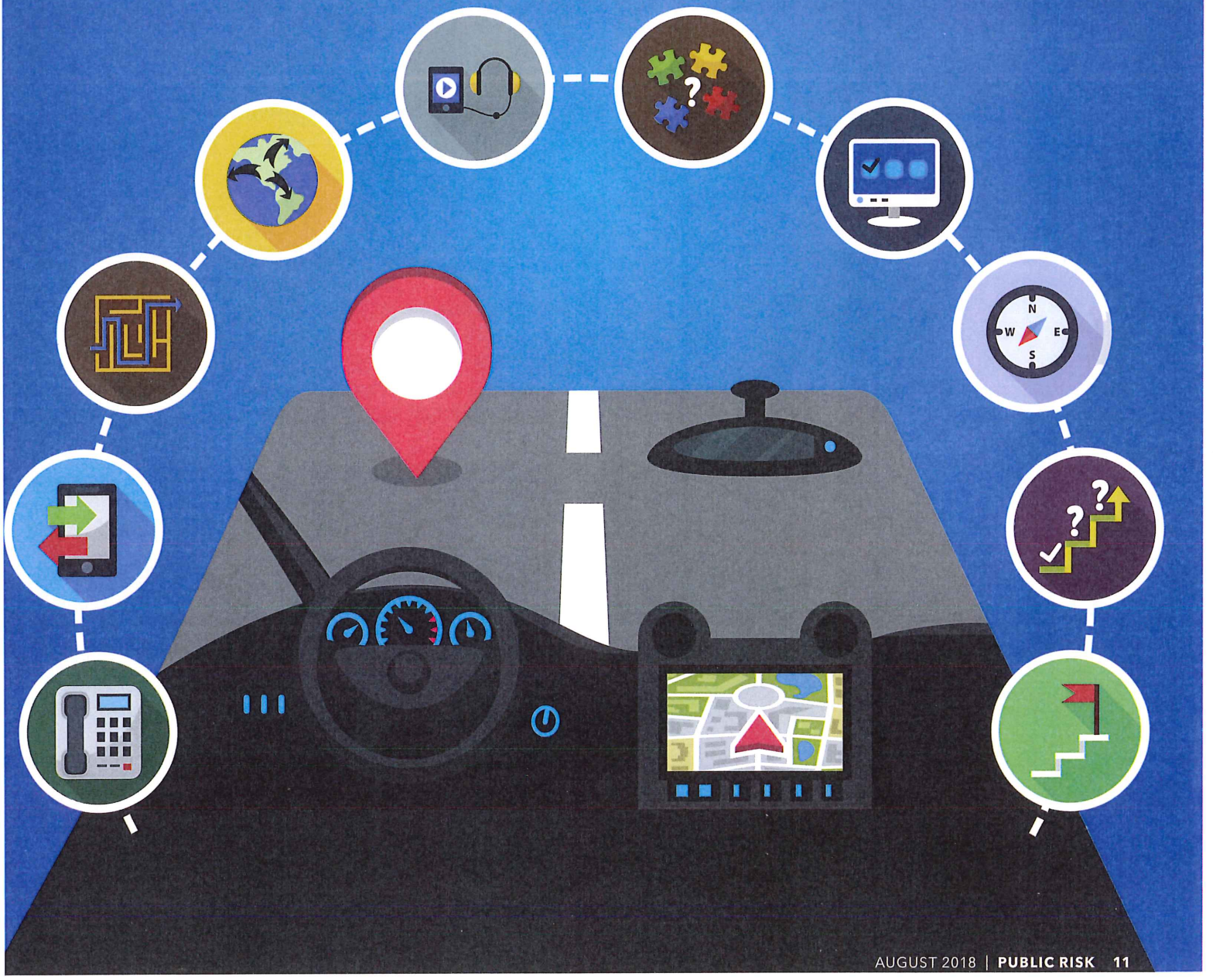
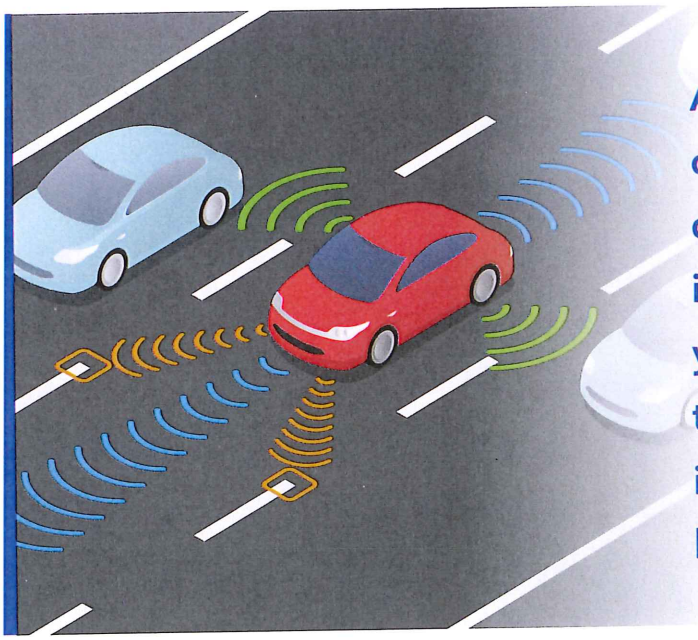
SELF-DRIVING CARS:

