Glossary

**AIS:** Automatic Identification System.

**AMSC:** Area Maritime Security Committee.

**ARENA:** Specialized software that simulates transit operations.

**CBP:** Customs and Border Protection.

**CDC:** Center for Disease Control.

**CHDS:** Center for Homeland Defense and Security.

**CHIPP:** Center for Health Informatics, Planning and Policy.

**CIP:** Critical Infrastructure Protection.

**Command, Control, and Interoperability Center for Advanced Data Analysis (CCICADA):** A constituent of the Department of Homeland Security (DHS) Center of Excellence (COE) Center for Visualization and Data Analytics (CVADA).

**Consequence Assessment:** The process of identifying or evaluating the potential or actual effects of an event, incident, or occurrence.

**Crowdsourcing:** The observance of the behavior of large networks of people in the online or offline community as a way to solve problems. The participants are generally volunteers.

**CTTSSR:** Center for Transportation Safety, Security, and Risk.

**Data Science:** A science of analyzing, preparing, collecting, visualizing, and managing large data sets by incorporating information and study from various STEM and social science disciplines.
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Data Sciences Summer Institute (DSSI): A keystone of CCICADA’s education program. DSSI was initially developed at partner institution the University of Illinois – Urbana Champaign to encourage computer science students in universities with small research programs to pursue graduate studies and to expose students to the national research laboratories.

Department of Homeland Security Center of Excellence (COE): An association of many universities and businesses whose work and research is to create and produce innovative and groundbreaking high technologies and critical knowledge in homeland securities. COE is sponsored by the DHS Office of University Programs and supported by the Oak Ridge Institute for Science Education (ORISE).


DIMACS: Discrete Mathematics and Theoretical Computer Science.

Discrete Science: Examines, studies, and analyzes patterns and assignments of large data sets, including schedules and arrangement. The purpose is to utilize this science to establish connections between individuals or groups and to provide better ways to identify changes in data patterns.

DOD: Department of Defense.

DSS: Decision Support System.


EVRL: Engineering Visualization Research Laboratory.

Experiential Learning: The process of learning from hands-on experience.


GPD: Gulfport Police Department.

High Frequency Radar: High frequency (HF) radar systems measure the speed and direction of ocean surface currents in near real time. The Rutgers University/University of Puerto Rico–Mayaguez HF radar system is a multi-use system. The first is to measure ocean currents via Doppler effects on the radar signal due to the
currents, and the second is to detect and measure position, velocity, and bearing of vessels, via Doppler shift techniques.

**Homeland Security Grant Program (HSGP):** Established in 2003 and consisting of three separate, yet interrelated programs: the State Homeland Security Program (SHSP), the Urban Areas Security Initiative (UASI), and Operation Stonegarden (OPSG), the HSGP provides grant funds to state and local governments to increase funding for first-responder equipment, planning, training, exercises, and the collection of intelligence about potential attacks.

**Homeland Security:** No definitive definition exists for this special and important entity. Its purpose is multifaceted, as one of its main purposes is to “secure” the safety and well being of all citizens of America.

**IDS-UAC:** Institute of Discrete Sciences- University Affiliate Sciences, a DHS Center for Excellence.

**Intergovernmental Relations:** The codependent and multifaceted relationships that exist between and amongst different levels of governments.

**IP HEI:** Infrastructure Protection Higher Education Initiative.

**IPO:** Individual Plan and Orientation.

**IT:** Information Technology.

**ITE:** Information Technology and Engineering.

**iTIER:** Informatics for Targeted Infusion of Education and Research in the Sciences.

**Local Oscillator:** The main high-frequency radio signal generated by a super-heterodyne receiver. This signal can radiate into the environment as unstimulated emissions.

**MAISA:** Maryland Alliance of Information Security Assurance.

**Marine Transportation System (MTS):** The Marine Transportation System, or MTS, consists of waterways, ports, and intermodal landside connections that
allow the various modes of transportation to move people and goods to, from, and on the water.

**Maritime Domain Awareness (MDA):** The effective understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment. The maritime domain is defined as all areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, people, cargo, and vessels and other conveyances.

**Matched Filter:** The optimal linear filter for detecting a known signal in additive white noise. Such filters are often used for detecting known electromagnetic emissions.

**Modeling and Simulation:** Modeling tools can be used by researchers to better understand consequences of actions or behaviors, and simulations are used to show the ultimate real effects of different conditions and courses of action or behavior. Simulation is also used when the actual system cannot be engaged, or because it may not be accessible. It may not yet be built, or it simply may not exist.

**MSI:** Minority Serving Institution.

**MSU:** Morgan State University, a historical Black University and minority serving institution (MSI).

**MTSRU:** Marine Transportation System Recovery Unit.

**NASA:** National Aeronautics and Space Administration.

**National Response Framework (NRF):** A guide to help governments plan and prepare for the ability to provide a unified response across jurisdictions to any manmade and natural disasters.

