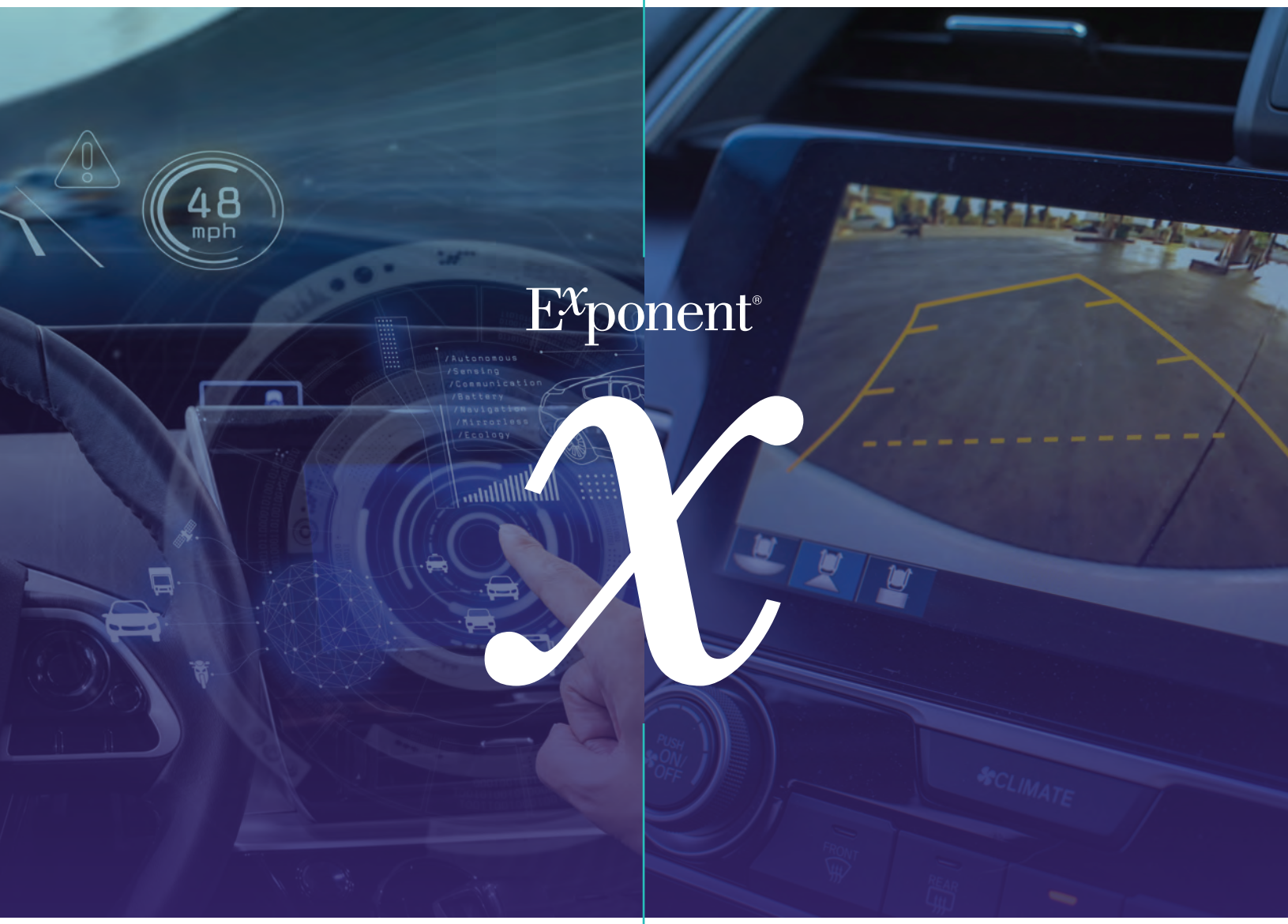
