

Accelerating Smart

When innovative technology companies combine forces to improve cities — the result might just change urban landscapes throughout the world. One such partnership is currently underway in the City of Las Vegas, where NTT and Dell Technologies are using cutting edge technologies to improve safety in several areas of the city.

Together with our partners, NTT is Accelerating Smart. We are driving new solutions that push the envelope on existing technologies. We are looking toward the future to imagine the possibilities that technology can bring to improve livability in urban centers and beyond.

NTT is one of the world's largest information, communication and technology companies. Our operations and capabilities span six continents connecting people and technologies. The depth and breadth of our global offerings span everything from mobile phones to data centers, with a strong foundation, focus and corporate commitment to innovation. What makes NTT unique is the combined know-how of the NTT Group companies. We know that no single company can have all the answers, that's why we have combined forces to create solutions to improve the lives of citizens throughout the world.

Innovate.Vegas

A few miles off the Las Vegas strip, in an area known as the Innovation District, a smart safety solution has been deployed. The initiative is part of the city's larger plan — called Innovate.Vegas. Las Vegas created the Innovation District to provide a proving ground for emerging technologies. Vegas is all in on becoming a smart city, even translating that commitment to a charter, “to provide safe, reliable and efficient civic technology that stimulates economic growth.” Las Vegas has invested significantly in smart infrastructure to make the charter a reality, from installing 123 miles of fiber optic cable to creating other smart solutions around the city, such the first autonomous passenger bus route in the United States. NTT and Dell Technologies have joined Las Vegas to help implement the city's vision, starting with a smart safety solution.



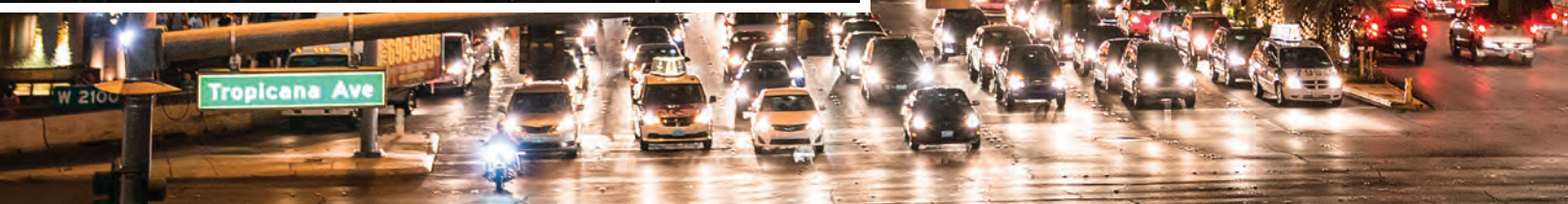
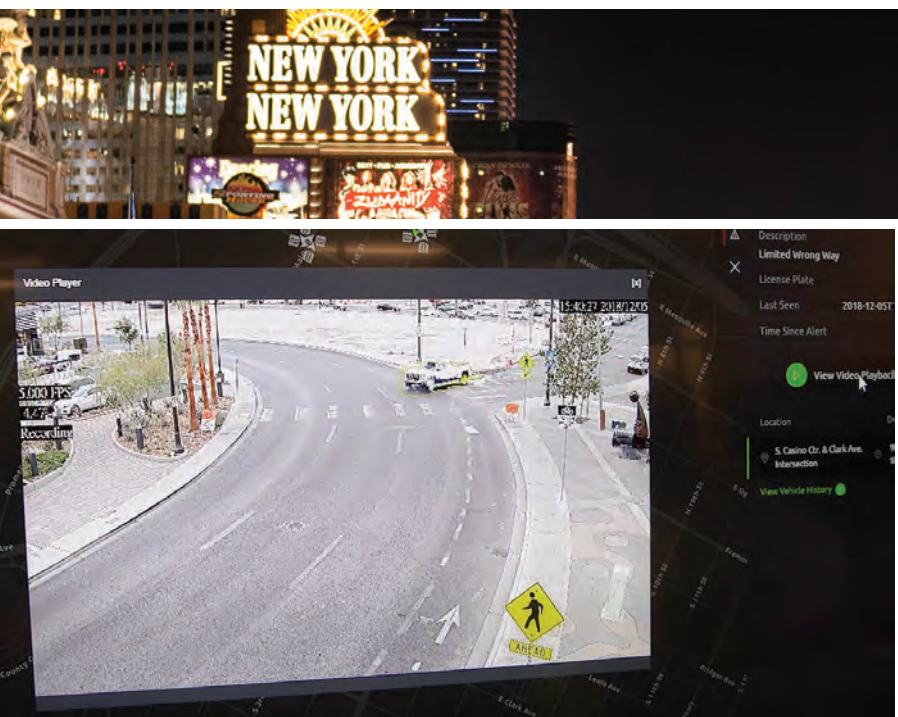
Accelerating Smart Using Technology for a Safe City

