

CALL FOR PROPOSALS

Innovation Challenge, SmartTO-York Region:

Smart Solutions for Safer Paramedic Vehicle Operations

Opens October 1, 2026
Closes December 7, 2026

SmartTO THE FUTURE OF MOBILITY | ySpace | YORK U | YORK LINK | York Region | OVIN AUTONOMOUS · CONNECTED · ELECTRIC | Ontario

Challenge Opportunity

York Region RTDS, part of the OVIN RTDS network has launched an Innovation Challenge with SmartTO@YSpace, York University.

York Region Paramedic Services has identified collision reduction as a high-priority opportunity, with approximately 100 vehicle collisions occurring annually across the service. Reducing collisions would improve staff safety, reduce operational impacts, and help maintain reliable emergency response capabilities.

Paramedics operate in complex and dynamic environments, often requiring rapid response while navigating congested roadways, intersections, adverse weather conditions, and unpredictable driver behaviour. Vehicle collisions can occur during routine operations, emergency response, travel between facilities, or while providing patient care services.

York Region Paramedic Services experiences approximately 90-100 vehicle collisions annually, with 344 collisions recorded between 2022 and 2025. Analysis of historical collision data indicates that approximately **91% of collisions are preventable,** highlighting a significant opportunity to improve staff safety, reduce vehicle downtime, lower repair costs, and maintain reliable emergency response operations.

Collision trends indicate that many incidents are associated with routine driving activities such as reversing, clearance misjudgments, and mirror/forward observation challenges rather than high-speed emergency response events. Between 2022 and 2025, reversing accounted for 113 collisions while clearance-related incidents accounted for 85 collisions. Mirror and forward observation incidents accounted for an additional 66 collisions.

Data also shows that employees with less than five years of driving experience go through the highest number of collisions, suggesting opportunities for enhanced driver awareness, coaching, training, and technological intervention. Given that the majority of collisions are preventable and are associated with reversing, clearance-related incidents, and driver observation challenges, York Region is seeking innovative solutions that can improve safety outcomes while maintaining operational effectiveness and emergency response capabilities.

How might we reduce preventable collisions for Paramedics during regular operations and service delivery so that staff health and safety are improved, vehicle repair costs are reduced, and collisions are prevented while maintaining timely emergency response and operational effectiveness?

Challenge Focus

While all innovative approaches will be considered, York Region is particularly interested in solutions that address the leading causes of preventable collisions, including:

- Reversing incidents
- Clearance-related collisions
- Mirror and forward-observation challenges
- Driver awareness and situational awareness
- Near-miss identification and prevention
- Driver coaching and behaviour improvement
- Collision avoidance technologies
- Driver training, simulation, and coaching technologies

These collision categories account for a significant portion of historical vehicle collisions within Paramedic Services and represent key areas for innovation.

Success Criteria & Technical Requirements

The IC is seeking to identify, evaluate, and pilot innovative solutions that can reduce the frequency and/or severity of collisions involving paramedic vehicles while maintaining service delivery and operational readiness.

Solutions are required to fulfill the following technical objectives:

- The proposed solution product must be at Technology Readiness Level of 5 or higher.
- Cybersecurity/Privacy requirements: the solution must protect privacy of the occupants, drivers and bystanders. The solution must strip away the collection of Personally Identifiable Information (PII) entirely. The solution shall protect all data collected through industry-standard encryption at rest and in transit, appropriate access controls, and privacy and cybersecurity safeguards. Organizational data shall remain confidential and shall not be accessed, disclosed, shared, sold, or used for any purpose other than providing the contracted service without prior authorization.
- Where applicable the solution must meet all CSA and ESA requirements. The solution will also have to meet Ontario Provincial Land Ambulance and Emergency Response Vehicle Standard version 7.0 from the Ministry of Health and Long Term Care.
- Optional-Ability to integrate with Mobile Computer Aided Dispatch technology and Fleet monitoring systems and existing vehicle mapping software.
- The solution shall provide authorized users with real-time access to current and historical data in a consistent format and structure, with the ability to search, filter, report, analyze, and export data without vendor intervention. Historical data shall remain readily accessible throughout the contract term and following system upgrades or changes.

