Acquisition Directorate

Research, Development, Test & Evaluation

Tenants and Detachments:
- Marine Safety Lab
- NOAA NRT5
- Waterways Product Line – Light Laboratory
- D1 Digital Forensics Lab
- CG AUX S&T Unit

RDC Overview
Sea/Air/Space
April 2023

Missions and Strategies Define Research

Coast Guard 11 Statutory Missions:

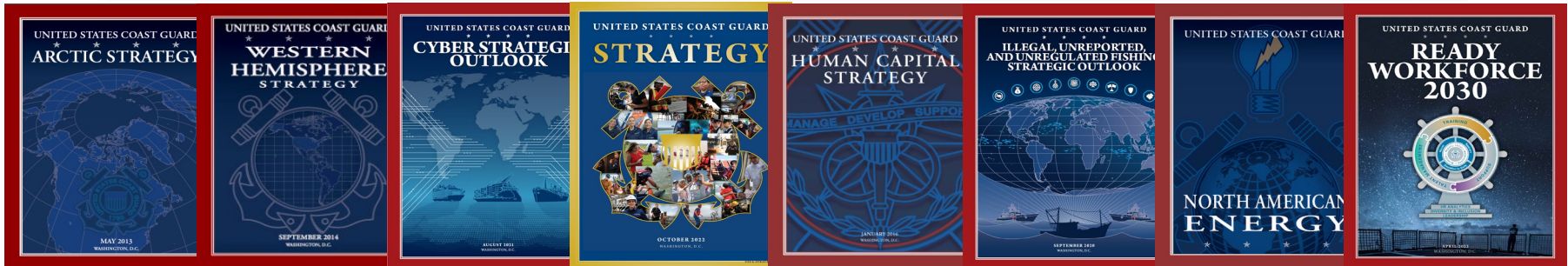|	
Ports, waterways and coastal security	Defense readiness
Drug interdiction	Migrant interdiction
Aids to navigation	Marine environmental protection
Search and rescue	Ice operations
Living marine resources	Other law enforcement
Marine safety	

FY24-25 DCO/DCMS Research Priorities

Mission:

Provide innovative technologies, premier analysis, and decision support to increase readiness, improve mission effectiveness, and reduce risk across all CG missions.

FY24-25 DCO/DCMS Research Priorities

Sharpen our Competitive Edge – **Grow Advanced Computing Capabilities to Maximize Readiness (Data Analytics)**

Sharpen our Competitive Edge – **Continue Development of Mobile Solutions to Deliver Mission Excellence Anytime, Anywhere.**

Sharpen our Competitive Edge – **Utilize Autonomous Systems to Address the Nation's Complex Maritime Challenges**

Transform our Total Workforce / Advance Mission Excellence – **Strengthen Resilience, Safety, Security, and Sustainability of Coast Guard Systems and Personnel to Deliver Mission Excellence Anytime, Anywhere**

Transform our Total Workforce / Advance our Mission Excellence – **Develop Human Machine Teaming to Maximize Readiness**

Sharpen our Competitive Edge – **Maximize Readiness Today and Tomorrow by Enhancing C5I Capabilities**

Sharpen our Competitive Edge / Transform our Total Workforce – **Develop Service Solutions to Climate Change Impacts**

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RDC Technical Division

RDC Focus Areas

The RDC conducts applied research that falls within the following focus areas:

- Unmanned / Counter-Unmanned Systems (Air/Surface/Sub-Surface)
- Polar Operations
- Space-Based Technology
- Intelligence and Cyber Systems
- Operational Performance Improvements, Modeling and Data Analytics
- Waterways Management and Environmental Response
- Emergent Technology Investigation

Aviation
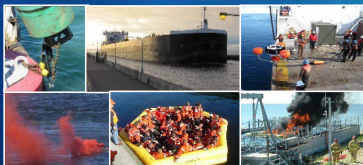

Manned & Unmanned Aircraft Systems / Mission Analysis / Wide Area Surveillance / Search & Rescue / Persistent, Strategic Maritime Domain Awareness

C5I

Radio Frequency Communications / Electronic Navigation Systems / Software Defined Radios Cyber Security Systems / Spectrum Management Intelligence / Command & Control / Sensors

Environment & Waterways

Environmental Protection / Pollution Detection & Response / Ballast Water Standards / Marine and Navigation Safety Improvements / Search & Rescue Improvements