In the Las Vegas Innovation District, NTT is leveraging internet of things (IoT), edge and predictive analytics to help improve public safety. High-definition video cameras, sound and motion sensors, and an array of IoT devices are being integrated and deployed to monitor a geographic area within the Innovation District to create a multi-channel solution. The smart public safety solution also integrates historical data sources, such as crime, weather and social media data. There are many ways in which this solution can facilitate public safety. For example, video cameras could scan for a license plate identified in an AMBER Alert or help locate a missing person. The integrated solution could detect a vehicle of interest (such as stolen vehicles or vehicles associated with criminal activities) or a vehicle driving in the wrong direction, as well as gunshots, panic screams or breaking glass, assisting and alerting first responders in real time.

The smart safety solution proactively provides real-time notification of potential and active public safety incidents to first responders, as well as command and control authorities. By leveraging advanced predictive analytics, including machine learning technologies, the Smart Platform “learns” normal patterns and detects patterns



that are abnormal. The Smart Platform monitors specific types of incidents that can be detected through video and sound sensor analytics running on edge compute devices. Designed with versatility in mind, the Smart Platform can be expanded to detect and alert a wider variety of incident types or configured to interact with new data sources that are based on open standards. Future plans could include advanced contextual and situational awareness modules or other advanced detection components, automated incident response components, such as drone deployments, for greater awareness of the developing situation.



How Smart Is Smart?

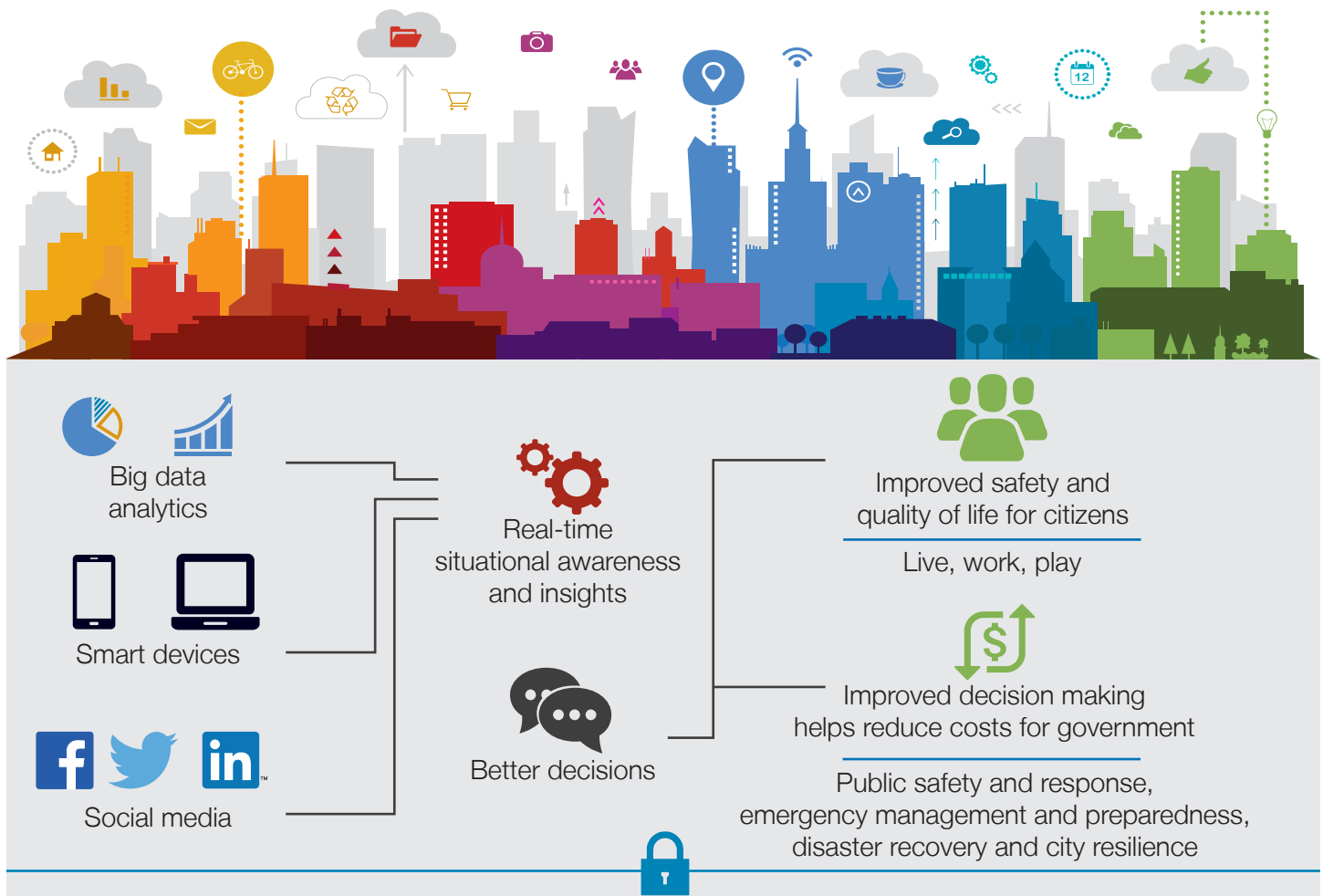
For the Las Vegas Innovation District, we began the smart safety solution by creating an agile, robust cognitive foundation of information and communications technology (ICT) systems. The systems “think” and can assess multiple data sources, perceive current conditions, and plan, decide and act on those conditions. It is possible for our Smart Platform to even learn from the consequences of its actions, using past knowledge to refine current and future decisions.

