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A Safe and Integrated City

Enhancing safety and security in today's city through funding and integrating the latest technologies.

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By 2050, it is projected that there will be 3.1 billion additional people living in cities as the trend toward globalization and urbanization continues with approximately 80% of the world's GDP coming from urban centers.[1]

Executive Summary

People are moving back to urban areas to have access to industry, as well as the services and conveniences a city offers. This growing urban population makes planning for current and future needs more difficult and puts increased pressure on infrastructure and budgets. As a city's population grows, security becomes an even larger issue.2 Increased criminal activities create additional stress for the cities law enforcement and the judicial system, since the city now requires additional police patrolling. In addition, there seems to be a new competitiveness for cities to attract and retain residents and corporations to take advantage of the benefits of a broader tax base.

At a recent United States Conference of Mayors 81st Winter Meeting, the mayors explored strategies and best practices to prepare for the growing wave of retirees who desire the convenience of an urban environment.3 Their vision for the safe, integrated city of tomorrow is focused on securing people, property and processes. As a result, city mayors, Chiefs of Police, and IT managers are under increasing pressure to ensure public safety. Leveraging the best of technology, integrating systems, and sharing information helps create overall situational awareness.

As leaders, they are challenged to leverage the most from their capital investments by implementing the optimal security and fire safety technologies, but more fundamentally, find a way to finance this necessary technology. The purpose of this white paper is to explore ways that city leaders can work towards the goal of a safe, integrated city and options for financing safety and security technologies for their city.
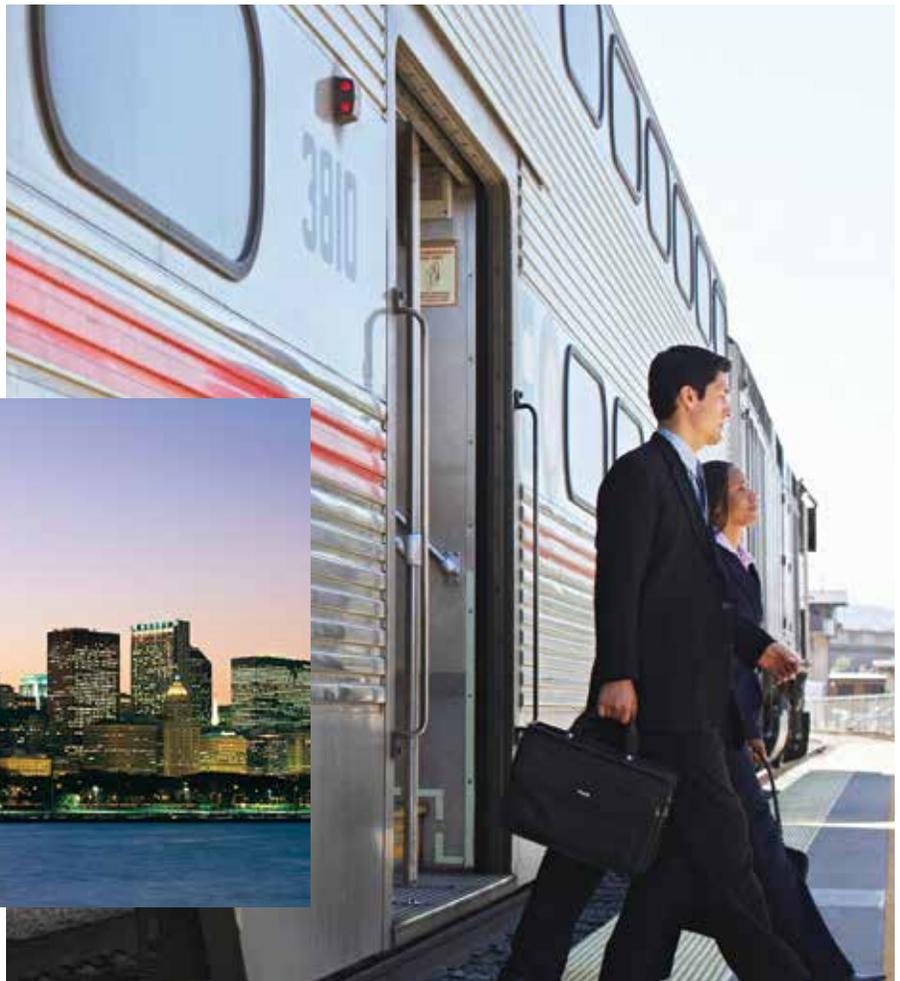
Creating a vision
for the city of tomorrow

