



## **A SOLUTION TO SPEED ENFORCEMENT IN HIGH-RISK AREAS IN THE US**

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### **EXECUTIVE SUMMARY**

People are dying on US roads, highways and interstates because irresponsible drivers speed through high-risk areas such as construction zones and school zones. Law enforcement pursuit of speed violators through these kinds of areas only exacerbates unsafe conditions, putting everyone on or near roads in greater danger. Statistics show a 5% increase in speed related deaths from 2014 to 2017, including deaths in high-risk areas where speed enforcement is extremely difficult.

While still in the field-testing phase of development, there are strong indications that Leonardo's ALPR-based speed enforcement technology, the ELSAG SpeedEnforcer, will become the next generation of automatic speed enforcement technology. This innovative technology will support law enforcement's real-time interdiction of menacing drivers who are responsible for the deaths of tens of thousands of our country's citizens, every year.

SpeedEnforcer satisfies law enforcement's need for a solution that allows officers to identify speed violators in high-risk areas in real time, and that allows officers to locate the speeder once they exit the speed zone, where interdiction can occur safely, immediately making roads safer for everyone. While speed cameras identify speeders in real time and trigger an automatic ticketing process, they cannot facilitate real-time interdiction outside dangerous road corridors. While ticketing is important for accountability, which can change future driver behavior toward safer choices, what saves lives is the real-time discontinuance of speeding vehicles, as soon as they are identified in the act.

SpeedEnforcer is expected to appeal to the public as a positive-impact speed enforcement solution and also appeal to public safety and speed enforcement stakeholders at federal, state and local levels.

### **THE PROBLEM**

There is an upward trend in speed related deaths plaguing our country, created by insensitive drivers who decline to obey speed limits. Are they late to an appointment? Just impatient? Are they young and inexperienced without respect for the dangers speeding imposing on everyone on or near roadways? There are studies that break down the demographics of speeders and it's helpful to understand mindsets to help deter speeding in the first place, but regardless of the motivations of these careless drivers, law enforcement sets a high priority on finding new, safe ways to catch speeders in the act and hold them accountable—especially speeders driving through high-risk areas such as construction zones, school zones, tunnels and bridges. These areas present a higher degree of danger due to the presence of construction equipment, changes in roadway design and markings, increased pedestrian activity, and narrow lanes. Pursuing speed

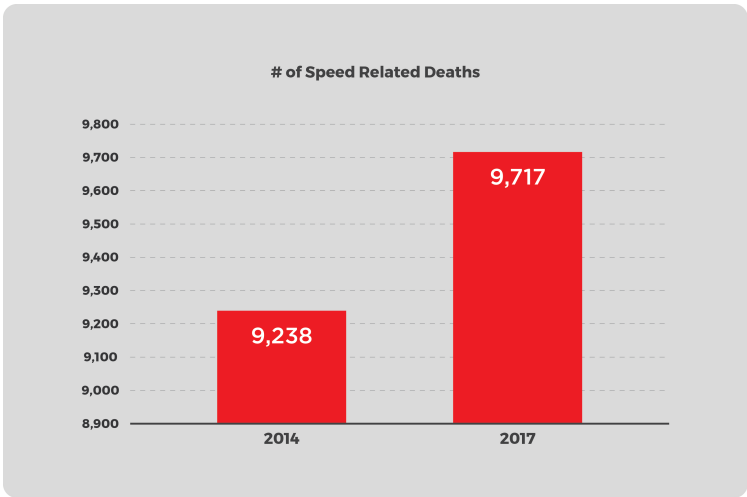


violators under these circumstances compounds the safety issue, putting drivers, pedestrians, cyclists, roadside workers and officers at a greater risk for injury and death.

There are many national organizations that gather and analyze data related to speed-related incidents. Their statistics are staggering. The US Department of Transportation's National Highway Traffic Safety Administration (NHTSA) reveals that speeding caused the deaths of 9,238 people in 2014, increasing by 5% in 2017 to 9,717 deaths.<sup>1,2</sup> See figure 1 below.

Surely, even apathetic speeders would respect traffic rules and speed limits in school zones, where the safety of children is at stake. Yet a 2017 driver safety public opinion poll conducted by the National Safety Council (NSC) found that 17% of people surveyed considered it acceptable to speed in a school zone.<sup>3</sup> The NHTSA's Fatality Analysis Reporting System (FARS) recorded 48 speed-related crashes in school zones in 2015, resulting in 24 deaths.<sup>4</sup> For that same year, there were 409 work zone crashes related to speeding, 45% of which resulted in fatalities.<sup>5</sup> The 2015 numbers increased from 2014 which saw 292 speeding incidents, with 58% resulting in fatalities.<sup>6</sup> These numbers fly in the face of our law enforcement and public safety officials dedicated to keeping citizens safe.