A Look Into Municipalities' Future Responsibilities

BY KENNY SMITH

THERE ARE MANY ORGANIZATIONS, INDUSTRIES AND INDIVIDUALS CAREFULLY FOLLOWING THE PROGRESS of self-driving vehicle technology and the developing infrastructure to support its integration into mainstream society. Currently there are 1.4 billion cars on the roadway; however, many of those cars will begin to be replaced by self-driving vehicles, potentially sooner than we expect. The public sector is a critical stakeholder with the potential to be significantly impacted by these advancements, as self-driving automobiles present a whole new risk exposure. In the same way self-driving vehicles will likely disrupt the structure of the automobile insurance industry, they will also alter the infrastructure of our communities–something that municipalities should begin to consider now.





As this technology continues to develop over the next couple of years, we will discover insight as to what our roadway infrastructure responsibilities will be. If your municipality has not begun discussing the implementation of V2I technology, now is the time. The process will be extensive, but well worth the benefits.

V2V + V2I = DRIVING 2.0

Self-driving cars operate utilizing vehicle-to-vehicle technology (V2V). V2V technology allows cars to wirelessly exchange information such as speed and positioning of surrounding cars, as well as detect obstructions created by traffic, terrain or weather and alert drivers with visual, tactile and audible alerts. This technology, to some degree, is already utilized in today's new cars and doesn't just allow drivers to drive smarter, it helps them drive safer. In 2015, there were 6.3 million police-reported vehicle crashes and it is estimated that 615,000 of those crashes could have been prevented with V2V technology.

While V2V technology provides critical information exchange between vehicles, what about the world they are maneuvering through? Vehicle-to-infrastructure (V2I) technology allows vehicles to communicate with roadway infrastructure such as traffic lights, stop signs, work zones and school zones and is the second critical ingredient needed to successfully integrate self-driving cars into our communities. For example, utilizing V2I, traffic controllers will be able to communicate with vehicles about signal phasing and timing, alerting drivers to a likely encounter with a red light based on his or her speed and helping them avoid having to brake suddenly or speed up through an intersection.

THE BENEFITS

The combination of V2V and V2I technology capabilities will create safer and less congested roadways. The National Highway Traffic Safety Administration (NHTSA) estimates that the combination of this technology could eliminate or reduce the severity of up to 80 percent of non-impaired crashes, including crashes that take place at intersections or while changing lanes. Additionally, such technology can alert drivers of numerous other scenarios, including but not limited to:

- Pedestrians in the roadway
- When a vehicle brakes suddenly
- Warn drivers if they are about to run a red light
- Warn drivers of vehicles in their blind spot
- Warn drivers of icy roadways
- Alert drivers of work zones or first responders on the side of the road
- Recommend speed adjustments to avoid hitting a red light, idling or unnecessary stops to save gas

WHAT TO CONSIDER

The Department's Federal Highway Administration has issued guidance for V2I technology to assist transportation planners with integration. While it is the duty of the municipality to update their roadway infrastructure to assist in reducing vehicle crashes and to keep up with our advancing world, there are many critical questions regarding this new technology that need to be answered first. For example, where will funding come from, both initially as well as for ongoing maintenance and inspections? How long will it realistically take to implement this technology, and how will it impact the community?

The Department of Transportation (DOT) hopes to answer all of these questions and more through their website—V2IDeploy.com—which is still under construction, but the DOT has indicated it will provide resources for local and state agencies interested in the use and implementation of V2I technologies. The website will provide information on planning, obtaining funding, contact information for subject matter experts, explanation of benefits, answers to frequently asked questions, news, and access to tools and resources to educate others including case

studies, presentations, infographics, talking points and more.

In the meantime, municipalities should begin to think about the issues and areas of their organization that will be impacted, including:

- **Zoning:** As the presence of autonomous vehicles grows, some visionaries think the need for large parking structures may decrease while the need for pick-up and drop-off areas for shared and on-demand ride services will likely increase. Additionally, municipalities may be asked to rezone large parking facilities for commercial or business use since autonomous vehicles, as mentioned above, may provide more shared and on-demand ride services eliminating the need for as many parking garages and spots.
- **Revenue:** Currently, many municipalities rely on a large stream of revenue from traffic violations, according to data this can be up to 59 percent. However, with smart and safer roadways and vehicles, this number will drastically be reduced, forcing municipalities to find new avenues of revenue.
- **Staffing:** Due to safer roadways and vehicles, municipalities may be able to reduce the amount of police officers patrolling the roadways. Instead, staff may need to be shifted to support the back-office, in-field traffic and system operations. In addition, when it comes time to install the new infrastructure, municipalities may need to hire trained employees to install the advanced technology or alternatively, train their current staff.

The implementation of autonomous vehicles into municipalities will require many decisions and changes; however, the benefits of the new technology will forever change our roadways. But, until a viable autonomous vehicle actually arrives on our roadways the new vehicles will continue to integrate new V2V and V2I technology to assist the driver in the safe operation of the vehicle. As this technology continues to develop over the next couple of years, we will discover insight as to what our roadway infrastructure responsibilities will be. If your municipality has not begun discussing the implementation of V2I technology, now is the time. The process will be extensive, but well worth the benefits. ■

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