A city is an entity that is a collection of services and facilities—spanning public administration, the private sector, mobility and urban transportation, the financial sector, healthcare, city services, and energy generation. Technology will continue to play a vital role in the transformation of today's cities. For example, the availability of affordable 4G LTE not only provides access to on-demand internet services and social networking, but also allows the implementation of advanced public services while reducing costs. The vision for the safe, integrated city of tomorrow is focused on securing people, property, and processes.

Securing people
Providing a high level of safety and security for the public, especially in known "hot spots" of criminal activity and gathering places such as busy downtown centers, parks, or event venues, is a commitment that every mayor makes upon election. It is critical that city management and first responders develop a Concept of Operations (CONOPS) for citywide emergency preparedness and have a plan in place to immediately verify threats and respond accordingly.

Securing property
Protecting key resources and critical infrastructure in and around the city is also imperative, starting with an early warning of a security breach along with a solid methodology to verify the threat and respond immediately by taking the appropriate counter measures. These city resources and critical infrastructure are vulnerable to damage or acts of terrorism and need to be secure at all times.

Securing processes
Responding with effective crisis management is critical for an integrated city. An efficient escalation process to address crisis management allows you to make more informed decisions during an emergency operation for seamless coordination between agencies. Effective and efficient processes that help ensure the safety and security of the city and public are essential.

Integrated safe city
In U.S. cities today, there are multiple security systems in place—video surveillance, access control, gunshot detection, alarm monitoring, and dispatch systems. These systems are often standalone and provide limited situational awareness. An integrated solution can improve overall situational awareness, streamline operations, and facilitate a quick response for enhanced public safety throughout the city.

A comprehensive methodology (See Figure 1.) can be applied to detect threats with risk analysis and scenario planning, prevent breaches in security using intelligent devices, respond quickly and appropriately to a crisis, and recover from the event through performing a "post-mortem" or "lessons learned" by city management and first responders. This type of approach facilitates an appropriate, effective response by consistently applying your customized policies, conforming to pre-determined security procedures, and defining appropriate actions for managing daily routines and time-critical processes as well as countermeasures for crisis or emergency situations.

Mitigate	Mobilize	Manage

Detect
- Risk Analysis
- Scenario Planning
- Simulation Services
- Public Awareness

Prevent
- Intrusion Detection
- CCTV
- Access Control
- Fire Detection
- Video Analytics
- Emergency Call Stations

Respond
- CAD
- GIS
- Two Way Comm.
- Mass Notification
- Evacuation Mgmt.
- Crisis Mgmt
- Resource Mgmt

Recover
- "Post Event Analysis" as input for prevention
- Electronic Policy Enforcement of SOPs
- Fail over and redundancy