In Las Vegas, NTT is deploying a Smart Platform solution that enables contextual, situational awareness and insight. Our complete solution involves many technologies and partners, all seamlessly integrated to facilitate safety. Here’s how:

- **Sensors and edge computing at work:** Using a secure, Smart Platform with micro data centers located near sensors around the Innovation District allows for rapid deployment of ICT resources and faster analysis of sensor inputs, enabling safety professionals to detect incidents and take actions quickly.
- **Predictive and diagnostic analytics at play:** Micro data centers use advanced analytics to deliver real-time

data to locations where data can provide maximum value. Diagnostic analytics at the edge analyze large volumes of data, but only send data indicating an incident has occurred or needs investigation back to the core. This approach minimizes data transport volumes and response times to reduce the demands on the ICT infrastructure.

- **Applying artificial intelligence (AI):** Cognitive analytics correlate and apply AI and machine learning techniques to the multiple edge data inputs and sources, including historical data, crime information, weather data and social media updates. This information provides deeper insights for responsive services to combat crime and improve public safety.
- **Deep learning at work:** The Smart Platform allows the ICT infrastructure to monitor, adjust or move workloads dynamically, based on the specific situation. For example, in future versions, if an AMBER alert is issued, the Smart Platform could automatically scale up the network and compute power for the portions of the system that perform enhanced and license plate recognition functions or capture higher resolution images than normal.



Connecting Communities, Safe Futures

According to a recent study by the McKinsey Global Institute, combining additional technologies could have a dramatic impact on public safety. McKinsey asserts that cities that deploy a broad spectrum of smart technologies could reduce fatalities from homicides, road traffic and fires by as much as 10%.*

The more data and information, the safer the city.

Imagine the possibilities if an emergency call center was optimized, getting first responders underway faster. As responders race toward the emergency, what if traffic signals were synchronized to give emergency vehicles the right of way? Every second that could be shaved off a response time could save a life.

As populations increase in cities, the demand for services will also increase and create more pressure on the limited resources available. Any efficiencies gained through technology that improve safety, provide peace of mind and reduce crime are well worth the investment. The NTT Smart Platform is a force multiplier, enabling governments and other organizations to do more with less.

For more information, visit nttdata.com or contact a representative from our Accelerating Smart team:

William Baver, william.baver@nttdata.com

John Saez, john.saez@nttdata.com

Joe Kyle, joseph.kyle@nttdata.com

