

# U.S. Coast Guard Navigation Center



## NAVCEN Overview



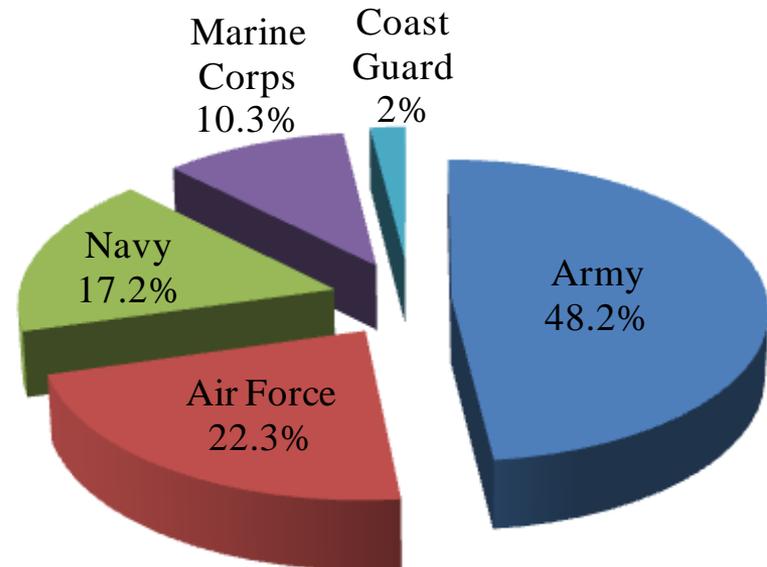
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# Personnel Strength of Armed Forces

Service	Military personnel	Percent of total
Army	1,042,200	48.2%
Air Force	483,000	22.3%
Navy	370,900	17.2%
Marine Corps	223,300	10.3%
Coast Guard	43,604	2.0%
<b>Total</b>	<b>2,163,004</b>	<b>100%</b>



*Active duty and Reserve*

*Source for Department of Defense (DOD) – FY15*

*Defense Manpower Requirements Report*



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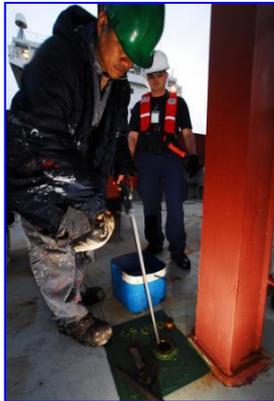
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# US Coast Guard's Missions

By law, the US Coast Guard has 11 Missions:

- Marine Safety
- Aids to Navigation
- Ports, Waterways, and Coastal Security
- Search and Rescue
- Marine Environmental Protection
- Living Marine Resources
- Other Law Enforcement
- Drug Interdiction
- Defense Readiness
- Migrant Interdiction
- Ice Operations



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# USCG Atlantic and Pacific Commands



