

# THE SIREN



A First Responders Group (FRG) Newsletter

November/December 2016

## Making Pivotal Steps to Support First Responders Around the Globe



On November 21-22, representatives from ten countries (Australia, Canada, Finland, Germany, Israel, the Netherlands, New Zealand, Sweden, the United Kingdom and the United States) and the European Commission came together for a meeting of the [International Forum to Advance First Responder Innovation \(Forum\)](#). Defence Research Development Canada hosted the meeting in Montreal.

The meeting was a pivotal step towards achieving the Forum's goal to improve the effectiveness, safety and efficiency of first responders around the globe by incentivizing industry to develop affordable, innovative technology. During the meeting, consensus was reached on establishing a Stakeholder Engagement Committee. The goal of the Stakeholder Engagement Committee is to pursue several objectives that are intended to enhance the relationship between the Forum, first responders, industry and academia. In addition, Forum members discussed the establishment of near and long term "wins/outcomes," along with measureable metrics. Once finalized, the Forum will use these metrics as a means to determine its success.

Forum members were also invited to give a presentation about the Forum and its global efforts to attendees of the Canadian Risk and Hazards Network Annual Symposium. Attendees included first responders, members of industry and academia from across Canada. Members provided a brief overview of the Forum and discussed how it is facilitating international collaboration to assist first responders. The session ended with a question and answer session between Forum panelists and audience members.

The Forum was established in 2014 as a joint effort between DHS S&T and its international partners. Since then, the group has released an initial picture of the global responder technology market and a common set of global responder capability gaps. The Forum will now use this data to increase the availability of affordable, innovative technology available to first responders worldwide. Where appropriate, participating countries will pool resources to address and solve responder technology challenges. This will allow for more research and development to take place over a shorter period of time and lower the risk for each participant. Additionally, aggregating the user base of first responders across the globe gives new critical mass to the market.

### In This Issue:

***Making Pivotal Steps to Support First Responders Around the Globe***

***Working with NATO Member and Partner Countries through NICS***

***BESS-E: Improving Operations through Behavioral, Economic and Social Science***

***Continuing to Combat Electronic Jamming Threats***

***Testing a Counter-Unmanned Aerial System with First Responders***

### Video Spotlight



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## FRG in S&T News

[DHS S&T Releases Compliance Assessment Bulletins for Public Comment](#)

[DHS S&T Calls for Anti-jamming Technology Submissions](#)

[S&T EMERGE Accelerator Pilots a New Path Forward](#)

[NATO Adapts NICS, a Communications Platform for First Responders](#)

[S&T's Research and Development Improves Wireless Emergency Alerts](#)

## Check out the latest FRG Articles

[Smart Cities Initiatives Enhanced as Geospatial Data Evolves](#)

[Responder Spotlight: Jeremy DeMar](#)

[Burn Saver Thermal Sensor Provides Warning for Firefighter Safety](#)

[Rural Volunteer Fire Departments Face Specific Challenges](#)

**Check out the [S&T Newsroom](#) for more Responder News!**

## Working with NATO Member and Partner Countries through NICS

Natural or manmade disasters often turn into global crises. Whether it is flooding in Florida or an earthquake in the Balkans, when humanitarian assistance and disaster relief are required, international cooperation may become essential. However, international relief missions face many challenges. Often, sharing even the most basic information on the location and scale of the disaster is complicated by the lack of interoperability between the myriads of technological tools used by governments at national, regional and local levels. This can make international collaboration difficult and slow.

S&T recently pledged to contribute to humanitarian assistance and disaster relief efforts in the North Atlantic Treaty Organization (NATO) member and partner countries with its [Next Generation Incident Command System \(NICS\)](#).

FRG Director Dan Cotter travelled to Brussels last month to kick off the Advanced Regional Civil Emergency Coordination Pilot, in collaboration with NATO's Science for Peace and Security Programme Office. Under the pilot program, NATO partner countries will develop and implement a system, based on NICS technology, to facilitate coordination among responders and improve civil emergency management across the region.



NICS has the ability to provide situational awareness, information sharing and collaboration across multiple organizations and governmental levels, including international. Based on open standards, NICS can enhance existing information-sharing capabilities and function interoperably with existing partner technology platforms and databases.

S&T looks forward to working with NATO on this project and learning how information sharing can support humanitarian assistance and disaster relief. Understanding capability gaps from efforts such as this is critical to helping S&T make informed decisions on how to invest our research and development funds in the future.

