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Smart City Interoperability Reference Architecture



**Homeland
Security**

Science and Technology

LACK OF INTEROPERABILITY AMONG EMERGING SMART CITIES TECHNOLOGY

As cities increasingly turn to next generation or smart technologies to aid public safety roles, there is a need to ensure that all of these new technologies are interoperable among the city's departments and with other jurisdictions. These new tech solutions also need to be applicable for jurisdictions of different sizes, so that rural cities can use the same technology as large, urban centers. Further, the emerging terms and language used in emerging smart city architectural principles differ, so that standards may not be the same or even contradict each other.

The U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T) has sponsored the Smart City Interoperability Reference Architecture (SCIRA), and has partnered with the City of St. Louis, Missouri, and the Open Geospatial Consortium (OGC) Innovation Program in this effort. SCIRA's purpose is to assess the state of Smart Cities standards as they develop in the public safety arena and the development of an open architecture for interoperable Internet of Things (IoT) sensors. Through SCIRA's findings, cities could have open, interoperable methods for incorporating IoT sensors into city services and have standards across Smart Cities.

TESTING CURRENT TECHNOLOGY FOR INTEROPERABILITY THROUGH SCIRA PILOT

DHS S&T and its partners will research, design and test SCIRA as an interoperable framework that integrates commercial proprietary IoT sensors for public safety applications at the community level. The SCIRA pilot will develop and test the integration of existing real-world technologies that can augment and even improve city operations and emergency response capabilities with the following resources:

- Situational awareness and a common operating picture;
- Computer aided dispatch;
- Dynamic routing and route planning;
- Workforce mobility; and
- In-building navigation.

PROVIDING COMMON ARCHITECTURE LANGUAGE AND INTEROPERABILITY STANDARDS

Pilot participants will engage stakeholders in a medium-sized city to test how their technology can meet real city needs. The pilot will test the technologies' performances and ability to enhance public safety operations in a series of flooding and building fire scenarios.

DHS S&T's objective is to provide a reference architecture and set of integrated technologies that can be replicated across various sized cities to enhance emergency response and public safety. To accomplish this, SCIRA is providing deployment guides, reusable design patterns and other resources for cities to plan, acquire and implement standards-based, cost-effective, vendor agnostic and future-proof Smart City information technology systems and networks. The resources include IoT, sensor webs and geospatial frameworks.

ENABLING OTHER CITIES TO ENGAGE TECHNOLOGIES IN COST-EFFECTIVE MANNER

The SCIRA pilot will test prototype advances in public safety, while aiming to reduce risk through interoperable information sharing and flexible incorporation of inexpensive web-connected sensors. By seeing how technologies work together in a medium-sized city, pilot participants will gain a better understanding of real and practical technology and interoperability requirements. The pilot will produce a design toolkit that will lower the barriers for other cities and enable them to take advantage of the available technologies in a cost-effective manner.

SCIRA PILOT TIMEFRAME

A pilot workshop in St. Louis in August 2019 for a cross-section of city stakeholders and department heads will be followed by tabletop walkthroughs of scenarios in mid-October 2019. SCIRA will conclude in early December 2019 with an exercise in St. Louis to carry out scenarios and capture demonstration assets.