**Figure 1: US Department of Transportation, NHTSA Traffic Safety Facts, DOT HS 812 318**



In spite of law enforcement's best practices for enforcing speed in high-risk areas, accidents happen, and news headlines fill in the details that statistics can't. In May 2015, in New York City, 12-year-old Ervi Secundino was struck by a speeding cab around 3:15 pm outside his Harlem school and dragged a block. He was pronounced dead at the hospital.<sup>7</sup> In October 2016, Jose Torres, a senior at McArthur High School in Houston, TX was struck and killed as he walked to school. The driver, a 33-year-old woman dropping off her child, was turning into the school's driveway when her vehicle struck Torres at about 6:45 a.m. Authorities said she was likely traveling 35 to 40 mph, nearly double the 20-mph school-zone speed limit.<sup>8</sup> And on January 10, 2017, in Pasadena, MD, a 58-year-old flagger on a bridge repair construction site was struck and killed by a Jeep Grand



Cherokee travelling too fast as traffic was reducing to one lane. The Jeep driver didn't see Rodney Christopher Chase, flagging traffic to a stop. Chase died at the scene.<sup>9</sup>

## **THE NEEDS**

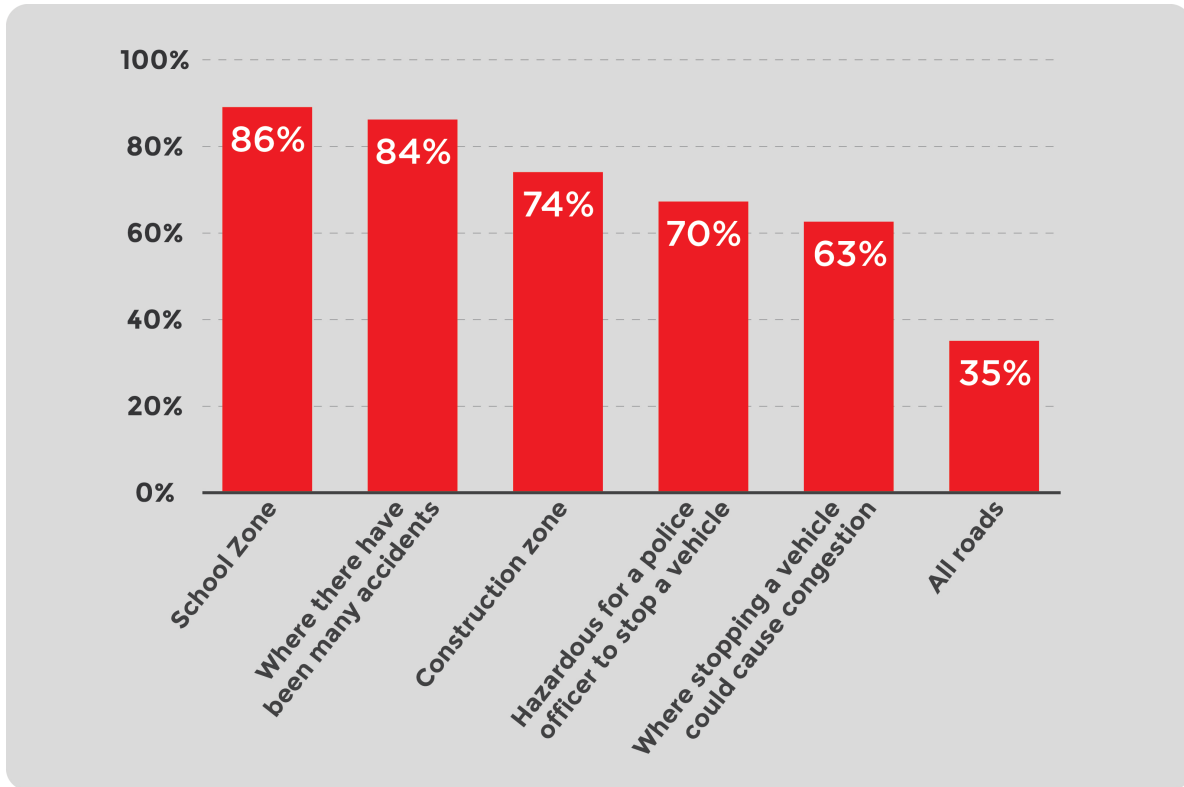
What else can law enforcement add to their arsenal to deter speeding in high-risk areas and safely stop violators? With the increase in use of digital, automatic law enforcement technologies, we can look to those manufacturers for a solution that can identify speeders but not require officers to manage enforcement from inside high-risk areas. Rather, the solution will facilitate real-time interdiction outside dangerous speed zones where the stop can be conducted safely, without jeopardizing the safety of drivers, pedestrians, cyclists, workers and officers.