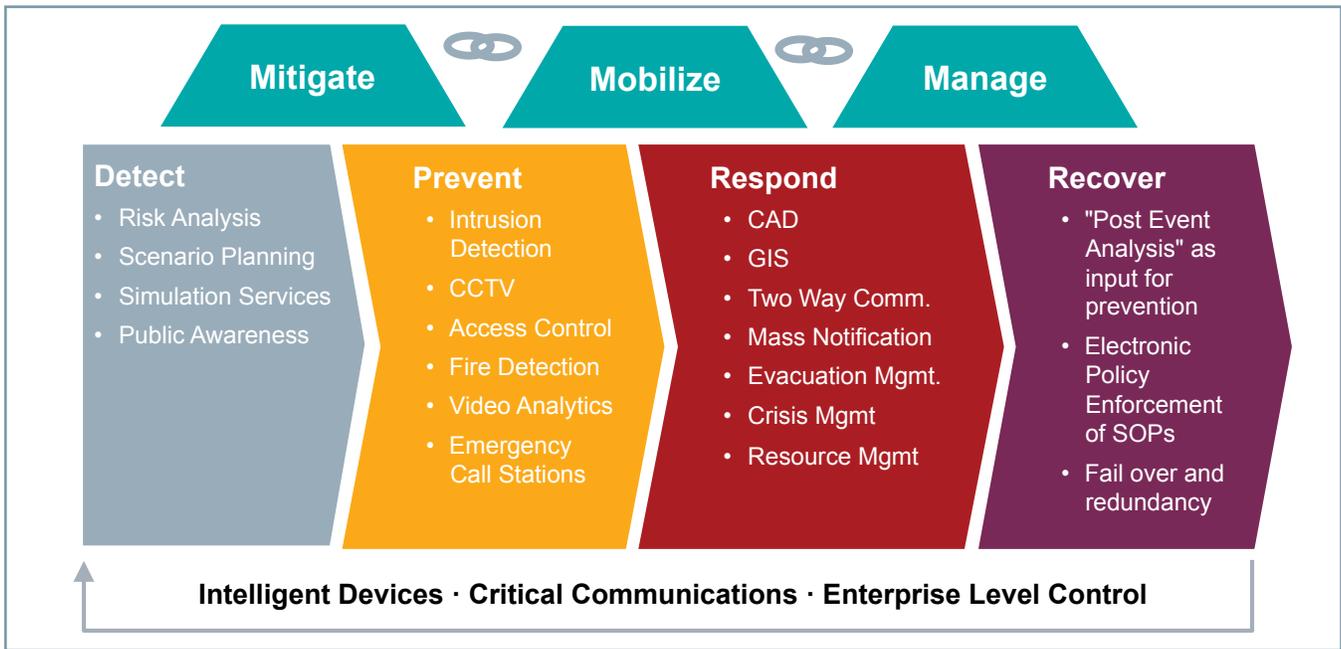**Intelligent Devices · Critical Communications · Enterprise Level Control**

Figure 1. Integrated solutions for improved situational awareness. © Siemens Industry, Inc.

As urbanization continues and population grows, so does the threat to safety and security in our major cities.

Command and Control Center for a city

At the hub of a safe, integrated city is the Command and Control Center, which monitors and controls the day-to-day operation of all systems citywide. The Command and Control Center ties together systems implemented throughout the city including fire, security, and communication sub-systems into a single, integrated system to provide enhanced situational awareness, streamlined operations, and faster response and coordination of law enforcement and public safety officials. In addition, the city's security policies and procedures can be integrated into the system for a customized, effective response to any situation. Fundamentally, a city's Command and Control Center should define appropriate actions and counter measures for a multitude of tasks, from managing daily routines to time-critical processes and emergencies. For example, a city's Command and Control Center monitors a high-crime neighborhood for loitering, gang, and drug-related activity using video surveillance with analytics, together with IP enabled smart lighting to illuminate the area, a License Plate Recognition (LPR) system, and acoustical targeting technology that detects gun shots. A gun shot triggers an intelligent, immediate response by the Event Management System or EMS— without receiving a 911 call. A trained, certified operator accesses the cameras for real-time analysis of the situation, while the LPR system records the license plate of a car leaving the area. The city block is immediately illuminated for public safety purposes and cordoned off from traffic using the intelligent traffic management system (ITM). First responders are informed and they respond to the situation quickly and appropriately, and evacuate a wounded bystander to safety. Investigators can use the recorded video with forensic search capabilities and the LPR to identify and track down the suspects and for their prosecution. In cases

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of vandalism, reparations can potentially be made based on the video evidence. Having a single, centrally managed platform not only simplifies processes, but also efficiently uses the city's resources and reduces response time in an emergency. In fact, many targeted areas for crime or terrorism threats can be monitored remotely.

Tourist attractions, public housing areas, busy downtown areas, public transportation hubs or other critical infrastructure, such as ports, rail yards, and transformer or switching stations, can be closely monitored for safety using video analytics. For example, a public transportation system equipped with video surveillance with analytics software can monitor track safety when a train enters or leaves the station. Video analytics software performance has improved dramatically with the ability to detect multiple security events. For example a suspicious package left in a crowded area could be detected on camera while another camera detects a surge of crowd activity on one side of the lobby area indicating an abnormal circumstance. This type of technology is beneficial since it leverages video surveillance assets, 24x7 operation, and automated functionality whereby events are pushed to operators lessening the requirement to constantly monitor video streams.

