



**SBIR/STTR SUCCESS**

# BALFOUR TECHNOLOGIES, LLC

First responders at an incident scene are tasked with not only the stringent physical demands required to avert disasters and save lives, but also with simultaneously deciphering a multitude of information pouring in from various channels. Raw data fed to them via cameras, radiation detectors, and air quality monitors, to name just a few devices, must translate to an integrated and cohesive Common Operating Picture (COP). In an effort to increase the fidelity of the COP and achieve situational awareness across commands, the U.S. Department of Homeland Security Science and Technology Directorate (DHS S&T) set out to fund new technologies through its Small Business Innovation Research (SBIR) program.

## PHASE III SUCCESS

Over \$4.5 million through contracts with the Department of Homeland Security, military and commercial sales; also over \$1 million of private investment capital

## AGENCIES

DHS

## SNAPSHOT

Balfour's technology promotes persistent awareness, which translates into better decisions in managing/securing infrastructure, assets, operations and safety across a wide range of organizations.

## BALFOUR TECHNOLOGIES, LLC

510 Grumman Road West  
Bethpage, NY 11714

[www.bal4.com](http://www.bal4.com)

Balfour Technologies, founded in 1999 by twin brothers Richard and Robert Balfour, knew it could provide this sought-after solution by applying its patented fourDscope® technology to meet the needs of DHS. The resulting innovation is a fourDscope® Automated Situation Awareness (ASA) system that effectively manages a large number of cameras and other sensors and delivers a correlated, integrated, seamless view of extensive areas under surveillance in an interactive, four-dimensional (4-D) display. 4-D refers to the three dimensions of space, but with the added dimension of time which enables operators to evaluate the situation as it changes dynamically. Additional data, such as street names and building locations add another layer of essential information.

First responders using the technology can monitor video cameras at the incident scene, review the status of sensor networks, track assets, share multimedia data in real-time with other users, and set alerts to receive contextual and interactive updates, all of which aids in making tactical decisions in a time critical environment.

During its initial Phase I SBIR project with DHS, Balfour used a \$97K investment to develop and successfully demonstrate a scalable system architecture with live, interactive fourDscope-based demonstrations. The subsequent Phase II work utilized an \$800K SBIR investment and saw the development of a deployable ASA system prototype based on the architecture developed during the first phase. The result was a one-of-a-kind platform that can vastly expand awareness by interactively visualizing massive amounts of intelligence, surveillance, and infrastructure data in a single 4-D Common Operating Environment. FourDscope® can be used on-site, at command centers, or remotely with smart phones, iPads, tablets and laptops.



Balfour's FourDscope® software has a wide range of potential applications in both military and commercial marketplaces.

“The DHS SBIR program supported our research and product development efforts,” says Richard Balfour, President of Balfour Technologies. “We were then able to complete designs, and with Phase III funding, bring to market a system that is currently being deployed in homeland security, public safety & security, and emergency response applications.”

FourDscope® was first tested in 2008 during Operation Lupercal, an emergency response exercise involving DHS and the Los Angeles County Sheriff's Department (LASD). The test simulated the release of a car bomb and a radiological dispersion device during a large public event, and included the LASD Bomb Squad and the Hazardous Material Response Team. FourDscope® allowed users to see a layered view of county images, models of the parade route, simulations of float traffic, information from a police deployment plant, traffic videos, and images from wireless helmet cameras and web cameras. These images were fused together seamlessly into a 4-D scene that enabled the first responders to act swiftly and accordingly. In 2009, fourDscope® was field-tested during the Tournament of the Roses Parade, and it further demonstrated the value of four-dimensional visualization for tactical and operational applications.

Since then, Balfour's innovations and the fourDscope® product line have been utilized in both military and commercial applications. The benefit extends far beyond surveillance; the core technology promotes persistent awareness, which translates into better decisions in managing/securing infrastructure, assets, operations and safety across a wide range of organizations.

“The ability of fourDscope® to run in the ‘cloud’ and connect to a diverse set of real-time sensors and data makes it applicable to many other industries,” says Robert Balfour, Chief Technology Officer at Balfour Technologies. Industrial applications include facilities operations, process controls, asset tracking, remote home/healthcare monitoring, and smart buildings to name a few.

In 2011, Balfour received the coveted Tibbetts award from the Small Business Administration for its fourDscope® ASA technology. The Tibbetts Awards are presented to small businesses and individuals judged to exemplify the best in the SBIR program. Although Balfour was among 44 businesses and eight individuals presented with the award, it was the only company to be nominated by the Department of Homeland Security.

Balfour Technologies began as a two-person consultancy with expertise in real-time 3D visualization, simulation and training. The company's chief offering was fourDviz™ visualization software, which evolved into the award-winning fourDscope® technology. Balfour has received six SBIR awards over the past nine years. The company's steady growth is a testament to the SBIR program – in 2010 Balfour formed a fourDscope® marketing and sales joint venture, VCORE Solutions LLC, and currently employs a team of fourteen fourDscope® specialists. In 2014/15, Balfour was awarded additional DHS SBIR Phase I/II awards to leverage their fourDscope® machine-to-machine (M2M) ASA technology to deploy a secure, mobile “Internet-of-Everything (IoE)” capability for first responders.