Exponent®
Engineering & Scientific Consulting

James Williamson

Principal | Vehicle Engineering
Farmington Hills
+1-248-324-9109 | williamsonj@exponent.com

Professional Profile

Leveraging several decades of global automotive industry experience, Mr. Williamson had a preeminent role at General Motors leading all vehicle program safety performance integration. He specializes in occupant protection and restraint systems, vehicle systems engineering, structural crashworthiness analysis, data analytics and data science, vehicle sensing, vehicle interiors, artificial intelligence and machine learning, safety research, driver behavior and distraction, active safety systems, interior engineering, product lifecycle management and managing large complex projects.

Mr. Williamson has experience in leading large teams in most areas of vehicle safety and interior engineering. He spent four+ years leading a 120+ organization responsible for all General Motors Vehicle Safety Performance in North America. He had additional oversight responsibility for all major global regions (China, Korea, South America, Australia, and Europe) where he had to review and approve the safety performance of every General Motors vehicle. In doing so he led his teams to multiple 5-Star awards and top safety consumer metric ratings in every region of the world. Additionally, he has managed complex compliance issues and overcome the toughest performance challenges. He also did this while achieving the highest Workplace of Choice Scores in the safety department. Mr. Williamson was uniquely qualified for this role given his many years of leading multiple vehicle programs as a Safety Performance Integration Team Leader.

More recently, Mr. Williamson has been responsible for leading the General Motor Global Safety Center. He helped guide and direct the work for all of GM's top corporate vehicle safety experts who oversee safety performance, technology, strategy, and research. He also was the leader of GM's Global Safety Council, which is the top decision-making body for vehicle safety policies, technical strategies, most likely scenarios, consumer metric goals, vehicle technical requirements, new product safety strategies, final product safety reports and review of any critical corporate vehicle safety topic. Mr. Williamson was well qualified for this role given his extensive deep experience in many areas of vehicle safety through his early career including:

- occupant protection
- seat belts
- airbags
- steering columns
- instrument panels
- computer aided engineering simulation

- vehicle and system and component testing
- body structures
- chassis components
- composite materials
- sensing systems
- fuel system protection
- high voltage battery and system/component protection
- post-crash electrical integrity
- safety data recording
- head impact protection
- ejection mitigation

With this level of expertise, he has given many presentations to NHTSA, Insurance Institute for Highway Safety, EuroNCAP, and China NCAP organizations to help guide future rulemaking, strategy, and technical specifications. He also was GM's Safety Technical Leadership Committee leader for the United States Council for Automotive Research (USCAR). As a result of Mr. Williamson's efforts, safety research funding increased 10X working collaboratively with Ford and Stellantis.

Additionally, Mr. Williamson was responsible for leading the General Motors Vehicle Safety Data Analytics department. This department of 40+ data scientist and data analysts were responsible for leveraging the latest artificial intelligence (AI) techniques such as making learning (ML), ontologies, and deep learning to find potential emerging safety issues. Through his leadership GM was able to develop an in-house tool that is able to efficiently search billions of records of safety data to look for potential problems in every data source. With this capability GM can now independently find potential safety outliers much more quickly than conventional reporting methods.

Mr. Williamson also has a decade of experience working for General Motors Interior Engineering in many roles. While on the direct staff of the head of Interior Engineering, he was the Global Strategic Operations Manager responsible for innovation planning. In this role he also was responsible for Global Interior Quality Management where he led GM to the #1 ranking in JD Power Initial Quality for Interiors. Prior to this Mr. Williamson was the Architectural Vehicle Systems Engineer for the Chevy Silverado and GMC Sierra/Denali Pickup Trucks and Chevy Tahoe/Suburban, GMC Yukon/Denali and Cadillac Escalade SUVs. He led a 30+ team of interior design release engineers to develop award winning top truck interiors while collaborating closely with GM Design Center. He held multiple other roles in leading interior teams (programs and commodities). He has extensive knowledge of vehicle product development gained from experience in working closely with program management, manufacturing, purchasing, finance, and marketing to create successful vehicles.

Given his deep vehicle product development experience, Mr. Williamson was asked to lead a $75 million Project Lifecycle Management (PLM) project as part of GM's Global Engineering and Systems organization. This project was transformational in achieving significant business benefits through integration of program management, engineering, change management, and cost management work streams. As a result, he has gained important experience in all product development processes.

Academic Credentials & Professional Honors

M.S., Aeronautics and Astronautics, Massachusetts Institute of Technology (MIT), 1991

B.S., Aerospace Engineering, Georgia Institute of Technology, 1989

1999 & 2000 NAO Design & Engineering Award of Excellence

1997 NAO Design & Engineering Special Achievement Award

Prior Experience

Here is a summary list of Mr. Williamson's prior work history prior to joining Exponent:

- Senior Manager, General Motors Global Safety Center, 2021-2023

- Senior Manager, General Motors Vehicle Safety Data Analytics, 2018-2021

- Senior Manager, General Motors Vehicle Safety Performance Integration, 2014-2018

- Program Manager & Engineering Module Leader, General Motors Global Engineering Operations, 2012-2014

- Global Strategic Operations Manager & Global Interior Quality Manager, General Motors Interior Engineering, 2010-2012

- Additional Roles in General Motors North American Interior Engineering, 2002-2010:

o Architectural Vehicle Systems Engineer – Full Size Truck & SUV Platform

o Engineering Group Manager – Truck & Crossover Garnish & Overhead Systems

o Global Functional Leader – Head Impact Performance Integration

o Architectural Vehicles Systems Engineer – Small/Midsize Trucks & Global Midsize Cars

o Engineering Group Manager – Instrument Panels & Floor Consoles

o Vehicle Systems Engineer – Midsize SUVs

o Vehicle Systems Engineer – Midsize Cars

o Engineering Group Manager – Minivans

o Lead Seat Belt Design Release Engineer – Large/Luxury/Performance Vehicles

- Safety Vehicle Performance Integration Team Lead – Large Luxury Car Programs & Full Size Van Program, General Motors North American Operations Safety Integration, 1999-2002

- Safety Vehicle Integration Engineer – Midsize & Large Car Architectures, General Motors North American Operations Portfolio Development Center, 1996-1999

- Lead CAE Safety Occupant Restraints Engineer – General Motors Mid/Lux Car Group VSAS/CPE Computer Aided Engineering, 1991-1996

- Structural Research Engineer, McDonnell Douglas Corporation, 1989-1991

Professional Affiliations

Georgia Institute of Technology Woodruff School of Mechanical Engineering Advisory Board, 2021-Current

Safety Technical Leadership Committee, United States Council for Automotive Research (USCAR) – 2021-2023

Patents

US Patent 6, 869,132: Cross-Car Beam Systems, March 2005 (JT Wang, G Jones)

US Patent 8,056,427: Adjustable Face Tool For Positioning A Free Motion Headform, November 2011 (JT Wang, M. O'Neal, P. Gareau, J. Williamson, A. Millerman)

Publications

Mertz, H.J., Williamson, J.E., & VanderLugt, D.A. Effect of limiting shoulder belt load with air bag restraint. 1995.

Lagace, P.A., Williamson, J.E. Contribution of the core and facesheet to the impact damage resistance of composite sandwich panels. 1993.

Williamson, J.E. Response mechanisms in the impact of graphite/epoxy honeycomb sandwich panels. 1991.