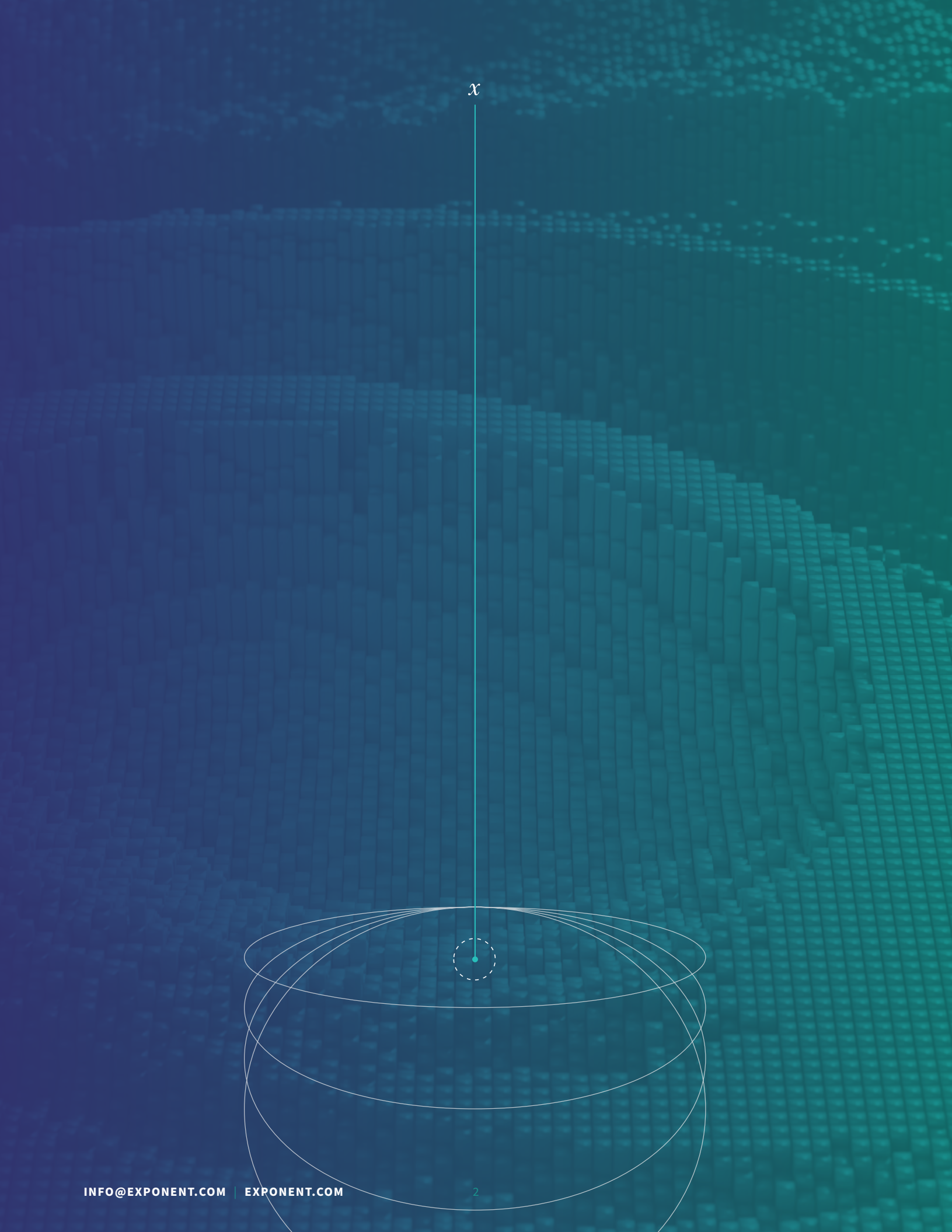