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# USCG District Structure

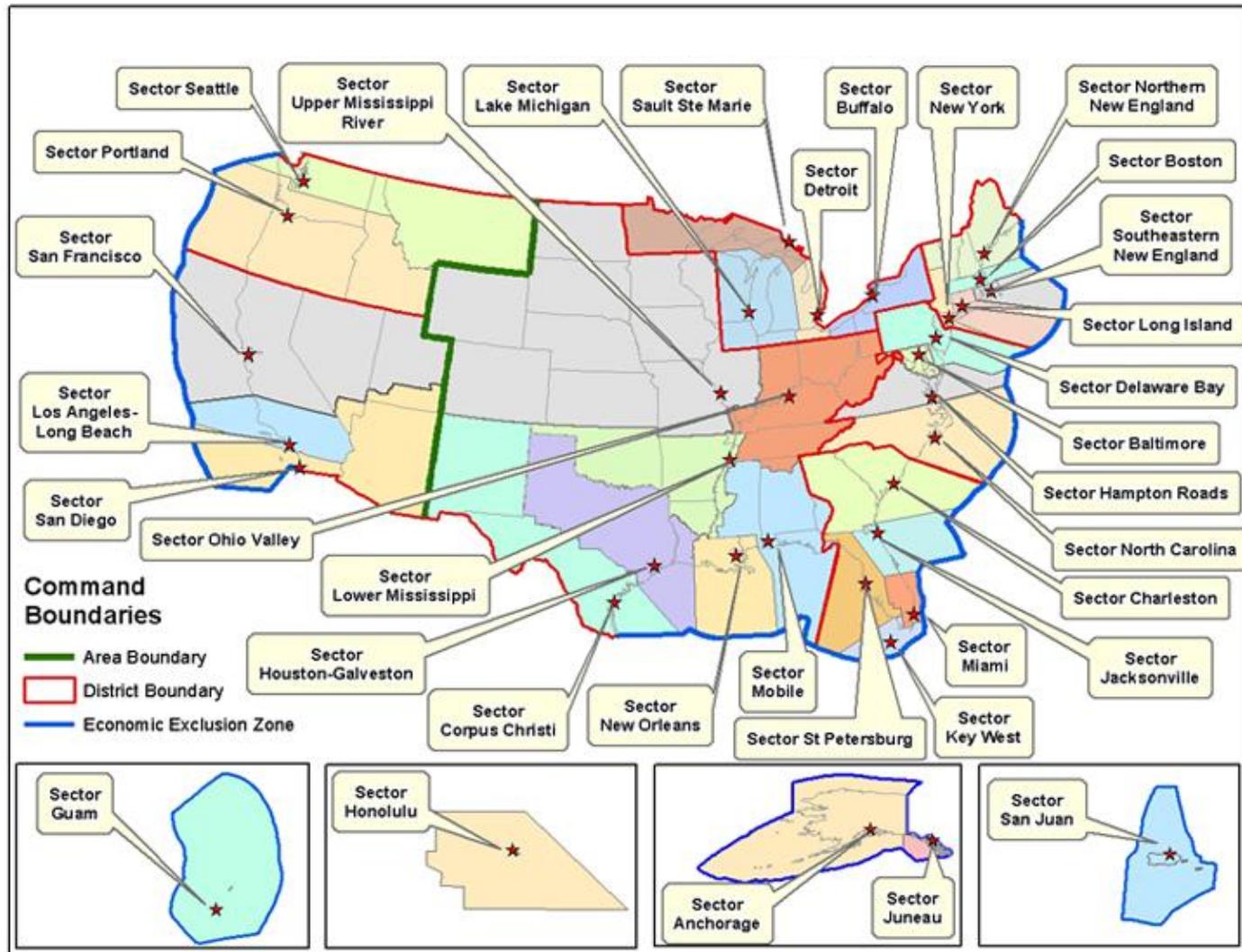


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# USCG Sector Commands



v6.0



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# NAVCEN Mission Statement

The Navigation Center provides services to enhance the safety, security, and efficiency of U.S. waterways, and respond to the needs of civil Global Positioning System (GPS) users. These services include:

- Operating the Nationwide Differential GPS (DGPS) System
- Operating the Long Range Identification and Tracking (LRIT) business helpdesk
- Operating the Nationwide Automatic Identification System (NAIS)
- Publishing Notices to Mariners and the Light List
- Managing the US Aids to Navigation Information Management System
- Managing electronic charting portfolios for U.S. Coast Guard units
- Serving as the primary U.S. government interface with GPS users (except aviation and DOD)
- Receiving and coordinating investigation of GPS outage reports
- Disseminating navigation information through 24/7 operations center and the NAVCEN website



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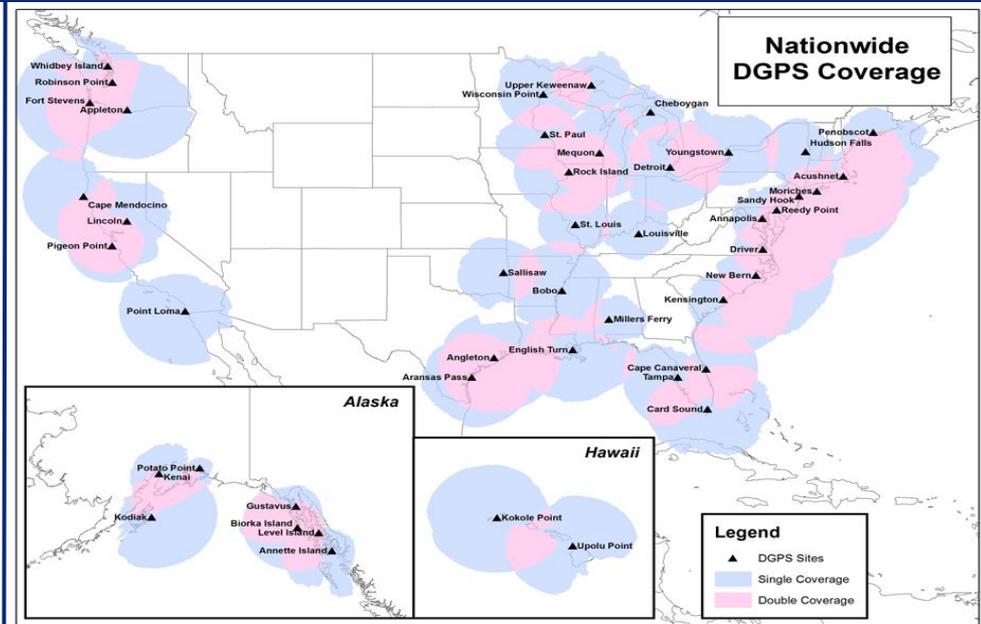
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# Nationwide Differential GPS (NDGPS)

## System Description

- 46 Nationwide Remote Broadcast Sites throughout the United States and territories (39 USCG and 7 USACE)
  - System in operation since 1996
  - Better than 10 meter accuracy
  - 10 second integrity alarm to the user
  - Satisfies Harbor/Harbor Approach requirements
  - 99.7% availability requirement
  - 99.9% availability requirement for Vessel Traffic Service (VTS)
  - Sites equipped with out-of-tolerance user alerting
- Use ALMIS to report and document casualties