The emergency management community has already employed NICS in the field. The state of California Office of Emergency Services deployed the NICS platform as the



statewide Situation Awareness & Collaboration Tool (SCOUT) in spring 2016 with an initial launch of over 1,200 users across 96 agencies. Also, as a result of FRG's collaboration with Australia's Emergency Management Victoria, NICS was launched as the EM-COP (Emergency Management-Common Operating Picture) system last November. EM-COP now supports 4,300 users across 111 agencies in the State of Victoria. FRG is also working with the U.S. Coast Guard and the DHS Geospatial Management Office to deploy NICS. S&T hopes to obtain more use case and capability requirements for information sharing to support emergency management from all these national and international engagements to ultimately inform future FRG R&D plans and the expansion of the NICS user community by leveraging the open source NICS platform via GitHub.

## BESS-E: Improving Operations through Behavioral, Economic and Social Science

Developing a scientific understanding of how individuals, small groups and organizations affect threats, prevention, deterrence, resilience, security and recovery activities related to homeland security is a massive, but vitally important task. The potential cost savings and increased efficiencies and effectiveness that result from investing in R&D in social and behavioral sciences are significant and highlight its vital role in our mission. Social and behavioral scientists deepen and expand our collective understanding of where we have been, where we are and where we are heading by applying scientific methods and the systematic use of evidence. They examine past successes and failures to determine how they can be replicated, avoided or improved. They examine the nature of the threats we face and how best to mitigate them.

Engineering and the natural and physical sciences are pushing the boundaries of technical capacity in many fields, including imaging, explosive detection, analysis, equipment use and DNA analysis, but we also must understand the individual, social and economic implications of such advances. This understanding, when approached in a systematic manner, is science.

S&T's [Behavioral, Economic and Social Science Engine \(BESS-E\)](#) provides DHS with subject matter expertise to develop success metrics, conduct impact assessments, overcome cultural barriers to technology acceptance and understand individual decision making. Over the past year, [BESS-E](#) has helped [Apex programs](#) develop success metrics and provided recommendations for improving the effectiveness of R&D efforts.

BESS-E and the [Border Situational Awareness Apex Program \(BSA\)](#) have collaborated to evaluate several activities. For example, BESS-E supported the BSA-sponsored Plugfest this year, which brought electronic equipment and software designers together to test the interoperability of their products. BESS-E developed an evaluation framework, a data collection instrument and recruitment protocols to capture participants' perceptions of the event to inform the planning of future Plugfests.

BESS-E is also aiding BSA in supporting U.S. Customs and Border Protection's (CBP) intelligence architecture. Through the use of CBP agent focus groups, BESS-E will help CBP understand how models that help CBP define its functional and operational tasks can be used to prioritize intelligence gathered in the field to inform acquisition and procurement decisions, operational planning, and resource allocation.

For the [Next Generation First Responder \(NGFR\) Apex Program](#), the BESS-E team shared examples of social science best practices for conducting evaluations, which were originally leveraged for the S&T-led [White Sands Missile Range Jamming Exercise](#) held last July. BESS-E will return for the 2017 First Responder Electronic Jamming Exercise to lead the working group that will identify and develop tests for different jamming mitigation strategies.

Additionally, BESS-E and NGFR have developed a performance logic model that helps identify the project outputs needed to reach program goals. For example, a goal of NGFR is to enable first responders to communicate necessary information clearly and securely. This means that radio communications must penetrate barriers, authentication/identity management must be easy yet reliable, data bandwidth must be available, and personal protective equipment cannot interfere with electronic communications. NGFR may measure their success in enabling communications by examining property damage levels, response time from initial call or number of fire-related deaths. NGFR uses this logic model during technical reviews to ensure that each project aligns to the desired outcomes.

BESS-E is in talks with the [Screening at Speed Apex Program](#) to support technology acceptance for the Transportation Security Administration (TSA) Innovation Task Force. This Task Force has introduced new technology into the passenger screening process at select airports around the country. BESS-E has proposed conducting passenger intercepts at the airport to examine the customer experience and gather insights and reactions to the new technologies, gain an understanding of traveler's perceptions of the effectiveness of the innovation lanes and recommend actionable ideas for improvement.