Exponent®

Advanced Driver Assistance Systems (ADAS)

OPTIMIZE YOUR ADAS SYSTEM PERFORMANCE FROM HOOD TO TRUNK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Hard Questions. Tough Challenges. Bring It.

In an era of accelerating change, Exponent is the only premium engineering and scientific consulting firm with the depth and breadth of expertise to solve our clients' most profoundly unique, unprecedented, and urgent challenges.

Exponent's 950+ consultants help our clients navigate the increasing complexity of more than a dozen industries, connecting decades of pioneering work in failure analysis to develop solutions for a safer, healthier, more sustainable world.

Exponent by The Numbers

90+
Technical Disciplines

30+
Offices Across North America, Europe & Asia

1967
50+ Years of Scientific Excellence

HOW WE HELP CLIENTS

Jumpstart Your ADAS Applications

Advanced Driver Assistance Systems (ADAS) have the potential to transform road safety — but only if the technologies that power them are confirmed safe, too.

The continual evolution of modern transportation systems and vehicles, combined with increasing regulatory, safety, and environmental requirements, places increased demands on vehicle manufacturers as they balance the development and implementation of innovative technologies with regulatory compliance and sound safety practices.

Electrical and electronic systems in both passenger and commercial vehicles are rapidly growing more complex as innovative new technologies are implemented. Exponent's vehicle experts have the industry experience necessary to increase the viability of your ADAS applications, from vehicle-level integration requirements to individual subsystem and component design validation.

We are well-versed in assessing performance against various metrics for specific ADAS applications and developing customized testing for clients as their needs evolve. Our consultants are actively investigating present-day performance and the future evolution of these systems, both as they develop and when equipped vehicles are involved in accidents.

Driven to Excellence

ADAS systems have multiple touchpoints and intricate components that require careful evaluation. Exponent's skilled multidisciplinary consultants offer a full range of capabilities designed to assist you in understanding and mitigating system failures.

Vehicle Electronics & Electrical Systems

Electrical and electronic systems in both passenger and commercial vehicles are rapidly growing more complex alongside innovations in technology. Exponent's electrical engineers and scientists have the industry experience necessary to increase the viability of your ADAS applications, from vehicle-level integration requirements to individual subsystem and component design validation.

Embedded Systems

Automobiles include hundreds of sensors to monitor the condition of the vehicle and the driver, enabling embedded systems to make real-time adjustments to performance. Exponent's multidisciplinary teams can help you tackle tough problems regarding sensor or sensor systems during all points of the product lifecycle — including design and development, product manufacturing, and failure analysis. We support clients with computer and communication architecture, software testing and validation, and control systems including:

- Sensor design and failure analysis
- Computer and communication system architectures and system design
- Software development, testing, and validation
- Control system performance analysis
- Design of control algorithms
- Control system failure analysis, including hardware and software subsystems
- Communication system performance issues
- Resolution of disputes related to expected control system performance
- Intellectual property related to control systems

SERVICES

Vehicle Accident Reconstruction

Exponent engineers provide detailed, evidence-based analyses of complex motor vehicle collisions, accident investigations, and incidents. We convey our findings with clear and powerful demonstratives, including well-documented reports, presentations, and animations so that our clients understand the methodology and basis for our conclusions and are equipped to communicate the findings to less technical audiences.

The Role of Human Factors in Accidents

Human factors, including human capabilities, limitations, perception, decision making, reactions, physical states, and behaviors, can all contribute significantly to accidents. ADAS technologies and related regulatory developments are evolving so quickly that it can be difficult for consumers to understand the limitations of these complex systems.

For clients seeking understanding of how to maximize safety and reduce risk, Exponent provides comprehensive reports on the role of human interaction and performance. We evaluate and analyze operator error, accident risk, impacts, and evaluation of in-vehicle technology, and the effects of instructions and warnings on operator behavior. Our novel, quantitative and qualitative frameworks allow us to apply scientific rigor to issues of human safety and provide clients accurate and objective insights.

Pushing ADAS-Equipped Vehicles Further

Exponent's multidisciplinary expertise allows us to leverage our state-of-the-art ADAS testing equipment to simulate reproducible crash scenarios at an unparalleled level of efficiency and consistency, supporting our clients in understanding the reliability and performance of their ADAS-equipped vehicles from design through to real-world scenarios and incidents.

Industry-wide safety research

Exponent is actively designing the verification and validation methodologies needed to inform the next generation of automotive innovation and legal inquiry on issues of not only "did it do what we designed it to do in the environments we considered?" but also the additional question of "does it deliver the user experience and capability we intended?" Our experts support government agencies and standards organizations through applied research, and we conduct independent studies and publish in peer-reviewed publications.

Cutting-edge testing

Our motor vehicle accident reconstructionists develop and perform bespoke tests to quantify ADAS and driver performance under specific accident conditions and in real-world driving situations. Our ADAS-related testing capabilities include the following:

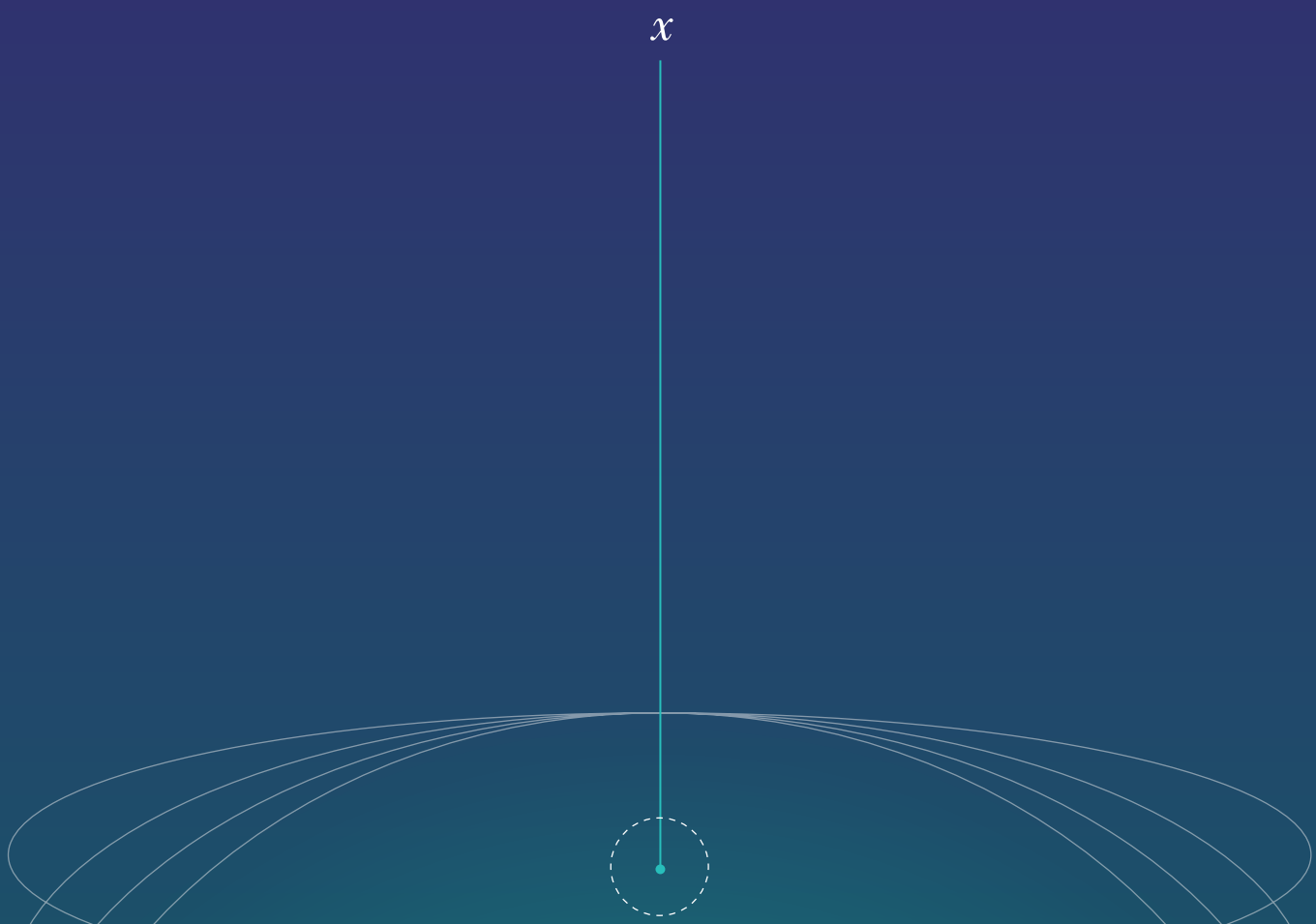
- State-of-the-art robotic vehicle control
- Programmable AB Dynamics™ Global Vehicle Target (GVT)
- Programmable AB Dynamics™ Global Soft Target (GST)
- Full suite of programmable AB Dynamics™ Vulnerable Road User (VRU) targets

Hit the Road at Exponent's Test & Engineering Center

For over 50 years, Exponent has led the industry in full-scale, instrumented vehicle dynamics and collision testing at our Test and Engineering Center (TEC) in Phoenix, Arizona.

Our 147-acre facility features a two-mile vehicle test track purpose-built for the automotive industry, where we conduct statistical analysis of real-world performance data, analyze individual incidents, and perform field, bench, and laboratory tests. Our customized approach provides clients with rigorous, relevant comparisons, performance evaluations, and definitive answers about specific ADAS applications.

What can we help you solve?



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