## Operations

- Redundant equipment at sites
- Redundant control stations at NAVCEN

## Stakeholders

- U.S. Army Corps of Engineers (USACE)
- Department of Transportation (DOT)
- National Oceanic & Atmospheric Administration (NOAA):
  - Continuously Operating Reference Stations (CORS) network



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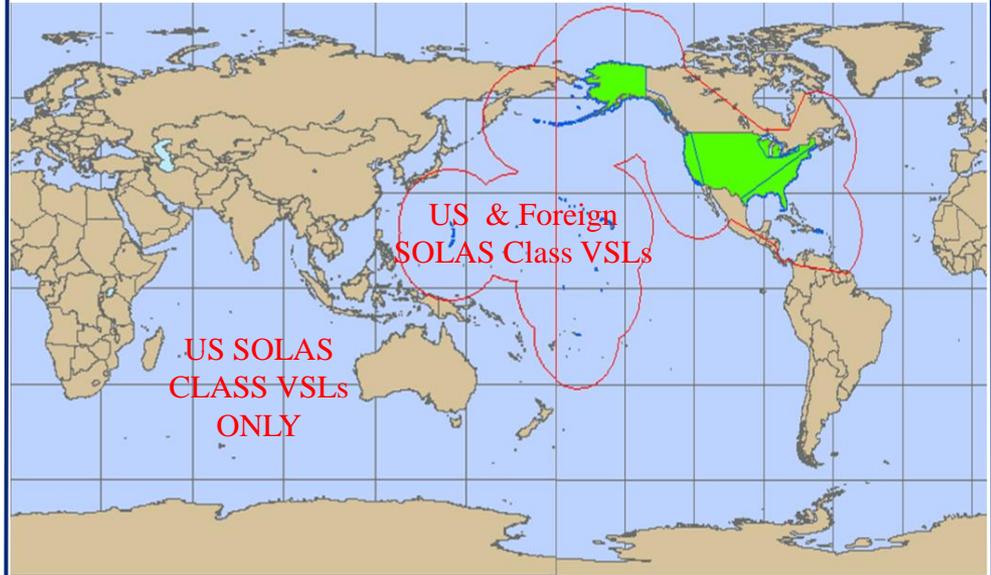
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# Long Range Identification & Tracking (LRIT)

## System Description

- Assist U.S. flagged ships subject to Safety of Life at Sea (SOLAS) regulation
- Uses existing INMARSAT/Iridium equipment
- Track U.S. SOLAS ships worldwide
- Track inbound vessels on Int'l voyages, or traveling within 1,000 NM of the U.S. that are:
  - Passenger ships, 300+ GT cargo ships, or self-propelled offshore drill unit, not on site
  - Available for search and rescue surface picture and maritime domain awareness



## Operations

- Around the clock watch to provide assistance
- Conformance testing
- Verification of vessel reporting (4x/day)
- Currently track 700+ U.S. vessels worldwide
- Track over 7,000 vessels within the U.S. border

## Stakeholders

- Over 100 countries participate in LRIT
- Pole Star (Private Contractor Data Management)
- Internally used within the Coast Guard to serve as:
  - Search and Rescue
  - Harbor Approach Early Notification



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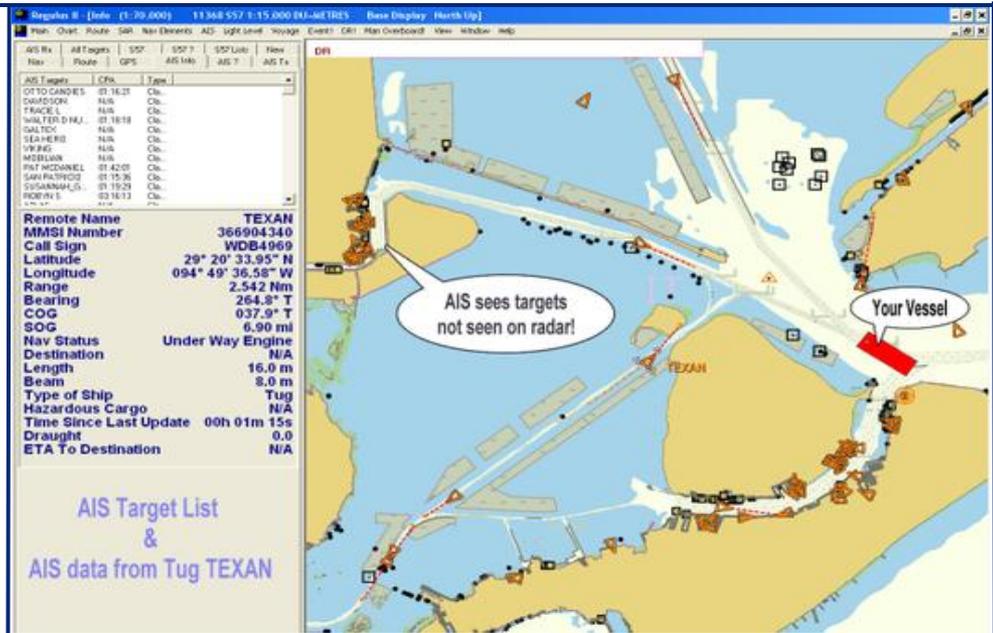
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# Nationwide Automatic Identification System (NAIS)