Any viable solution will need to be accepted and supported by the public in order to be effective in encouraging voluntary compliance with speed laws. A 2011 national survey by the NHTSA indicated that many drivers felt the use of speed cameras could help with speed management in high-risk areas. Eighty-six percent of drivers polled felt that speed cameras would be useful in school zones, 84% thought they would be effective in places where there had been many crashes, 74% indicated speed cameras would assist speed management in construction zones, 70% felt they could be effective in areas where it would be hazardous for a police officer to stop a driver, and 63% of those surveyed felt speed cameras could have a positive impact in areas where stopping a vehicle could cause traffic congestion.<sup>10</sup>

### ***Figure 2: Locations Where Speed Cameras May Be Useful***

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US Department of Transportation, NHTSA Technology Traffic Series, DOT HS 811 866, December 2013; 2011 National Survey of Speeding Attitudes and Behaviors

Public acceptance of automatic speed enforcement technology will help gain support of stakeholders and decision makers involved in the development of speed enforcement programs. A study done by the Roadway Safety Institute interviewed law enforcement and public health stakeholders, as well as non-enforcement government stakeholders, and learned that the key factors in support of automatic enforcement systems are safety improvement, public acceptance and measures to prevent abuse of the system.<sup>11</sup>

## THE PROGRESS

It is well documented that speed cameras have been effective in reducing speed in many states. According to the Insurance Institute for Highway Safety, as of October 2017, there are 142 communities engaged in speed camera programs. This includes statewide work zone programs in Illinois, Maryland and Oregon.<sup>12</sup> In Scottsdale, AZ, before a speed camera pilot program, 15 percent of drivers were traveling more than 75 mph through areas posted at 65 mph. Once the signs and cameras were installed, the percentage of violators fell to one to two percent.<sup>13</sup> Analysis of speed camera effectiveness in Charlotte, NC over a five-year period indicates that the camera program reduced speeds and likely reduced collisions in corridors with automated enforcement.<sup>14</sup> In May 2007, Montgomery County, Maryland implemented an automated speed enforcement program using cameras on residential streets with speed limits of

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35 mph or lower, including school zones. In 2012, the county began periodically moving the cameras along the zone corridor. The overall effect of the program was a 39% reduction in the likelihood that a crash resulted in a serious injury or fatality.<sup>15</sup>

Speed cameras are a step in the right direction, but they are not a total speed enforcement solution for high-risk areas. While they can automatically identify speeders, can issue tickets and can become a speed deterrent over time, speed cameras cannot help law enforcement safely stop speeders in their tracks, interrupting the danger. And the safe interdiction of speeding violators in the act saves lives.

## **THE ADVANCED TECHNOLOGY SOLUTION**

Automatic License Plate Recognition (ALPR) technology takes speed cameras a step further. They automatically identify speeders and immediately, instantaneously broadcast data associated with speeding vehicles to law enforcement, waiting outside the dangerous zones. The information allows officers to spot the violator quickly, and interdict much more safely than inside the risky areas. ALPR systems are in use in every state in the US helping to identify unlicensed drivers and unregistered vehicles, aiding the recovery of stolen vehicles, finding missing persons, and assisting other public safety law enforcement missions.

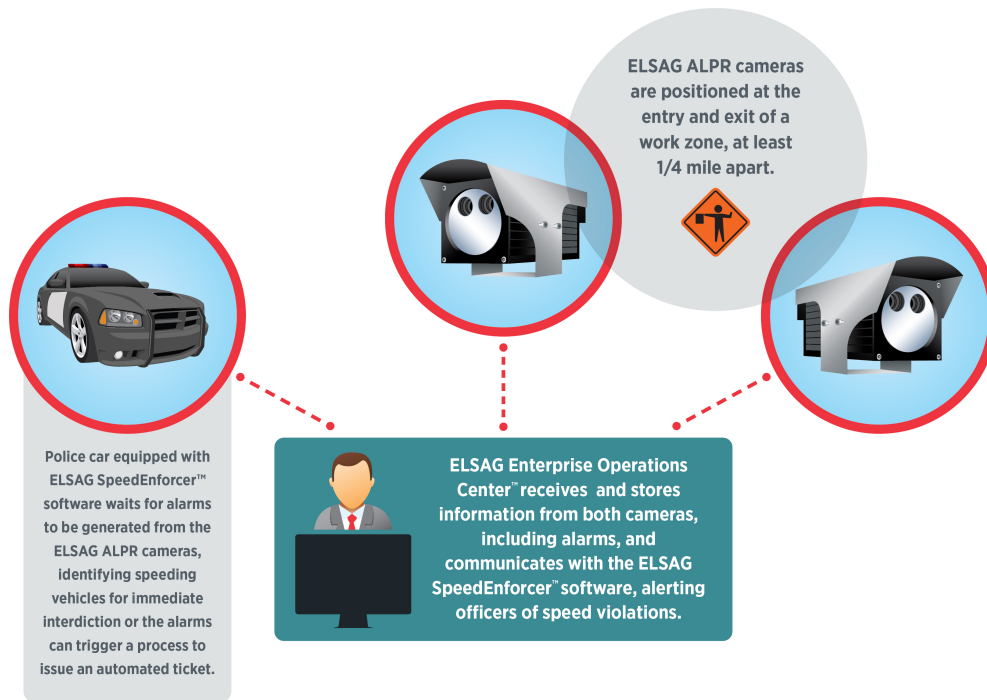
The technology, ELSAG SpeedEnforcer™, was developed by Leonardo, an ALPR manufacturer in the United States, with global roots in aerospace, defense and security technologies. Like speed cameras, ELSAG SpeedEnforcer automatically identifies speeders in real time using a simple speed over time/distance calculation. But unlike speed cameras, ELSAG SpeedEnforcer instantaneously broadcasts alarms to dispatch centers and nearby officers via wireless transmission. Officers who are monitoring high-risk speed zones are ready to interdict in a safe area outside the monitored corridor. The information provided to officials for each speeder identified includes the vehicle's traveling speed, license plate number, general vehicle description via a color photo of the vehicle's license plate and surrounding area, and the location of the speeding incident.

