Acquisition
Directorate

RESEARCH, DEVELOPMENT, TEST & EVALUATION AND INNOVATION PROGRAM

CAPABILITIES

The Coast Guard **Research and Development Center** executes projects that directly address the most pressing needs of the service and have the ability to transition and deliver results.

The **Innovation Program** supports the commandant's mandate to create a service culture of continuous innovation and learning. It uses an open innovation model to develop solutions to enterprise strategic challenges.

The **Blue Technology Center of Expertise** is a partnership with Scripps Institution of Oceanography to create a pipeline for the rapid identification and implementation of new maritime technologies into critical Coast Guard operations.

The **Coast Guard Science and Technology Innovation Center** conducts rapid prototyping, testing and integration of available solutions to address immediate operational challenges within the Coast Guard and DHS.

A **Coast Guard detachment at DOD's Defense Innovation Unit leverages DIU's** access to commercial technology, its rapid prototyping capability and its ability to scale and partner with other services.

The Coast Guard Research, Development, Test & Evaluation (RDT&E) and Innovation Program enhances acquisition and mission execution by conducting applied research and bringing technological advancements and innovation to the service's operational forces.

The RDT&E and Innovation program is the Coast Guard's leading office conducting applied RDT&E experimentations and demonstrations. The program is continuously innovating and incorporating the best ideas from across the Coast Guard. At any given time, the program is working on more than 40 research and innovation projects that support Coast Guard requirements spanning all 11 statutory mission areas. The RDT&E and Innovation program also plays an integral role in Coast Guard acquisition by conducting services such as market research, alternatives analyses and testing and evaluation. The program leverages the collective expertise of the nation through an extensive partnership network that includes government, academia, industry and international partners.

RESEARCH AREAS

The RDT&E and Innovation program brings value to the organization by investing in new ideas and technologies to help the Coast Guard better perform its missions in the future. Projects typically fall into five main program areas:

Aviation/Systems
Provides investigations of sensor and airborne platform technologies, mission-relevant test and evaluation, performance measurement and analysis, and performance model validation programs. Products include analysis support that addresses specific questions for decision-makers, including requirements and alternatives analysis, mission analysis, risk analysis and life cycle cost analysis.

C5ISR/IT and Networks
Supports maritime domain awareness, command and control, tactical communications and cyber technology programs.

Environment and Waterways/Arctic
Supports aids to navigation, pollution and non-indigenous species prevention and response, Automatic Identification System programs, and investigating technology solutions to address the complex issues associated with operating in the harsh, remote Arctic region.

Surface
Provides program support to enhance vessel technology, port security, law enforcement, alternative energy and weapons of mass destruction identification and prevention capabilities.

Modeling and Simulation
Provides decision-makers with responsive, low-cost, low-risk modeling support for Coast Guard and external customers. Products include Fleet Mix Analysis support, tactical mission engagement scenarios, sensor optimization, resource allocation, game theory-based scheduling tools, and system-wide trade-off studies to support strategic capability and acquisition decision-making.

(OVER)

RECENT AND ONGOING RDT&E PROJECTS

Low-Cost Maritime Domain Awareness

The Coast Guard evaluated unmanned systems across a spectrum of missions. One project addressed the need for increased and persistent awareness in remote areas with a primary focus on monitoring illegal, unreported and unregulated fishing. A month-long evaluation of unmanned surface vehicles (USV) was conducted off Oahu to determine the ability of several USVs to patrol an assigned area and provide actionable data.

Beyond Visual Line of Sight for UAS

The RDC is evaluating detect and avoid technologies to enable unmanned aircraft systems (UAS) to operate without relying on Coast Guard cutter systems for clearing airspace. In addition to supporting operation of UAS to cover greater distances at sea and patrol operational areas from land-based stations, this technology could increase efficiency by eliminating the need for a dedicated air direction controller to keep UAS clear of other aircraft.

i911 for Search and Rescue
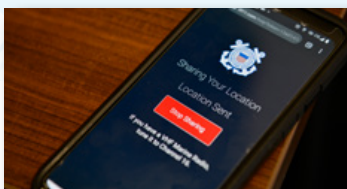
Addressing an increasing trend in the use of cellular phones by the maritime public, the RDC investigated available technologies that could further facilitate the use of cell phone location services to more accurately determine the position of mariners in distress. i911, a web-based geolocation tool, went operational in March 2020. The tool is used by Coast Guard command centers nationwide an average of 20-30 times daily.

Low-Cost Remotely Operated Vehicles

Coast Guard operators were looking for a way to do necessary underwater inspection or cleaning work without taking the time and expense to dry-dock a vessel or bring in a diver. The study of low-cost remotely operated vehicles has led to Coast Guard policy allowing for use for missions such as inspection of underwater hulls and tanks and bilges in large vessels. The use of technology provides maintenance efficiencies by reducing the number of crew-hours and risk to personnel required to perform time-consuming dives and providing on-demand inspection of hulls and piers.

Polar Regions Technology Evaluations

The Coast Guard needs to help maintain defense readiness in the Arctic and Antarctic regions, as well as enforce laws and treaties that safeguard both industry and the environment; provide ports, waterways and coastal security; and provide logistical support such as vessel escort. RDT&E conducts annual field tests on promising technologies that will help in the execution of those missions which are being conducted in some of the most remote and challenging locations. Recent testing has focused on communications, machine vision training, and window heaters, deicers and defoggers.

Modeling and Analysis
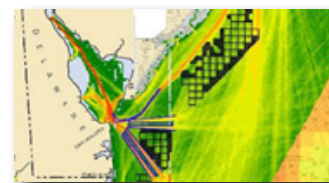
Modeling, Simulation and Analysis help the Coast Guard optimize operational performance and balance resources, as well as provide valuable information for decision-making. One recent project used modeling and analysis to quantify the changes in navigational safety risk that result from the creation of offshore development, including wind energy structures. The Coast Guard is charged with providing input when these developments are reviewed, and needed reliable qualitative and quantitative tools to more accurately assess the associated potential changes.

Contact Us:

To contact the **RDT&E and Innovation** program about a general question, idea or industry inquiry, send an email to **research@uscg.mil**.

For updates on the **RDT&E and Innovation** program, visit **www.dcms.uscg.mil/acquisition/rdte**

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