## System Description

- Track vessels transiting throughout the NAIS areas
- Support coordinated information sharing with U.S. organizations and port partners
- 50 NM receive range, 24 NM transmit range
  - Interim Receive – Operate
  - Permanent Transceive System – Operate
  - Includes VTS AIS Transceiver - Only monitor
  - Marine Exchange Alaska – Only monitor



## Operations

- Around the clock monitoring the performance of the NAIS sites
- Remote troubleshooting
- Monitor data connection to users

## Stakeholders

- Bidirectional data sharing with Canada in the St. Lawrence Seaway
- Partnerships with U.S. Departments of Defense (DOD), Transportation (DOT), Homeland Security (DHS), and Commerce (DOC)
- U.S. Coast Guard operational units



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# Local Notice to Mariners (LNM)

## System Description

- A region based method by which the public is informed of changes to aids to navigation
- LMSs are a carriage requirement onboard all commercial vessels
- NAVCEN website is the single authoritative source for LNMs and the chart corrections contained therein, as well as Light Lists



## Operations

- U.S. Coast Guard Districts create LNM
- LNMs distributed via NAVCEN Website (33 CFR 72.01-5)
- Users subscribe to a list server for notification that the NAVCEN website is updated

## Stakeholders

- Service to all mariners who navigate the waters of the United States
- National Oceanic and Atmospheric Administration (NOAA)
- National Geospatial-Intelligence Agency (NGA)



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# US Aids to Navigation Information Management System (USAIMS)

## System Description

- USAIMS is the official electronic record of USCG and private Aids to Navigation (ATON)
- NAVCEN supports District Prevention Department Waterway Management staffs (dpw) and ATON Units with application support (e.g., special queries, tutorials, document system change requests)
- Automate production of weekly and annual Light List for NAVCEN website
- Produce print files for the annual version of the Light List



## Operations

- Produce annual Light List for NAVCEN website and printing
- Produce weekly Light List updates (PDF and XML) for NAVCEN website
- Manage updates and maintenance of the system, perform system testing and training

## Stakeholders

- Service to all mariners who navigate the waters of the United States
- CG ATON Units
- District Waterways



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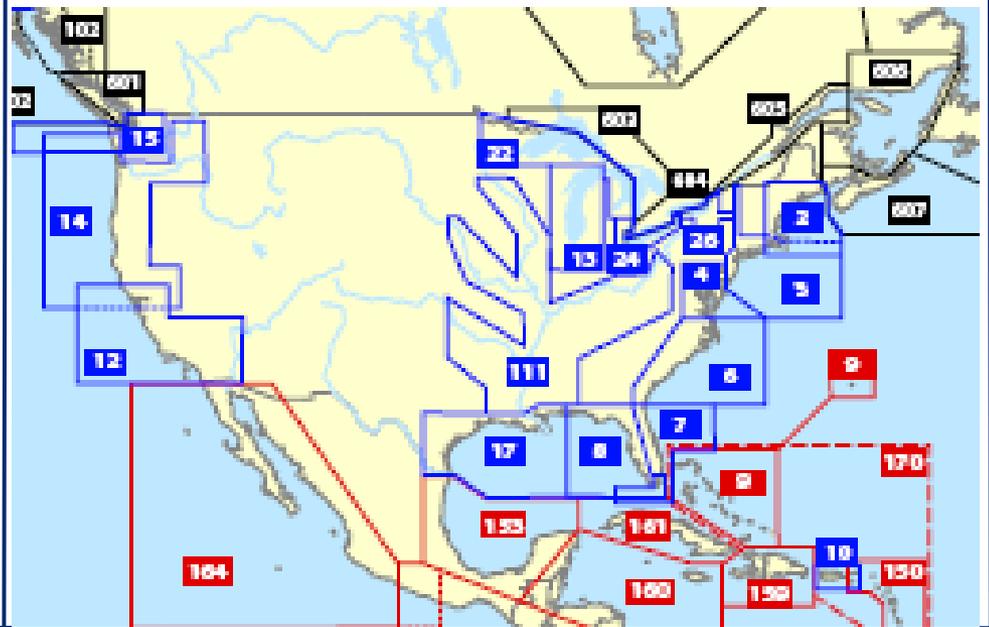
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# Electronic Chart Portfolio Management

## System Description

- USCG Electronic Chart Portfolio Manager
- Provide electronic charts to the USCG cutter fleet and boat forces
- Provide help desk service, Electronic Chart Display and Information System (ECDIS) lab
- Electronic charts covering U.S., Caribbean, Mesoamerican waters, and other select areas
- Cover 321 cutters/boats (49'+) and 1190 boats