Modeling, Sim & Analysis

Modeling & Simulation / Data Analytics / Artificial Intelligence & Machine Learning / Process Automation / Risk Analysis / Human Factors

Surface

Unmanned Surface & Sub-Surface Systems Boarding Team Tools / Compel Compliance / Law Enforcement / CBRNE Countermeasures Alternative Energy / Polar Region Capabilities

Science & Tech Innovation

Rapid Technology Evaluation & Transition Acquisition Analysis & OTA Support

IT & Networks

Coast Guard Mobility / Software Prototyping Cloud Computing / Software Defined Networks Mixed Reality / Telecommunications / Space Based Systems / Cyber Security Systems

FY24 RDT&E Strategic Portfolio Development Process

CG FY23-24 Research Priorities

Approved by DCO and DCMS

July 2022: CG FY23-24 Research Priorities Finalized

Idea Solicitation and Collection

Gaps and challenges submitted from across USCG

July – August 2022: Open Idea Submission Period

U.S. Coast Guard
FY23 RDT&E
Project Portfolio

UNCLAS | FY23 RDT&E Project Portfolio
CG-926 RDC

Approved FY23 Project Portfolio

Idea Submission Review (ISR)

USCG stakeholders meet to prioritize submissions

October 2022: FY23 ISR Event

Potential Project List

Narrowed down based on prioritization

October 2022 – January 2023: Pursue External Partnership Opportunities

Assessment of Prospective Portfolio (APP)

USCG Flag officers and SESs assess project submissions

February 2023:

August 2023:
- FY24 Portfolio Approval – CG-9D/7D
- DCO / DCMS Portfolio Review & Outbrief

Approved Project Portfolio

Deputy Assistant Commandant for Acquisition & Deputy Assistant Commandant for Capability approve for execution

RDC Toolbox

We perform early exploration of technology and concepts and reduce the risk of introducing new technology into operations using our research *disciplines*, *authorities*, collaboration and *partnership* connections, and unique national *capabilities*.

Disciplines:
- Scientific integrity
- Human subject research
- Research project portfolio execution + metrics
- Experimental design | Field Limited User Evaluations
- Pre-acquisition/requirements tech demos
- Independent/unbiased decision support

Authorities:
- Cooperative R&D Agreements | MOUs

Partnerships:
- Lab Commander's Sync
- Federal Laboratory Consortium
- RDC AUX S&T Unit
- CGA
- Annual Polar Technology Evaluations

Capabilities:
- Project Demo Spaces | RRT Lab | Light Lab
- Comms Lab (Coming Soon!)
- Robotic & Autonomous System Test Annex
- C2 UAS Trailer | 29', 25', OTH-V R/Vs

Emergent Tech Evals, Pilots, Limited User Evals

Pre-acq Tech Evals, e.g., WCC sonar testing
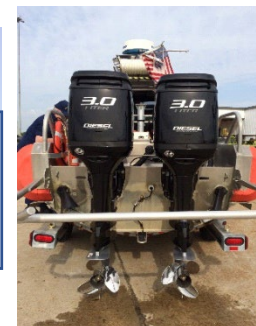
CRADAs e.g., i911. diesel outboards

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District/Sector of the Future...

Goal: Capitalize on new and emerging technology to support mission execution though extended demonstrations and field evaluations.

Examples of what can be done right now:

- AIS Transmit – shore to ship
- FirstNet data network
- Mobile Adhoc Network connectivity
- ISR buoys/Nextgen buoys
- Uncrewed assets (air and surface)
- Team Awareness Kit
- Expansion of i911 capability
- Data analytics in the Cloud
- Network acceleration/SATCOM connectivity
- R21 link to NG911
- R21 Natural Language Processing

SECTOR OF THE FUTURE

THE TESTBED OF TOMORROW'S CG

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RDC Partnerships and Emerging Research

