HONDA

Ohio Department of Transportation Taps Honda to Lead Two-year Project to Advance Road Condition Management System

- *Honda to pilot advanced prototype of road condition management system with three tech partners and Ohio Department of Transportation (ODOT)*
- *ODOT invests $700,000 for data analysis and evaluation in project led by Honda and partners i-Probe Inc., The University of Cincinnati, and Parsons Corporation*
- *Vehicle-generated data could make roadways safer by helping maintenance crews more quickly address roadway damage*

COLUMBUS, Ohio, November 9, 2023 – DriveOhio, the smart mobility hub of The Ohio Department of Transportation (ODOT), has awarded over $700,000 for a two-year research project led by Honda and three technology partners – i-Probe Inc., The University of Cincinnati, and Parsons *(NYSE: PSN)*. The partners will develop a road condition management system that will use vehicle-generated data to identify and report hazardous road conditions in Ohio. Honda will lead the project, leveraging the [research it conducted in 2022 and the Honda Drive Data Service* from Honda](#) Motor Co., Ltd., with the funding to cover project work by the three partners.

In addition to increased efficiencies and potential cost savings for the state of Ohio, the project could help make roads safer and reduce the cost to consumers associated with vehicle damage due to road hazards. ODOT is responsible for nearly 50,000 lane miles and almost 45,000 bridges across the state. Through early identification of roadway issues like potholes or damaged guardrail, ODOT's maintenance crews may be able to respond faster and make repairs before conditions worsen. Furthermore, the vehicle-generated data could instantly link inspectors to near real-time information, potentially reducing the need for time-consuming visual inspections.

The initiative will build on a pilot program conducted by the Honda Research Institute in 2022, which evaluated a road condition management system using GPS coordinates and cameras to collect real-time road condition information.

During the new two-year project, Honda test vehicles equipped with Advanced Driver Assistive Systems (ADAS) will collect road condition data on select routes that will be analyzed and evaluated to pinpoint roadway damage and inform road maintenance operations in Ohio. In the future, ADAS-equipped vehicles could become part of an active road maintenance system that collects anonymized road hazard information for analysis and appropriate action by road maintenance crews.

Honda has been a leader in the U.S. in advancing connected vehicle and connected infrastructure research and pilot programs. By empowering drivers to participate and contribute to building a safer and better roadway, this will significantly enhance the customer experience while potentially improving the efficiency of maintenance work for road operators like ODOT.

Scope of Two-year Project

Working closely with ODOT, the partner companies will integrate their respective technologies with Honda test vehicles for data collection and analysis of the roads located in rural and urban areas. The project will focus on the following roadway conditions:

- Roadway striping deficiencies that affect some driver assistance features, such as lane-keeping assist functions
- Pothole development, including size and location
- Ride quality of the road, regardless of the vehicle's age or condition
- Guardrail and cable road barrier damage
- Road sign wear, including missing signs
- Condition of berms, including the percentage and depth of drop off

Honda and the partner companies will provide the roadway condition data to ODOT through a web dashboard. ODOT will use the data to cross-reference its regular visual inspections. The results of the analysis will be used to enhance the machine learning algorithm Honda uses to generate the web-based dashboards. After the project, ODOT will evaluate the possibilities and value-add for long-term use of such data for maintenance as well as for other ODOT operations.

Executive Comments:

Ohio Department of Transportation/DriveOhio:
"As transportation evolves and modern vehicles become more advanced, ODOT is excited to investigate new ways to apply technology and maximize efficiency for our crews," said

DriveOhio Executive Director Preeti Choudhary. "Integrating vehicle data into our operations has the potential to be a game-changer when it comes to better serving Ohio drivers and increasing roadway safety for all."

Honda:
"As Honda continues to expand the application of our Honda Sensing and AcuraWatch systems in the U.S., we have a tremendous amount of valuable, anonymized data available for road operators," said Sue Bai, chief engineer and chief of data business, Digital Service Development Division at American Honda Motor Co., Inc. "We believe this initiative will be a paradigm shift in road infrastructure evaluation, management, and maintenance, by empowering drivers to contribute to and participate in creating safer and smoother roadways with a sense of shared ownership and pride, improving the overall driving experience, and proactively helping prepare infrastructure for future mobility needs including autonomous vehicles, all toward Honda's goal of achieving zero traffic-collision fatalities involving our motorcycles and vehicles by the year 2050."

i-Probe Inc.:
"i-Probe is a world-leading vehicle-data-based engineering service provider that can bolster the revival and enhancement of road infrastructure," said Daisuke Oshima, Chief Executive Officer at i-Probe Inc. "In this ODOT project, i-Probe will lead data collection on the roadways in Ohio and leverage results reporting based on the experience we've gained through pilot projects conducted with other state DOTs."