## Operations

- Subject matter experts on policy and acquisitions for electronic charts
- Liaison with NOAA, NGA, and USACE for charting and maritime information

## Stakeholders

International and national agencies

- National Oceanic and Atmospheric Administration (NOAA)
- National Geospatial-Intelligence Agency (NGA)
- U.S. Army Corps of Engineers (USACE)



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# Electronic Tracking (E-Tracking)

## System Description

### Data Management Processes:

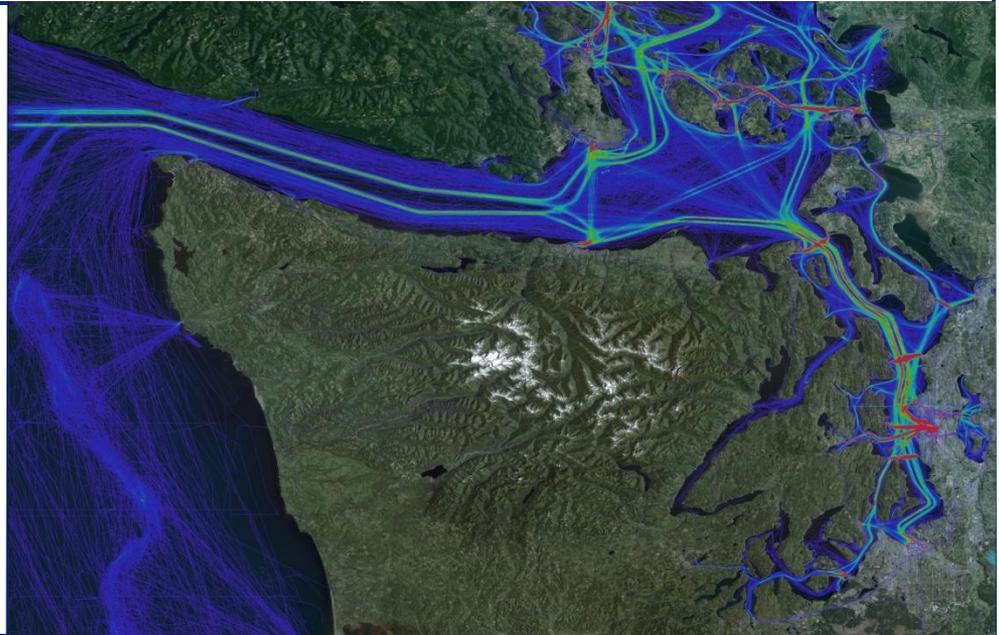
- Commercial AIS error notification
- CG and Port Partner AIS error notification
- NAIS historical and live data request processing

### MIOC application support:

- LRIT Business Help Desk (BHD) application administration
- System Operation Center (SOC) tool administration

### NAIS infrastructure analysis:

- Monitor and troubleshoot system performance criteria
- Technical liaison to system sponsor and Product Line



## Key Outcomes

- NAIS meets functional and operational requirements
- International Maritime Organization (IMO) vessel assistance and notification of AIS infractions
- CG assets meet AIS requirements
- NAIS data product delivered to customers

## Stakeholders

- All USCG Program Offices
- OGAs (Internal Revenue Service (IRS), Department of Justice (DOJ), Department of Defense (DOD), Customs and Border Patrol (CBP))
- Civilian Legal Offices, Port Partners, Educational Institutions
- Freedom of Information Act (FOIA)



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# Navigation Information Service (NIS)

## System Description

- Primary interface to disseminate information on GPS, DGPS, AIS, NAIS, LRIT Maritime Safety, Maritime Communications, Maritime Regulations & Local Notice to Mariners
- Over 275,000 hits monthly on the NAVCEN website
- 21,000+ List Server subscribers for GPS status, GPS advisories, and LNMs
- Coordinate Civilian GPS Interference detection and mitigation response
- Civil interface for non-aviation GPS users



## Operations

- Around the clock NAVCEN point of contact for maritime and civil GPS users
- Main dissemination point of information for NAVCEN
- GPS testing coordination

## Stakeholders

- General Public
- Maritime and public entities include:
  - Maritime users
  - Civil GPS users
  - Other non-Department of Defense (DOD) users

