



Montgomery County SCALE

Safe Community Alerting Network

The Safe Community Alert (SCALE) network seeks to bring the safety and security that connected devices promise to everyone, regardless of their financial means or techno-savvy. In a network that features a diverse ecosystem of devices, standards, and connectivity options, the SCALE team is demonstrating the feasibility of a new element of the public-sector safety net. Being currently demonstrated in a senior living facility in Montgomery County Maryland, the SCALE network senses hazardous air and water factors as well as some facets of the physical health and well-being of our resident volunteers.

SCALE Phase One

In this real-world test bed, we have deployed environmental sensors that detect a variety of factors including: smoke, carbon dioxide and monoxide, some toxic gases, humidity, temperature, particulates, and some forms of pollen. Sensors also detect water consumption and contaminants. This data complements sensed events related to the health of a resident that could come from devices such as blood glucose monitors, heart monitors, and oxygen machines and even detect events such falls, unauthorized access to sensitive areas, or a resident that has wandered off. Once an event is sensed or data is collected, it goes to the SCALE platform where applications can be built. These applications could take numerous forms. The SCALE team will demonstrate a text message notification system, automatically initiated conference calls with family and care providers, dashboards for first responders, and analytics for public health officials. All of this will be demonstrated with affordable forms of technology and connectivity.

The Montgomery County SCALE team features a diverse group of partners, from small to large businesses to academic institutions and government. The team includes: Montgomery County, UC-Irvine, Brivo Labs, IBM, AT&T, Intel, Victory Housing, SigFox, N5 Sensors, Senseware, TATRC, Captiva, Twilio, Earth Networks, UT-Dallas, IoT Dev Labs, Intel Security, Massachusetts General Hospital/Harvard Medical School, MIT, IoT DC Meetup and the University of Maryland.

During the SmartAmerica Challenge the Team demonstrated the ability to use IoT technologies to provide additional safety and situational awareness to anyone, regardless of their ability to pay for expensive devices and services.

SCALE Phase Two

The second phase of SCALE will unveil an expanded testbed that seeks to answer some of the open problems identified during phase one, engaging the public, businesses, and other governments. The second phase consists primarily of the following components:

- **Extended Test Facilities:** The Team will seek opportunities for test and operational deployments of new IoT technologies and will share the information learned from these test deployments fully permitted by any third-party agreements.
- **Local Partners:** To facilitate the work of the Team and the creation of first-of-a-kind devices, the Team will utilize partners, with an emphasis on and to include, but not necessarily limited to, partners located in a respective Team jurisdiction as laboratories/incubators for IoT technologies and start-ups. All these local partners may serve as resources to the Team as they work together. The Team will make reasonable efforts to incorporate the intentions of this component in any agreement with Local Partners.
- **Establish a public sector led IoT Council:** The council will be comprised of private, academic and government partners focused on supporting industry needs, developing policy, and education/awareness of IoT. This council will consist of members from many types of organizations, but will be driven by the public-sector members.
- **Awareness Events and “Make-a-thons”:** Because one of the goals of the Global Cities Team Challenge is to build public awareness around IoT and to tap the creativity of citizens, students, and entrepreneurs, the Team will hold several forums and “Make-a-thons”. During these events, like hackathons, citizens, students, and entrepreneurs will create their own connected devices while receiving expert guidance on how to do so. The Team will jointly plan events throughout the year to highlight their partnership and share knowledge.

Lessons Learned

Wiring

- Attach one wire to sensor and one to Pi/ADC board to make removing the lid and working inside the box easier (can just disconnect the wires and easily plug back)
- Try to find a way to avoid multiple power cords exiting the boxes as this makes deployment and mobility difficult
- Get better connectors for boards that allow clipping in place, rather than taping “Dupont wires” to the boards

Arranging internal components

- Using regular tape helps with changing box later, but leaving a “flag” may help make removing the tape easier
- Consider which sensors / devices will be more frequently (un)plugged and keep their wires on top
- Make ample vertical space for tall components that need to stick out of the box, like Sigfox adapters

Sensors

- explosive gas sensor died easily, particularly after direct exposure to butane gas from a lighter during testing

Challenges

Healthy Air, Healthy Water, Healthy People

A safe and healthy environment supported by connected devices/sensors, or the Internet of Things (IoT) is now well within the reach of many people. However, too often new technologies do not benefit those who need them most: elderly, infirmed, and vulnerable residents who are unable to afford this level of protection. The public sector already plays a critical role in protecting the most vulnerable around us, and can now do it more effectively and efficiently with IoT.