BESS-E is also working with the [Flood Apex Program](#) to better understand the problem of uninsured flood losses. In 2017, BESS-E will develop and field a series of surveys designed to understand the perceptions of risk and decision-making around the purchase of insurance in diverse communities in Virginia. The survey results will lead to recommendations for encouraging homeowners to buy flood insurance.

The infographic features a blue background with white and yellow text. At the top, the title 'APEX ENGINES' is in large yellow letters, with 'BEHAVIORAL, ECONOMIC & SOCIAL SCIENCE' below it in white. A paragraph explains that through the BESS-E, Apex Programs will analyze the human impact of their programs and technologies early in the planning stages. Below this are three icons: a lightbulb, a group of people, and a heartbeat line. Another paragraph states that BESS-E analyzes the social, economic, and behavioral implications of an Apex Program's research, implementation, and diffusion of new technologies, programs and policies. The section 'THE BEHAVIORAL, ECONOMIC AND SOCIAL SCIENCE ENGINE WILL:' is followed by three bullet points with icons: a document for 'Work with Apex Programs to identify requirements and apply existing capabilities to meet immediate needs', a road sign for 'Help identify facilitators and roadblocks to implantation and diffusion of new technologies or policies', and a bar chart for 'Determine the impact that the program has on operations, how well a program meets its success metrics & any unintended consequences'. At the bottom, there are six circular icons with labels: 'Technology Acceptance', 'Broad Research Support', 'Human Factors Engineering', 'Program Evaluation, Research', 'Analytics Development', and 'Computational Social Science'.

## Continuing to Combat Electronic Jamming Threats

First responders across the country face significant electronic jamming threats that can leave responders without vital communications or critical situational awareness. In response to this threat, FRG Program Manager Sridhar Kowdley led the inaugural [First Responder Electronic Jamming Exercise](#) in July 2016.

The exercise was the first step towards protecting mission-critical communications against illicit jamming. It also made significant contributions towards the Next Generation First Responder Apex program goal of ensuring first responders are reliably connected during emergencies. The final report is expected to be finalized in January. It will be vital in shaping the DHS strategic direction for countering electronic jamming threats, and the report will play a critical role in helping responders complete their missions safely and successfully. Due to the sensitive subject matter, it will be designated For Official Use Only and will not be publicly posted. However, individuals and organizations with a demonstrated need to know may request the report by contacting [Jamming.Exercise@hq.dhs.gov](mailto:Jamming.Exercise@hq.dhs.gov).

A Joint Jammer Infographic was developed in coordination with the Federal Communications Commission, which highlights the threats of electronic jamming to first responders, suggests mitigation tactics and lists who to contact in the event jamming is suspected. S&T encourages responders and other partners to share this infographic.

Following the success of the 2016 exercise, the team is continuing to work with responders across the country to develop strategies to mitigate the effects jamming has on responder equipment and to increase public safety resilience. S&T will hold the 2017 First Responder Electronic Jamming Exercise at the U.S. Department of Energy's Idaho National Laboratory in July 2017 to build off of the findings from the 2016 exercise.

## Testing a Counter-Unmanned Aerial System with First Responders

The [National Urban Security Technology Laboratory \(NUSTL\)](#) led a Counter-Unmanned Aerial System (C-UAS) experimentation coordinated with the DHS Program Executive Office (PEO) Unmanned Aerial Systems (UAS) to assess capabilities of the TCI Blackbird Drone Detection and Geolocation C-UAS System with first responders. The Blackbird system, designed by TCI International Incorporated, is a drone detection system used to automatically detect, identify and locate radio transmissions from UAS devices and their controllers.

The U.S. Army Armament Research, Development and Engineering Center (ARDEC) hosted the experimentation in Picatinny Arsenal, New Jersey. Observers and evaluators included first responders and representatives from various divisions of the New York City Police Department, Port Authority of New York and New Jersey and the U.S. Coast Guard, among others. Following a training session, evaluators operated the Blackbird system to demonstrate some of its signal search capabilities and features, as several small drones were flown in the area. Afterwards, NUSTL C-UAS Testing and Evaluation Program Manager Bhargav Patel conducted a question and answer session with end users, which allowed DHS to better understand the end users' mission needs and the system's capabilities. The event provided NUSTL with an opportunity to collect valuable feedback during various scenarios in which the system was assessed for its effectiveness and suitability. The demonstration also helped to educate potential end users on commercially available C-UAS technology.



### Helpful Links



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