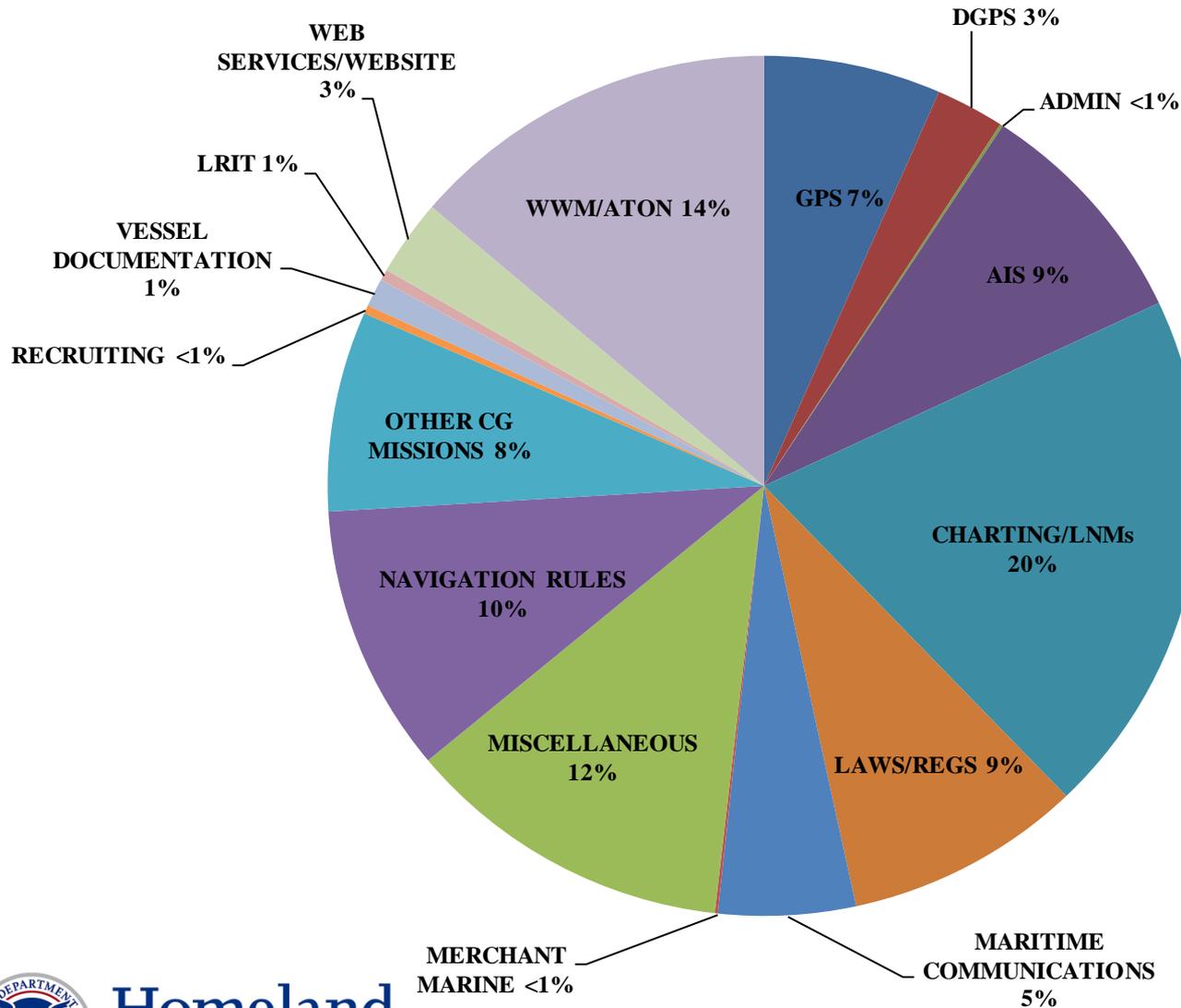


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# Navigation Information Service (NIS) Inquiries



**944 Total  
Inquiries in  
2015**



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# Operational Civil Interface Duties

## Description

- 1986 – GPS became a dual-use (Military/Civil) system, DOD formed an MOU with DOT for GPS Civil Interface
- Civil GPS Service Interface Committee (CGSIC) was formed as liaison between world's civil GPS users and U.S. GPS authorities
- DOT assigned operational interface to U.S. Coast Guard for dissemination of GPS operational information, CG retained responsibility after shifting to DHS



## Operations

- CGSIC Deputy Chair and Executive Secretariat
- Publish GPS operational files for public use
- Accept and process GPS inquiries and problem/interference reports
- Advocate for the civil GPS community

## Stakeholders

- U.S. Air Force GPS Operations Center (GPSOC)
- FAA National Operations Control Center (NOCC)
- Other agencies of the U.S. government for response to inquiries
- Civil, non-aviation users



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# Civil GPS Services Interface Committee (CGSIC)

## Description

- 1989 – DOT Takes Lead for Civil Users
- 1991 – Civil GPS User Interface Committee (CGSIC):
  - Chair (DOT/Research and Innovative Technology Administration)
  - Deputy Chair (CO NAVCEN)
  - Executive Secretariat (NAVCEN Staff)
  - Liaison for world’s Civil GPS Users



CGSIC Plenary Session, Tampa, Florida, 14-15 September 2015

International Sub-committee held in Kyoto, Japan, Nov 2015  
Survey, Mapping & Geo-Sciences held in Portland, OR, Nov 2015

## Operations

- CGSIC Provides:
  - Technical information exchange with civil GPS users
  - Identify type of information & distribution methods
  - Identify Issues for resolution by U.S. GPS Authorities
  - Conduct GPS information studies on civil user needs
  - Advocate for civil use of GPS