Existing Environment and Technical Considerations

Proposed solutions should consider:

- Compatibility with existing ambulance and emergency response vehicle operations.
- Ability to operate safely within active emergency response environments.
- Compatibility with existing fleet technology platforms where applicable.
- Ability to function during both emergency and non-emergency operations.
- Ability to collect and analyze safety-related data while minimizing collection of personally identifiable information (PII).
- Minimal impact on vehicle availability, response times, and frontline operations.

Further Pilot Considerations:

- Both training solutions for the drivers and on the vehicle retrofit solutions will be considered.
- Any proposed solution might require extensive lab testing and approvals to ensure safe operation prior to any field deployment.
- The proposed solution will be limited to accessing Regional infrastructure or other supporting/facilitating infrastructure only as required to demonstrate the solution.
- The pilot doesn't guarantee any future paid pilots or procurement of the solution.
- For consideration: Ontario Provincial Land Ambulance and Emergency Response Vehicle Standard, Version 7.0

Ideas for Considerations:

Solutions that address common collision categories such as reversing, vehicle clearance, driver awareness, blind-spot monitoring, collision avoidance, near-miss detection, driver coaching, predictive analytics, or situational awareness are encouraged:

- **Improve driver awareness and promote safer driving behaviours**, including better situational awareness and recognition of high-risk driving situations.
- **Reduce the risk of preventable vehicle collisions** during both emergency and non-emergency operations through early identification and mitigation of driving risks.
- **Improve staff safety outcomes** by supporting safer vehicle operations and reducing exposure to collision-related risks.
- **Reduce fleet repair, maintenance, and replacement costs** associated with preventable vehicle collisions.
- **Maintain or improve emergency response performance** while supporting safer driving practices.

Anticipated Outcomes:

York Region RTDS anticipates that a successful challenge applicant will work in collaboration with municipal staff in the Paramedics Unit to test and evaluate a technology through a pilot.

York Region RTDS is seeking innovative solutions that can demonstrate measurable improvements in one or more of the following areas:

- Reduction in preventable collisions.
- Reduction in collision severity.
- Improved driver awareness and decision-making.
- Improved staff safety outcomes.
- Reduction in vehicle repair and replacement costs.
- Reduction in fleet downtime.
- Improved operational awareness during emergency and non-emergency operations.
- Reduced high-risk driving events and near-miss incidents.
- Enhanced training effectiveness for new and existing paramedic staff.
- Scalable deployment across the paramedic fleet and potentially other York Region fleet operations.

Prizes for top applicants:

1. Pilot with York Region Paramedics (6-12 month duration)
2. $20K cash for pilot implementation
3. Support from SmartTO YSpace valued at $20,000

Application Process

Applications will be accepted online until December 7 (TBC). Each solution shall be submitted separately. Incomplete applications will not be accepted.

Information session is scheduled for November, exact date TBC

Potential applicants can direct their questions to smartto@yorku.ca

Selection Process

- Solutions must address the challenge's technical criteria above; a selection committee will review the submissions
- Risk/Insurance considerations
- TRL 5 plus
- Only Ontario-based industry will be considered for the prizes

Innovation Challenge Timeline

- Launch of the Innovation Challenge – October 1, 2026
- Information Session – TBC, November 2026
- Solutions due –December 7, 2026 at 11:59 PM.
- Selection and Preparation – December to January 2027
- Innovation Challenge Showcase – February 2027
- Pilot installation and commissioning – Spring/Summer 2027

Background

The IC is delivered by SmartTO at YSpace in collaboration with York Region. The York Region Regional Technology Development Site, is funded by Ontario Centre of Innovation as part of the Ontario Vehicle Innovation Network (OVIN) program.

