February 2020.

Cades D, Senatore C, Campbell J, Harrington R, Wood D. Automated and Assistive Vehicle Technology: Opportunities and Challenges. American Bar Association – The Brief, Volume 49, Number 1, Fall 2019.

Harrington R, Senatore C. The Road Toward Automated Vehicles. Connecticut Defense Lawyers Association – The DEFENSE, Volume 31, Number 1, Spring 2019.

Harrington R, Senatore C, Scanlon J, Yee R. The Role of Infrastructure in an Automated Vehicle Future. National Academy of Engineering – The BRIDGE, Volume 48, Number 2, Summer 2018.

Lange R, Kelly S, Senatore C, Wilson J, Yee R, Harrington R. Data Requirements for Post-Crash Analyses of Collisions Involving Collison Avoidance Technology Equipped, Automated, and Connected Vehicles. ESV 2017 Paper Number 17-0338, June 2017.

Kim A, Perlman D, Bogard D, Harrington R. Review of Federal Motor Vehicle Safety Standards (FMVSS) for Automated Vehicles: Identifying potential barriers and challenges for the certification of automated vehicles using existing FMVSS. DOT VNTSC OSTR 16 03, March 2016.

Bettisworth C, Burt M, Chachich A, Harrington R, Hassol J, Kim A, Lamoureux K, LaFrance-Linden D, Maloney C, Perlman D, Ritter G, Sloan S, Wallischeck E. Status of the Dedicated Short-Range Communications Technology and Applications: Report to Congress. FHWA JPO 15 218, July 2015.

Shaulov M, Green K, Harrington R, Mergel J, Pickrell D, Keefe R, Van Schalkwyk J. 2017 - 2025 Corporate Average Fuel Economy Compliance and Effects Modeling System Documentation. DOT HS 811 670, August 2012.

Van Schalkwyk J, Green K, Pickrell D, Harrington R, Shaulov M. 2012 - 2016 Corporate Average Fuel Economy Compliance and Effects Modeling System Documentation. DOT HS 811 301, March 2010.

Harrington R, Lam A, Nodine E, Ference J, Najm W. Integrated Vehicle-Based Safety Systems Light-Vehicle On-Road Test Report. DOT HS 811 020, August 2008.

Harrington R, Lam A, Nodine E, Ference J, Najm W. Integrated Vehicle-Based Safety Systems Heavy-Truck On-Road Test Report. DOT HS 811 021, August 2008.

Selected Invited Presentations

Harrington R. Legal & Liability. Panelist, Center for Connected and Automated Transportation (CCAT) at the University of Michigan - Global Symposium on Connected and Automated Transportation Webinar, April 14, 2020.

Harrington R. Overview of the Technologies - Levels of Automation - Federal Policies and Regulations. Presenter, ADAS & AV Legal Issues & Liabilities World Congress, Novi, MI, October 22, 2019.

Harrington R. Automated/Autonomous Driving Systems (ADS) 101: A Guide for Automotive Practitioners. Presenter and panelist, American Conference Institute (ACI) - Automotive Product Liability Litigation Conference, Chicago, IL, July 17, 2019.

Harrington R. Changing Landscapes of the Transportation Environment - What Attorneys Need to Know.

Panelist, Product Liability Advisory Council (PLAC) - OEM/Supplier Legal Summit, Detroit, MI, February 28, 2019.

Harrington R. Advanced Driver Assistance Systems. Presenter and panelist, Product Liability Advisory Council (PLAC) - Fall Conference, Dana Point, CA, November 1-2, 2018.

Harrington R. Autonomous Vehicles: The Good, The Bad, & The Ugly. Presenter and panelist, American Bar Association - Webinar, October 2, 2018.

Harrington R. The Changing Nature of Driving: Implications of Advanced Driver Assistance Systems (ADAS) and Highly Automated Vehicles (HAV). Presenter and panelist, The Bar Association of San Francisco - Webcast, San Francisco, CA, July 11, 2018.

Harrington R. An AV Crash Occurs: What Happens Next?. Panelist, Automated Vehicles Symposium 2018, San Francisco, CA, July 9-12, 2018.

Harrington R. Paving the Road to ADAS & Automated Driving with Embedded Systems. Panelist, Embedded Systems Conference 2018, Boston, MA, April 18-19, 2018.

Harrington R. The Passenger Cabin of the Future: Alternative Cabin Layouts for Autonomous Vehicles. Presenter and panelist, American Bar Association - 2018 Emerging Issues in Motor Vehicle Liability Litigation Conference, Phoenix, AZ, April 5-6, 2018.

Harrington R. An Automated Vehicle Crashes: What Happens Next?. Panelist, Automated Vehicles Symposium 2017, San Francisco, CA, July 11-13, 2017.

Harrington R. Societal Perspectives on Safety Assurance. Presenter and panelist, Automated Vehicles Symposium 2017, San Francisco, CA, July 11-13, 2017.

Harrington R. The Future of Vehicle Fuel Efficiency & Emissions Policies. Panelist, Motor & Equipment Manufacturers Association (MEMA) - 2017 Legislative Summit, Washington, DC, May 16-18, 2017.

Harrington R. Automated Vehicles: The Evolving Landscape and Product Litigation Considerations. Presenter and panelist, American Bar Association - 2017 Emerging Issues in Motor Vehicle Liability Litigation Conference, Phoenix, AZ, April 6-7, 2017.

Harrington R. Exploring Autonomous Technology within Greater Boston. Panelist, Association for Unmanned Vehicle System International (AUVSI) New England - Autonomous Vehicles Summit 2017, Cambridge, MA, March 2, 2017.

Harrington R. Automated and Connected Vehicles: Overview and USDOT Role. Eighth Annual Autonomous Guidance, Navigation and Control (AGN&C) Symposium, Draper Laboratories, Cambridge, MA, November 3, 2016.

Harrington R. Automated and Connected Vehicles: Overview and USDOT Role. American Council of Engineering Companies (ACEC) 2016 Fall Conference, Colorado Springs, CO, October 21, 2016.

Harrington R. CAFE Compliance and Effects Modeling System - Overview. National Academy of Sciences Committee Meeting - Assessment of Technologies for Improving Fuel Economy of Light-Duty Vehicles - Phase 2, Washington, DC, June 20-21, 2012.

Harrington R. Passenger Car and Light Truck CAFE Analysis and Technology Inputs. National Academy of Sciences Committee Meeting - Committee to Assess Fuel Economy Technologies for Medium- and Heavy-Duty Vehicles, Ann Arbor, MI, June 18-19, 2009.

Harrington R. Light Vehicle and Heavy Truck Test Track Verification Test Results. Integrated Vehicle-Based Safety Systems 2008 Public Annual Meeting, Ypsilanti, MI, April 10-11, 2008.

Additional Education & Training

kVA and SGS-TÜV Saar – Automotive Function Safety Professional (AFSP) Certification (ISO 26262), 2019

SAE International – Powertrain Selection for Fuel Economy and Acceleration Performance and Turbocharging for Fuel Economy and Emissions, 2009

Bosch VP44 Diesel Fuel Injection System Training, 2006

Six Sigma Green Belt Training, 2005

Shainin® Red X Problem Solving Training, 2003

General Motors Advanced Driver Training, 2001

Peer Reviewer

Serves as a peer reviewer at the Department of Energy's (DOE) Annual Merit Review (AMR)