

Thousands of search and rescue missions are performed each year for patients with Alzheimer's who wander from their homes. With the help of dbS Productions, search and rescue teams are better equipped to locate lost persons based on past behavior models.

dbS Productions

One of the most pressing problems our elderly generation faces today is Alzheimer's disease and the effects it has on an individual. Each year, over 125,000 search and rescue missions are conducted for Alzheimer's patients who unknowingly wander from their homes. Individuals with dementia might not know why or where they are wandering, making the first few minutes and hours of a rescue operation critical for its success. This epidemic led the founder of Virginia-based dbS Productions to compile a vast database of statistics and reports on missing persons, and the outcome was a tool that could help search & rescue teams to locate any lost person by deciphering where exactly they should be looking.

PHASE III SUCCESS

dbS' Lost Persons App has sold more than 3,000 copies, and the company has received follow-on funding worth \$300,000.

AGENCIES

DHS S&T

SNAPSHOT

dbS Productions has developed life-saving software solutions used by first responders to locate lost persons including those with mental illness, dementia and Autism, as well as lost children.

DBS PRODUCTIONS LLC

P.O. Box 94
Charlottesville, VA 22902

www.dbs-sar.com

"I use past behavior to predict future behavior," says dbS Productions Founder and CEO Robert J. Koester. "If there is a missing four-year old child who ran off into the woods, what does history tell us about where that child ends up? Which way do they run? How do they behave and what are the factors that influence that?"

The Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) First Responders Group (FRG) has teamed up with dbS to develop and test a suite of tools designed for first responders deployed during search and rescue operations. The software, named FIND, uses Lost Person Locator statistics of decisions and patterns made by lost individuals in over 150,000 past cases, to decipher and assess lost person behavior.

Koester, a neuroscientist, who also authored a book titled: Lost Person Behavior: A Search and Rescue Guide on Where to Look – for Land, Air, and Water, has been compiling these kinds of statistics since founding his company in 1989. It wasn't until 2013 that he responded to a solicitation from the Department of Homeland Security through the Small Business Innovation Research (SBIR) program. A Phase I award was granted, followed by a Phase II. The aim of the project was to develop innovative and life-saving software, which would show first responders a heat map with the probability of area for the missing person. Using that information, an initial response-tasking algorithm map shows exactly where search teams should be tasked. This essentially allows the power of formal search theory to be placed into the hands of initial responders with little to no formal training.



dbS' Lost Person Behavior app helps search and rescue missions by drawing upon past behavior. Which way a child may run in the woods, how far, and which direction are all stats that are carefully calculated and considered.

"The DHS S&T project seemed to be the perfect match for our technology platform, and specifically in making spatial models/predictions of where lost persons are most likely to be found," adds Koester. "If you are lost in the Grand Canyon, you behave much different than if you are lost in an urban setting, or in say the Great Smoky Mountains. This model helps the Search and Rescue teams draw more accurate rings."

Right now, the underlying data can be found in an app titled "Lost Person Behavior" for a \$9.99 purchase price. The app is available through Apple as well as

Android platforms. dbS Productions has sold over 3,000 downloads to date. As a supplement, DBS also provides behavioral and statistical profiles for a variety of conditions, including despondent, mentally ill, or even abductions. The app does not depend on connectivity to the internet because the case studies and programs are already integrated into the app, making it ideal for remote areas.

"R&D, by definition, means you don't know what the answer/outcome will be. The SBIR programs gives you the ability to take an innovative idea and then conduct real research and development," says Koester. "As a small business, I could not really allocate 90% of my time to research and development. SBIR allows me to come up with innovative ideas that have a certain

amount of risk, but you get feedback and support, to bring those innovations to market."

Over forty subject types are included on the Lost Person Behavior app. These include persons with mental illness; dementia; lost children; hikers; mountain bikers; persons with Autism; water incidents; and more. For each of the subject categories, there are four main pieces of information along with a behavioral profile, which communicates what this particular group is likely to do. For example, if you are looking for someone with dementia, a background is included on

how they perceive their environment. All of this is summarized in a short, tactical briefing. Investigative questions are also included for the search teams. Finally, an initial suggested task list is generated to help the parties hone in on where to conduct their search.

The app provides statistics used to make the predictive spatial models. One example of this technology is a dispersion model, which deals with direction of travel. There is also an elevation model, which can decipher whether one is most likely to travel uphill or downhill, if you are dealing with mountainous terrain. Although dbS is currently finishing up the Phase II portion of the SBIR project with DHS, over 250 instructors around the world are using the app to teach courses on lost person behavior.

The app itself is just a small part of what dbS Productions is hoping to accomplish. The company currently has the largest database in the world of ground search and rescue incidents (currently almost 150,000 incidents), and is continually adding to its records as part of the SBIR. These stats have been collected from all over the world, and dbS is continually finding new ways to present this information.

Another product in the suite is called SARCAT – and it is a collection and analysis tool people can use to compile data in a standardized format to create their own mapped-based reports. Another product aims to take a variety of spatial models and transform them into something visual – a formal search and rescue theory that will communicate where to send teams. If there is a find, the data is automatically updated and used for future incidents.

dbS hopes to continue its work in the field in which it has become a worldwide leader. Koester has taken his company's knowledge and has a goal to provide critical information in a variety of formats. He also teaches "The Lost Person Behavior course," which has been taught to search and rescue professionals around the world and is currently used by several state agencies.

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FOUNDER AND CEO