FY23 Portfolio Highlights

- **Currently executing a total of 43 projects with 21 unique Sponsors**

- **12 new-start projects selected for execution following last APP**

- **Resource constraints limited that to 8 new-starts**

- **Focus areas:**

  - ❖ Autonomy/UxS/Counter UxS

  - ❖ Polar Operations

  - ❖ Waterways Management & Environmental Response

  - ❖ Operational Performance Improvements, Modeling, and Data Analytics

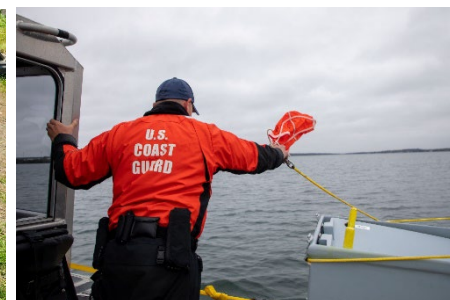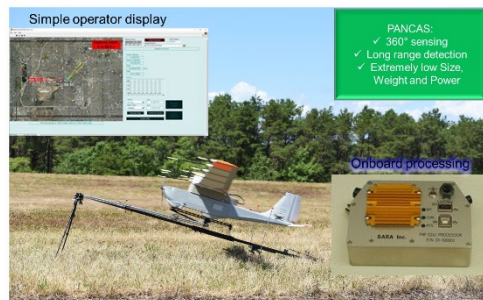Impact vs Feasibility
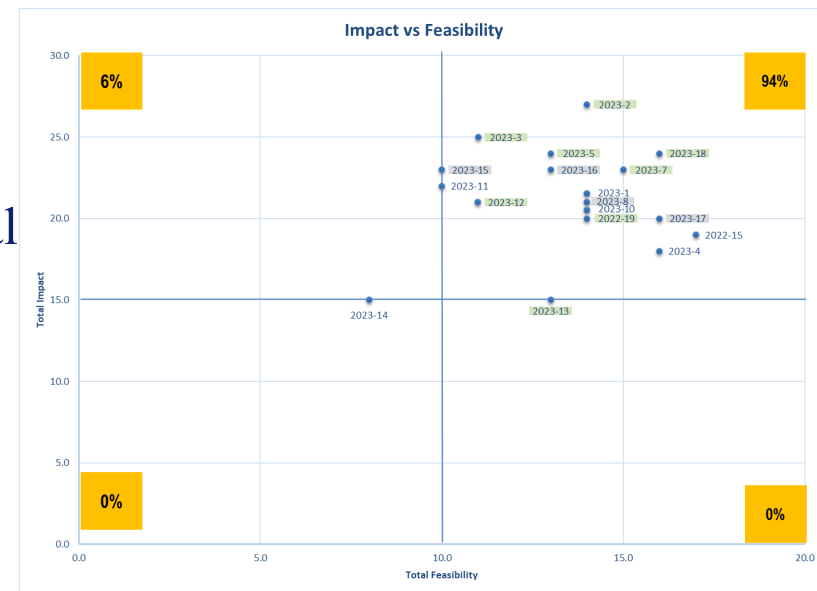
Tomorrow looks different. So will we.

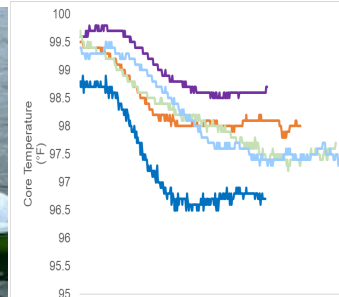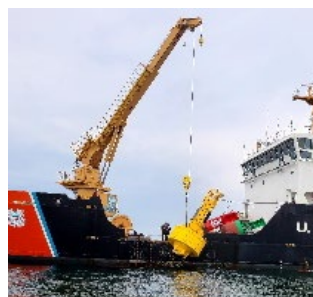## *Transform our Total Workforce*
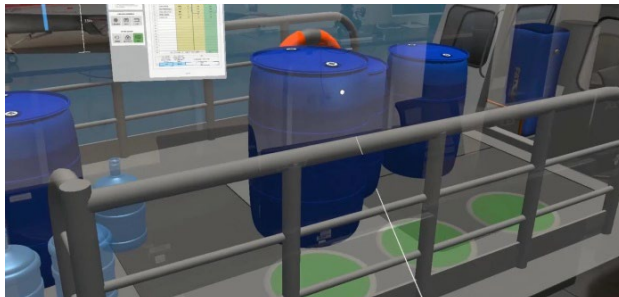
Cognitive and XR Training | Workforce Simulation | Attracting STEM Talent | Leverage of S&T AUX talent

Sharpen our Competitive Edge

Unmanned technology | Spill Response tools |Counter Unmanned tools

Advance our Mission Excellence

NextGen ATON | ISR Buoys |Conducting SAR in Wind Farms | Enhanced Survival Decision Tools

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