

28 November 2016

SPS Advanced Regional Civil Emergency Coordination Project in the Western Balkans

(ARCECP) SPS G4968

Next Generation Incident Command System

Information is a crucial resource in managing the complexities of an emergency response operation. Being able to rapidly share this information amplifies its value. Getting the right information into the right hands as quickly as possible allows the best decisions to be made, saving lives and property.

Massachusetts Institute of Technology Lincoln Laboratory (MIT LL), in collaboration with the United States Department of Homeland Security (DHS) Science and Technology Directorate (S&T) and the United States Coast Guard (USCG) has developed new technology to meet this challenge.

This system, the Next Generation Incident Command System or NICS provides situational awareness for widely dispersed responders. It is a web-based command and control environment for incidents that facilitates collaboration across Federal, Military, State & Local levels of preparedness, planning, response, and recovery for all-risk/all-hazard events.

Next Generation Incident Command System (NICS) in Use

- Used by California firefighters since 2010; most recently adopted by the California Governor's Office of Emergency Services as Situation Awareness and Collaboration Tool (SCOUT);
- Basis for the Victorian Information Network for Emergencies (VINE) built in Australia in 2014;
- The US Coast Guard initiated and funded the development of the cross-platform mobile application Portable Handset Integrated NICS (PHINICS). This resulted in a mobile app enabling responders to access and interact with NICS with or without cellular coverage.
- The U.S. Department of Homeland Security Science and Technology Directorate recently made NICS available worldwide for first responder and emergency management agencies on GitHub: <https://github.com/1stResponder>.

Capacity-Building in the Western Balkans

The NATO Science for Peace and Security (SPS) project "Advanced Regional Civil Emergency Coordination Pilot" (ARCECP) will implement the NICS system and technology in Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia*, and Montenegro. In this engagement, NATO and the DHS S&T will jointly support the adaptation of the current implementation of NICS into a system that meets the international emergency management needs of these countries. The objective of this effort is to introduce, iteratively modify and deploy an open platform for incident response that can interoperate with existing systems, function in areas of disadvantaged communications, and leverage community-driven improvements and applications.

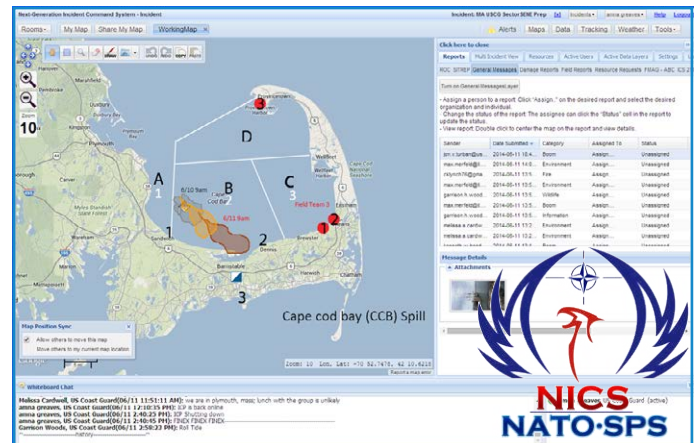


Figure 1 The NICS User Interface requires no software installation other than a standard web browser to operate.

This SPS flagship project will enable participating partner nations in the Western Balkans to acquire, deploy and customize the NICS system, supporting capacity-building of emergency response and management in the region. Each year will feature a demonstration to test and integrate standard operating policies, involving national emergency response and supporting agencies. In addition to adoption, integration and demonstration with response agencies, ARCECP seeks to engage young scientists and engineers to further develop this technology. By doing so, project partner nations not only support the NATO SPS key priorities on fostering practical cooperation in civil security related science and technology. It also builds networks and an active community with the capability to evolve and contribute to the common body of Open Source Software.

*Turkey recognizes the Republic of Macedonia with its constitutional name



Figure 2 Undergraduate University Students collaborate with MIT Lincoln Laboratory to employ small, commercial quadcopters for search and rescue of victims in urban environments

The project is expected to provide enhanced Situational Awareness for emergencies and tackle challenge capabilities identified by Balkan project partner nations to include topics such as interoperability with existing emergency response systems, integration with Terrestrial Trunked radio-based communications, sharing of information within in areas of disadvantaged, intermittent, or limited communications as well as decision support elements for prediction, visualization and synthesis of real-time data feeds.

Technical Description of NICS

There are two key attributes that give the system its inherent strength: a streamlined geospatially-referenced, user-friendly interface that allows teams to quickly form and collaborate within an incident and to share information using drawings, gesture, and speech; and an underlying modular design that enables the system to be rapidly customized for diverse user needs and changing mission requirements. The architecture is a cloud-based system and emphasizes open standards for software development, user interface display and external data interfaces.

The system accepts a wide variety of input data (e.g. resource location and tracking, remote sensor imagery, weather models, census data, critical infrastructure information) and is easily modified to accept virtually any data source. Support for custom mobile applications pushes real-time situational awareness to the tactical edge, enabling sharing using Android or iOS devices and functions such as GPS location, camera, chat, and text. The system has the ability to archive all aspects of a created incident, so it becomes a powerful and adaptable tool for analyzing any response. Statistics and reports are easily generated and shared, and it enables more advanced analysis that can impact future re-

sponse planning and execution. As such, it has tremendous utility across all echelons: tactical, operational, and strategic.

The architecture is designed not to replace any existing systems, data sources and legacy capabilities but to be complementary to and interoperable with them, creating a response ecosystem that leverages the most useful and adaptable of all available means.



Figure 3 NICS integrates with Android and iOS based mobile devices. The NICS app can be found on Apple and Google Play Store.

The NATO Science for Peace and Security (SPS) Programme

The SPS Programme is an established brand for NATO based on the pillars of science, partnership, and security. As a policy tool, it enhances practical cooperation and dialogue between NATO member states and partner countries and contributes to the Alliance's core goals. The Programme:

- Aims to enhance international security, peace & stability by applying the best scientific and technical expertise to deliver solutions for security issues of mutual concern to NATO Allies and Partners;
- Promotes regional security and cooperation;
- Builds confidence and raises awareness of NATO's role and activities through enhanced public diplomacy;
- Offers grants for projects, workshops and training courses involving scientists and experts from NATO member states and partner countries.
- Visit our website www.nato.int/science and follow us on Twitter @NATO_SPS.