It is the belief that placing signs at the entrance to high-risk zones warning drivers that automatic average speed measurement may be in effect, will encourage drivers to voluntarily comply with speed limits and also adjust long-term behavior toward speed compliance. The NHTSA study mentioned above, in which the majority of those surveyed felt speed cameras can be useful in high-risk areas, gives reason to believe ELSAG SpeedEnforcer will be accepted as a viable law enforcement speed management and enforcement tool. Furthermore, the public can only benefit from ELSAG SpeedEnforcer's ability to facilitate safer, real-time speed enforcement, removing active speeders and the threats they cause from streets, highways and interstates. Plus, ELSAG SpeedEnforcer data can be analyzed for traffic studies that can further enhance roadway safety.

### ***Figure 3: Overview of SpeedEnforcer™ ALPR-based Speed Enforcement System***

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Public acceptance of ELSAG SpeedEnforcer is the first step in securing support from stakeholders involved in speed enforcement plans and programs. Beyond that, ELSAG SpeedEnforcer has other benefits that will appeal to decision makers, such as the system's ability to collect data day and night, around the clock. The data provides a much easier way to measure speed enforcement performance toward agency goals, compared to traditional survey methods. ELSAG SpeedEnforcer data can also help identify times of high-volume traffic, high incidents of speeding, and other times when active enforcement is most warranted. Further analysis of data can provide flexibility in data sampling, as well as scrutiny of large population sizes, which can provide a wide range of statistical information. Perhaps the most exciting aspect of ELSAG SpeedEnforcer is that, unlike speed cameras that only collect data on speeders, this technology does not discriminate. It captures data associated with every vehicle that passes through the monitored zone. ELSAG SpeedEnforcer systems trigger a ticketing process, if desired, and are easy to install and move to different locations, as needed.

**Figure 4: Overview of Benefits of SpeedEnforcer™ ALPR-based Speed Enforcement System (there's an extra space before broadcasts in second bullet green box)**

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## Improves speed enforcement safety in high-risk areas

- Identifies speeders in real time using speed over time/distance calculation
- Instantaneously broadcasts alarms to dispatch centers and nearby officers
- Officers can interdict safely in an area outside the zone

## Collects data on all vehicles passing through the speed zone, not just those speeding

## Collects data 24/7

- Measures speed enforcement performance toward agency goals, with less effort than traditional survey methods
- Data analysis can help identify times when active enforcement is most warranted
- Data analysis can lead to the development of new traffic safety measures

## THE CONCLUSION

Due to the increase in injuries and fatalities occurring on our streets, the nation's leaders at federal, state and local levels are highly focused on improving safety. Excessive speed is a major contributor to injuries and fatalities, not just for drivers and passengers, but for pedestrians, cyclists, roadside workers and law enforcement officers. New technology is emerging and a new Automatic License Plate Recognition-based speed enforcement system, Leonardo's ELSAG SpeedEnforcer, is an encouraging leap forward in the fight to improve the safety of speed enforcement in high-risk areas. This technology encourages voluntary compliance with speed limits and facilitates the real-time shutdown of speeders who disregard the value of life—their own and of those sharing the roads. ELSAG SpeedEnforcer will be more effective than speed cameras, the technology predecessor, and based on documentation, there is reason to believe the ALPR-based speed enforcement technology will be just as accepted by the public and by transportation and public safety stakeholders. It's time to seriously consider ELSAG SpeedEnforcer as viable tool that significantly helps close the gap between today's dangerous speed enforcement in high-risk areas and the public safety goals our country's law enforcement is steadfastly devoted to serving.

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