The University of Cincinnati (UC):
"We are very excited to be part of this effort to help ODOT in achieving its mission of providing a transportation infrastructure that is safe, accessible, well maintained, and positioned for the future." said Munir Nazzal, the Director of UC's Center for Smart, Sustainable and Resilient Infrastructure (CSSRI). "Over the past years, we have been developing edge AI algorithms for real-time detection of infrastructure assets deficiencies. In this project, we will be testing and validating some of these algorithms as well as assisting in integrating them into the Honda vehicles."

Parsons:
"This pilot project, a first for Parsons, is a unique opportunity to gather original equipment manufacturer data into our iNET® decision support system to help improve operational efficiency for the Ohio DOT," said Jodie Bare, vice president, Global Digital Services & Operations for Parsons. "Our entire team is excited to be a part of this opportunity to leverage innovative ideas, emergent technology, and product evolution to push the boundaries of what's possible and deliver a better world for our clients and communities."

Partners Bring Unique Expertise

Honda and its partners are committed to drawing on unique expertise from various domains to deliver the most impactful project based on ODOT's defined requirements, while also creating a vision for the scalability of the road condition management system. The partnering organizations bring strong expertise in complementary disciplines:

- **Honda** has extensive knowledge of vehicle-generated data and can serve as a significant source of anonymized connected vehicle data to advance ODOT operations. Advanced active safety and driver-assistive systems found in Honda Sensing® and AcuraWatch™ technologies are equipped to more than 7 million vehicles on U.S. roads, designed to reduce the frequency and severity of collisions while also serving as a technological and perceptual bridge to the more highly automated vehicles of the future. Honda also introduced the world's first vehicle with an Automated Emergency Brake (AEB) system in 2004 and a Level 3 automated vehicle (conditional automated driving in limited area) in Japan in 2021.
- **i-Probe Inc. (IPI)** is one of the world's first providers specializing in collecting and analyzing big data obtained from vehicle sensors to provide infrastructure condition information services. IPI services include pothole/crack detection, pavement roughness condition monitoring, and deterioration alerts, which come with map overlay and are generated from daily monitoring. IPI collaborated with Honda to deploy several vehicle-based road asset assessment pilot projects in the U.S.
- **The University of Cincinnati (UC)** is home to industry leaders with extensive knowledge and experience in the use of vehicle sensors for infrastructure assets evaluation and management. The UC team has led projects for ODOT and other infrastructure operators, assisting in improving roadway maintenance practices and addressing infrastructure challenges. The UC team led a project that developed a system used by ODOT to track and schedule different types of maintenance equipment.
- **Parsons** is a world-class leader in Intelligent Transportation Systems (ITS) with a deep understanding of transportation management centers based on their experience in deploying over 90 Advanced Traffic Management Systems (ATMS). This includes significant integrations with other systems and data platforms to create a seamless experience for DOTs.

* Utilizing driving and vehicle behavior data and location information, the Honda Driver Data Service analyzes and evaluates the traffic environment including locations where brakes are used frequently. The system is designed to reduce the risk of traffic collisions by identifying potentially dangerous spots on the road which may cause traffic collisions and enabling the user to improve the traffic infrastructure.

About Honda Commitment to Safety

Honda is committed to "[Safety for Everyone](#)" and is working to further improve safety for everyone sharing the road. The company has established a global goal to achieve zero traffic collision fatalities involving Honda motorcycles and automobiles by 2050. Honda operates two of the world's most sophisticated crash-test facilities in Ohio and Japan, and is responsible for numerous pioneering efforts in crashworthiness, collision compatibility and pedestrian safety.

Advanced passive safety features include Honda's proprietary Advanced Compatibility Engineering™ (ACE™) body structure and next-generation driver and passenger front airbag technology, which are designed to provide a high level of collision protection for occupants. Advanced active safety and driver-assistive systems found in Honda Sensing® and AcuraWatch™ technologies, now on more than 7 million vehicles on U.S. roads, are designed to reduce the frequency and severity of collisions while also serving as a technological and perceptual bridge to the more highly automated vehicles of the future.

Learn more at https://www.honda.com/safety.

Learn more about Honda through the Honda Digital FactBook.

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