Public and private events in and around the city, from concerts to sporting events, can be actively monitored with video surveillance and plans in place for crowd control and emergency response in the event of an emergency due to extreme weather, a medical crisis, or worst case, a terrorist attack. Pre-planning of possible scenarios and training of emergency personnel are critical to ensure all stages of the response are in place and flow smoothly. This process begins with proper dissemination of the information from the operator to first responders on the ground for full situational awareness and access to maps and information, to appropriately and efficiently responding to the crisis or event, and supporting recovery efforts with accurate resources, such as ambulances or hazardous materials personnel after the immediate crisis in under control.

Financing security for your city

There are several options city leaders can investigate to seek financing for these capital investments for infrastructure and security projects. These include:

- Leveraging federal government grants, such as the Urban Area Security Initiatives (UASI) program.
- Utilizing citywide energy improvement initiatives to offset security project cost.
- Initiating Public-Private Partnerships (PPP) within the community.

City leaders should consider the UASI grant program, which supports expanding regional collaboration and is meant to assist participants in the creation of regional systems for prevention, protection, response, and recovery. In correspondence with the 9/11 Commission Act, states are required to ensure that at least 25 percent of appropriated funding is dedicated to terrorism prevention planning, organization, training, exercises, and equipment. While these grants are still available, the challenge of securing a grant has become more difficult due to decreasing amount of federal funds available. For more information on government grant programs, visit www.fema.gov/grants.[4]

Another option for funding security initiatives is to finance them through an Energy Saving Performance (ESP) contracting program at the local government level. These programs assist cities in implementing capital improvements through energy savings, and for most projects the savings produced by the project are sufficient to support the capital cost of the project over the term of the contract. The savings are guaranteed to the city by the project vendor, reducing the project risk. The U.S. Department of Energy (DOE) supports a broad range of energy efficiency measures to reduce energy consumption and associated costs. According to the DOE, "State and local energy costs can account for as much as 10% of a typical government's annual operating budget with electricity accounting for nearly 75% of that cost."[5] When financed through an ESP contracting program, these energy efficieny savings can be reallocated to invest in the city's security initiatives.

Finally, to create true situational awareness throughout the city–from industrial and manufacturing parks to busy downtown shopping areas is to form Public, Private Partnerships, or PPPs. Connecting with private companies, property managers, retail businesses, and community organizations that have security cameras in and around their perimeters allows local government entities to leverage this surveillance technology and data when critical time arises. These partnerships help minimize the upfront capital expense for the city, while improving response time by law enforcement because more information is available to the Command and Control Center. It also fosters a true sense of community where corporations become actively involved in the process of creating a safer, more responsive urban environment. Then, the challenge becomes integrating these different camera and sensor systems into a common platform at the city level. This requires an enabling technology, like an Event Management System or EMS, a software solution that uses web services to integrate multiple third-party systems into a unified, cohesive platform that can "normalize" the data received from different systems and create a common operational picture for the city. For more on how these PPPs can be leveraged, visit the website for The National Council for Public Private Partnerships.[6]

What can and should be done today

For city leaders with the goal of maximizing their existing infrastructure and budget, it is important to invest in technology that has a planned integration path downstream. Having the latest technology may be impressive, but if it cannot integrate into the existing infrastructure or with new technology, then its full potential may never be reached.

In addition, it is important to recognize that detection is not just driven by technology—it's human, too. Communication is the most vital element of effective management in any emergency—from reacting efficiently to the immediate crisis when every second counts to recovering from an event and creating best practices. Armed with intelligence gathered both overseas and domestically, this information needs to be shared quickly with law enforcement to expedite results. To keep this information secure, there will be greater reliance on information technologies and high speed networks. City IT managers will take a greater role in evaluating, purchasing, and implementing these solutions.

As urbanization continues and population grows, so does the threat to safety and security in our major cities. A more intelligent approach is required for the city of tomorrow— one that is safe, integrated, and responsive. Leveraging the best of technology and sharing information helps ensure the best possible response when confronting even the worst possible scenario. Technology will continue to develop and evolve over time. As we look to the future, city leaders will strive to integrate the latest and best technologies in their Command and Control Centers to protect lives, property, and assets and ultimately, make their cities safer and more secure.

About Siemens Industry, Inc.

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Sources

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