**Native American Tribes:** The term “tribe” is used interchangeably with “American Indian,” “Native American,” and “tribal nations.” As used throughout this study, these terms refer to “any Federally-recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe under the Federally Recognized Tribe List Act of 1994, 25 U.S.C 479a (FEMA, 2010).” For clarification purposes as designated by the Department of Interior, Bureau of Indian Affairs
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(2013), “federally recognized tribes are recognized as possessing certain inherent rights of self-government (i.e., tribal sovereignty) and are entitled to receive certain federal benefits, services, and protections because of their special relationship with the United States.”

**NIPP**: National Infrastructure Protection Plan.

**NMIO**: National Maritime Intelligence-Integration Office.

**NOAA**: National Oceanic and Atmospheric Administration.

**NOPD**: New Orleans Police Department.

**NSF**: National Science Foundation.

**NTSCOE**: National Transportation Security Center of Excellence.

**NYHOPS**: New York Harbor Observing and Prediction System.

**OIP**: Office of Infrastructure Protection.

**ORNL**: Oak Ridge National Laboratory.

**OUP**: Office of University Programs within the Department of Homeland Security.

**PACER**: The National Center for the Study of Preparedness and Catastrophic Event Response, a DHS Center for Excellence.

**Passive Acoustics**: The action of listening for sounds generated by targets of interest, often at specific frequencies or for purposes of specific analyses. These may be water or airborne vessels, or intruders, among other things.

**PSL**: Johns Hopkins Division of Public Safety Leadership.

**Range-Doppler Processing**: A method for simultaneously extracting both range and range-rate from a radar signal. The processor outputs a two-dimensional matrix with range on one axis and range-rate (doppler) on the other. For stimulated emissions, the “doppler” output is the mutual frequency drift between the transmitter and the target device.
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**Reconnect:** Workshops that expose undergraduate teaching faculty to the interchange between the mathematical and computer sciences and the department of homeland securities by introducing the faculty to relevant research topics that can be implemented in classroom lectures, activities, and presentations.

**Research Experiences for Undergraduates (REUs):** REU programs provide undergraduate students with an interesting and important research experiences that will positively enhance their academic decisions and future educational and career goals.

**SAROPS:** Search and Rescue Optimal Planning System used by the Coast Guard.

**SCIPUFF:** Second-Oder Closure Integrated Puff.

**SMEs:** Subject Matter Experts.

**Social Media:** Internet, Website, and electronic means of communicating socially. Operationally defined here, social media is described in a more complex way than the term is generally expressed. It is looked at as more than being useful for socializing, but also as an Internet, networking tool for security, where humans are able to electronically and quickly communicate with each other in case of emergency or homeland threat.

**Software-Defined Radio:** A radio transmitter or receiver which has signal processing functions that are defined by computer software.

**SPRETS:** Special Populations Response to Emergency Health Threats Survey.

**SSRIW:** Supporting Secure and resilient Inland Waterways.

**START:** National Consortium for the Study of Terrorism and Responses to Terrorism.

**STEM:** Science, Technology, Engineering and Mathematics.

**Stimulated Emissions:** A method for inducing changes in a device’s unintended electromagnetic emissions by using specially-crafted radio signals.
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Superheterodyne Receiver: A radio receiver design used for high-quality speech or high-rate data signals. They are common in two-way radios, broadcast receivers, and cellular or cordless telephones.

Super-Regenerative Receiver: A simple radio receiver design used by many low-cost devices, such as toy cars and keyless entry systems.

Target Device: An electronic device that has stimulated emissions. Devices tested in this study include toy cars and narrow-band FM radio receivers.

Tribal Governance: Incorporates tribal culture, history, social interactions, laws, jurisdiction, and sovereignty.

Trust Responsibility: The responsibility of the federal government to honor treaties, compromises, and other bound agreements by inheriting the expectation to honor those agreements for the best interests of the tribes and its members.

TSA: Transportation Security Administration.

Unified System of Homeland Security and Emergency Preparedness: The unified approach to homeland security and emergency preparedness has included efforts to “provide a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment” (FEMA, 2010). According to the Department of Homeland Security’s National Response Framework (2007), to be able to achieve an effective system of unified command, there needs to be unity of effort which must extend across multiple geographic and legal jurisdictions. FEMA made it clear that emergency management is a difficult function that must frequently cross jurisdictional boundaries (Waugh, 1994). Like the foundation for achieving a unified system of command, in order to be able to execute effective emergency management strategies, it is crucial that there be cooperation and coordination across jurisdictions. To be more specific, FEMA’s agency policy warns that within the field of emergency management, the agency expresses that problems are shared and so too should responsibility. It goes on to note that the agency refrains from providing assistance to only one jurisdiction or government and consequently placing in jeopardy the interests of needs of another government (Federal Registrar, FEMA Tribal Agency Policy, 1999).
**Up-Mixing Component:** The high-frequency stimulated emissions of a super-heterodyne receiver. These emissions contain a nearly-perfect copy of the signal that the device is receiving.

**USACE:** United States Army Corp of Engineers.

**USCG:** United States Coast Guard.

**UUVs:** Unmanned Underwater Vehicles

**VACCINE:** Visual Analytics for Command, Control, and Interoperability Environments, a DHS Center for Excellence.

**VAST MSI:** Visual Analytics for Science and Technology at a Minority Serving Institution.