## Stakeholders

### Subcommittees

- Survey, Mapping & Geo-Sciences
- Timing
- U.S. States & Local Government
- International Information

### Advisors

- Land
- Aviation
- Marine
- GPS Industry Council

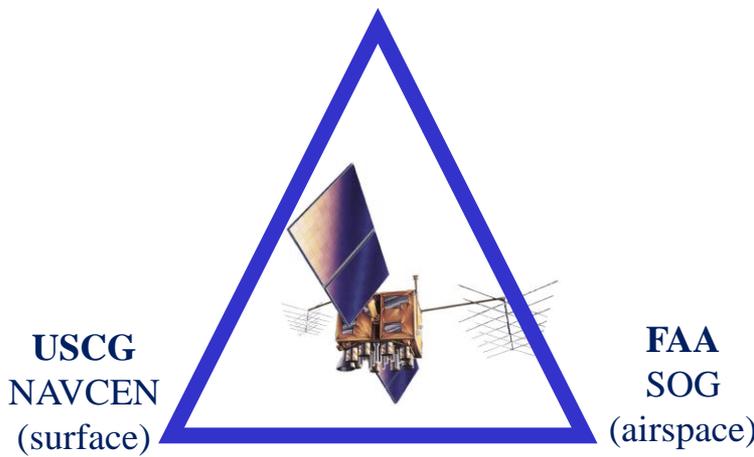


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# GPS Information Sharing & Interference Detection and Mitigation (IDM)

<p style="text-align: center;"><b>System Description</b></p> <ul style="list-style-type: none"> <li>• 2014 Interagency GPS User Support MOA</li> <li>• Trilateral-agency User Segment Representation</li> <li>• Multi-agency IDM Coordination</li> <li>• Implement GPS MOA</li> <li>• Maintain Trilateral Representation</li> <li>• Multi-agency IDM Coordination in Annex</li> <li>• Designated by USCG as GPS testing focal point for all GPS band testing and Other Government Agency (OGA) testing events</li> </ul>	<p style="text-align: center;"><b>USAF GPSOC (military)</b></p>  <p style="text-align: center;"><b>USCG NAVCEN (surface)</b></p> <p style="text-align: center;"><b>FAA SOG (airspace)</b></p>
<p style="text-align: center;"><b>Operations</b></p> <ul style="list-style-type: none"> <li>• Support Civil Mission Planning and User Requirements</li> <li>• Provide Satellite Constellation Status</li> <li>• Provide User Advisories</li> <li>• Coordinate GPS Testing</li> <li>• Process GPS Disruption Reports</li> <li>• Interface Control Document Review and Coordination</li> <li>• GPS related Committees and Working Groups</li> </ul>	<p style="text-align: center;"><b>Stakeholders</b></p> <ul style="list-style-type: none"> <li>U.S. Air Force GPS Ops Center (GPSOC)</li> <li>FAA Satellite Operations Group (SOG)</li> <li>FAA Air Traffic Control System Command Center (ATCSCC)</li> <li>U.S. Coast Guard Navigation Center (NAVCEN)</li> <li>Federal Communications Commission Ops Center (FCCOC)</li> <li>DHS National Coordinating Center for Telecomms (NCC)</li> </ul>



The primary means of information dissemination used by the NIS is the NAVCEN Website. It is the focal point of all NAVCEN data regarding GPS, DGPS, NAV Rules, NAIS, LRIT and much more.



## NAVIGATION CENTER

The Navigation Center of Excellence



U.S. Department of Homeland Security  
UNITED STATES COAST GUARD

Home | DGPS Advisories | GPS Constellation Status | MSI Data Downloads | GPS Testing Notices | LNMs | Almanacs | Nav Rules | AIS | N. Amer. Ice Svc | Contact Us | Search

### Mission Areas

- Global Positioning System
- Nationwide DGPS
- Nationwide AIS (NAIS)
- AIS (Overview, Messages, etc.)
- Long Range Identification and Tracking
- Local Notice to Mariners
- 2016 Light Lists
- Civil GPS Service Interface Committee
- LORAN C (archive)

### Subscribe / Report (free)

- Local Notice to Mariners (Weekly)
- GPS Operational Summary (Daily)
- NANUs (upon occurrence)
- Join CGSIC
- Report an ATON Discrepancy
- Report a GPS Problem
- Report an NDGPS Problem
- Report an LRIT Problem
- Report an NAIS Problem
- Contact Us

### Maritime Information

- Electronic Charts Approval
- Maritime Safety Information Downloads
- Maritime Telecommunications
- CG Nat'l Distress System
- Global Maritime Distress and Safety System

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May 11, 2016

#### NAVIGATION CENTER POINTS OF INTEREST



##### Current Operational / Safety Information

- Consolidated Nav Info
- DGPS Site Status
- GPS Ops Advisories & NANUs
- GPS Almanacs
- GPS CNAV Testing
- FCC GPS Jammer Enforcement
- Current Ice Chart
- Public Notices for Bridges
- Local Notice to Mariners
- Light List / Updates / Corrections
- Navigation Rules
- Navigation Regulations