The successful participant challenge submission does not guarantee project funding through OVIN's R&D Partnership funds, however, if additional funding will be required for ongoing product development, the Region will support the successful challenge participant in applying for this funding.

York Region Paramedic Services operates a large fleet of ambulances and emergency response vehicles that provide critical emergency medical services across the Region.

Paramedic vehicle collisions can result in:

- Staff injuries and safety risks
- Delays in patient care and service delivery
- Vehicle downtime and reduced fleet availability
- Increased repair and replacement costs
- Administrative and insurance-related impacts

York Region Paramedic Services has identified collision reduction as a high-priority opportunity, with approximately 100 vehicle collisions occurring annually across the service.

Collision Statistics

- York Region Paramedic Services recorded **344 vehicle collisions between 2022 and 2025,** averaging approximately 86 collisions annually
- **312 of 344 collisions (91%) were classified as preventable**
- The most common collision types include:
  - Reversing collisions: **113**
  - Clearance-related collisions: **85**
  - Mirror/forward observation collisions: **66**
- Drivers with **0-5 years of experience accounted for 46 collisions,** substantially more than any other experience category.
- The highest number of collisions occur during daytime operational periods, with incidents peaking between **12:00 PM and 2:59 PM (78 collisions) and 3:00 PM and 5:59 PM (60 collisions).**
- Most collisions occur during routine operations rather than emergency responses, with:
  - 155 collisions occurring while not assigned to a call
  - 111 occurring during Code 4 emergency responses
  - 71 occurring during Code 3 emergency responses
- **91% of ambulance collisions are preventable.**
- **A significant proportion of collisions result from basic driving incidents,** such as reversing, inadequate clearance, mirror/forward observation, and being struck through no fault of the driver.
- **Drivers with less than five years of experience have the highest collision rate,** highlighting the importance of experience, training, and continued driver development.

Reducing collisions would improve staff safety, reduce operational impacts, and help maintain reliable emergency response capabilities.

Advances in vehicle safety technologies, artificial intelligence, telematics, driver-assistance systems, predictive analytics, training technologies, and fleet monitoring solutions may provide opportunities to reduce collision frequency and severity while maintaining operational effectiveness.

- **Improve fleet safety** outcomes by reducing vehicle and preventable collisions, minimizing collision severity and staff injuries, and strengthening overall fleet safety performance.
- Maintain and enhance **operational performance** by preserving response times and service delivery, ensuring vehicle readiness and fleet availability, and improving operational awareness during emergency response.
- **Improve driver behaviour** and reduce risk by decreasing high-risk driving events and near-miss incidents while strengthening compliance with safe driving practices, driver awareness, and decision-making.
- Optimize financial and fleet performance by reducing vehicle repair costs, downtime, and collision-related maintenance impacts while demonstrating a measurable return on investment.
- Enhance staff experience and adoption by ensuring positive frontline feedback, ease of implementation and use, minimal workflow disruption, and high user acceptance.

- Drive staff acceptance and adoption by ensuring positive frontline feedback, ease of implementation and use, minimal workflow disruption, and strong user engagement.
- Enable scalable and sustainable implementation by ensuring compatibility with existing fleet systems and operations, cost-effective deployment and long-term viability, and the potential to expand across the paramedic fleet and other York Region fleet operations.

Additional Resources:

- Examples of world-wide/alternate solutions
  - Advanced Driver Assistance Systems (ADAS)
  - AI-powered driver monitoring systems
  - Collision avoidance systems
  - Blind-spot detection technologies
  - 360-degree camera systems
  - Telematics and driver behaviour analytics
  - Near-miss detection systems
  - Predictive risk modelling and fleet safety analytics
  - Driver coaching and training platforms
  - Vehicle sensor and vision technologies
  - Emergency vehicle-specific safety technologies
- Ontario Provincial Land Ambulance and Emergency Response Vehicle Standard, Version 7.0

