Autonomous technology in Calgary: Reducing emergency vehicle travel times

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The City of Calgary recently reported the details of its testing and implementation of autonomous vehicle and road technology, which was installed on 16 Avenue North. Calgary created this project to establish an assessment corridor for vehicle-to-infrastructure (V2I) technology. The goals of the project were to enable transport-sector innovation and further understand connected vehicle applications. The project included 12 intersections along 16 Avenue North being equipped with dedicated short-range communication roadside equipment, several emergency vehicles being outfitted with on-board equipment, and trialing pre-emption applications that relied on this technology. The project was hailed to be a success and plans for next steps are ongoing.

16 Avenue North as a testbed

16 Avenue North is a major road and key link in Calgary's transportation network. This multi-lane corridor connects three fire stations, an emergency medical service station, a level 1 trauma hospital and two post-secondary institutions and it is often used for emergency vehicle routing. In addition, some intersections along the corridor were already equipped for emergency pre-emption. As a result, the corridor provided an opportunity to support both internal and third party research and development in the short term, but it also prepares Calgary for the anticipated arrival of automated vehicles in the long term.

Project objectives and outcomes

Calgary set out to test and implement connected vehicle applications that could provide an immediate and tangible benefit to both itself and the public. Four applications were tested. The testing focused on an emergency pre-emption application. Other applications included a connected vehicle validator that provided audio and visual alerts as well as an application to assist visually impaired pedestrians. This allowed Calgary to compare reliability and usefulness based on how much time passed between the emergency call being received and when the emergency vehicle arrived at its destination.

The project showed that the V2I pre-emption application benefitted the Calgary Fire Department. The V2I application reportedly provided some advantages over the current alternative methods, such as:

- Allowing for message exchange between the communication equipment in the emergency vehicle and the roadside equipment. With current methods, messages are only received by the roadside equipment. This exchange between the roadside equipment and the communication equipment in the emergency vehicle provides warnings to dispatchers of events like pedestrians in crosswalks or predicted collision warnings.
- The potential to communicate warnings of approaching emergency vehicles to other drivers or pedestrians.
- Integration into a more complex system allowing it to be used for other vehicles.

The data collected from the project showed that the pre-emption technology and equipment resulted in decreased travel times during peak hours. Overall travel time reductions were recorded during both peak morning and afternoon hours with as much as a 16.2 per cent reduction during the morning peak hours. The outcome of the project supports the report's conclusion that the reduction in travel time is directly related to the addition of connected vehicle pre-emption technology.

Conclusion

Projects like this are creating the roadmap for future connected vehicle innovation. We expect adoption of autonomous vehicle technologies to continue to grow across sectors. This undoubtedly calls for careful mitigation of liability associated with such projects for all ecosystem players.

BLG's Autonomous Vehicles Group

With broad industry experience and particular expertise in the development of autonomous vehicle and road technology, BLG's Autonomous Vehicles Group is here to help clients navigate the opportunities and challenges this revolutionary era of autonomy is expected to bring. For more information on AV, please reach out to your BLG lawyer or one of the key contacts listed below.

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