##### Maritime Information

- Automatic ID System (AIS)
- Global Maritime Distress and Safety System (GMDSS)
- CG Nat'l Distress System
- Digital Selective Calling
- Vessel Traffic Services
- USCG "Homeport" Website
- Maritime Telecommunications
- Radionavigation Pubs
- Radio Watch Requirements
- Marine Safety Information Broadcasts
- Ports and Waterways Safety Assessment



##### About NAVCEN

- Mission Statement
- Contact Us
- Directions to NAVCEN
- Search Our Site
- Site Map
- Website Privacy Policy

### News and Notices:

-  RSS Feeds (LNMs, LL Corrections)
- A continuing series of incidents have been reported in the general location of Incheon, Republic of Korea and the surrounding Gyeonggi and Gangwon provinces out to approximately 100 nautical miles beginning on or about 0000Z31March16. For more information, please read the U.S. State Department Notice.
- The current aids to navigation design framework needs to be updated to take into account technology advances that allow for better positioning and increased marine information. Therefore, the Coast Guard will review the national levels of service provided to the mariner by the U.S. Aids to Navigation System (USATONS). To determine the appropriate aids to navigation lay down, we must take a systematic and holistic approach that considers stakeholder input, environmental considerations, channel framework, user capabilities, training and carriage, available technology, and available resources. Please assist us by providing your input to a [Seacoast Waterways Analysis Management Survey](#).
- The final GPS IIF satellite has joined the GPS constellation; the Air Force 50th Space Wing recently accepted satellite control authority of the final Global



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## NAVCEN Federal Partners



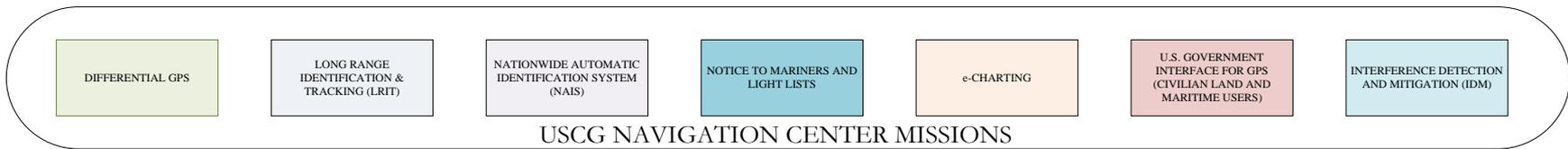
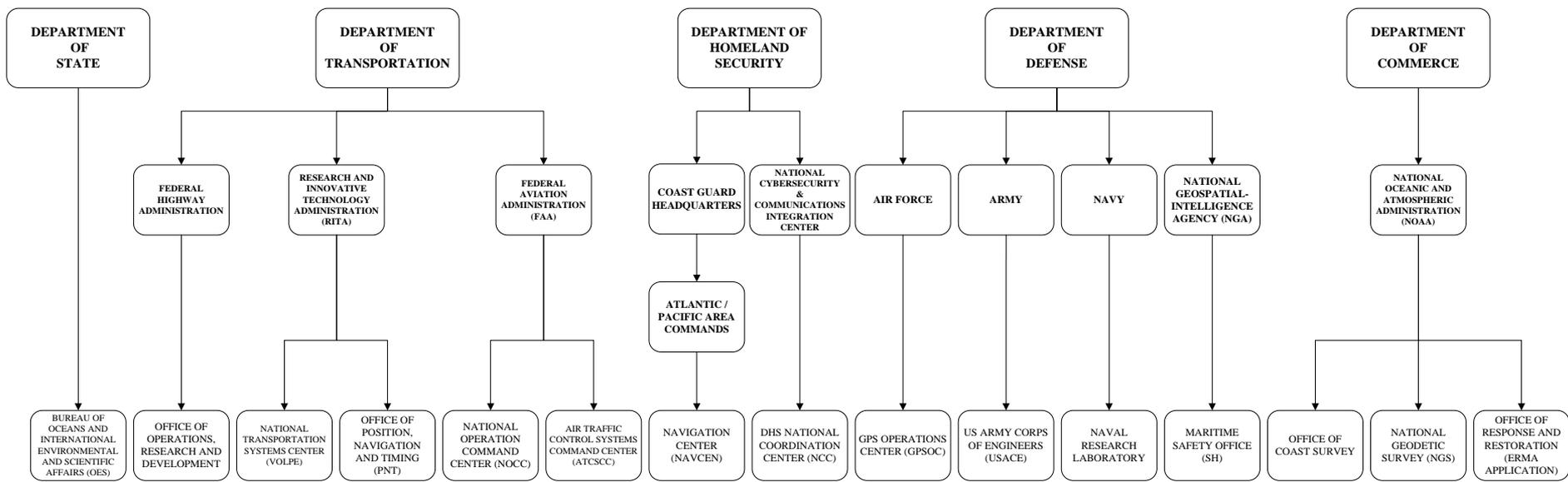
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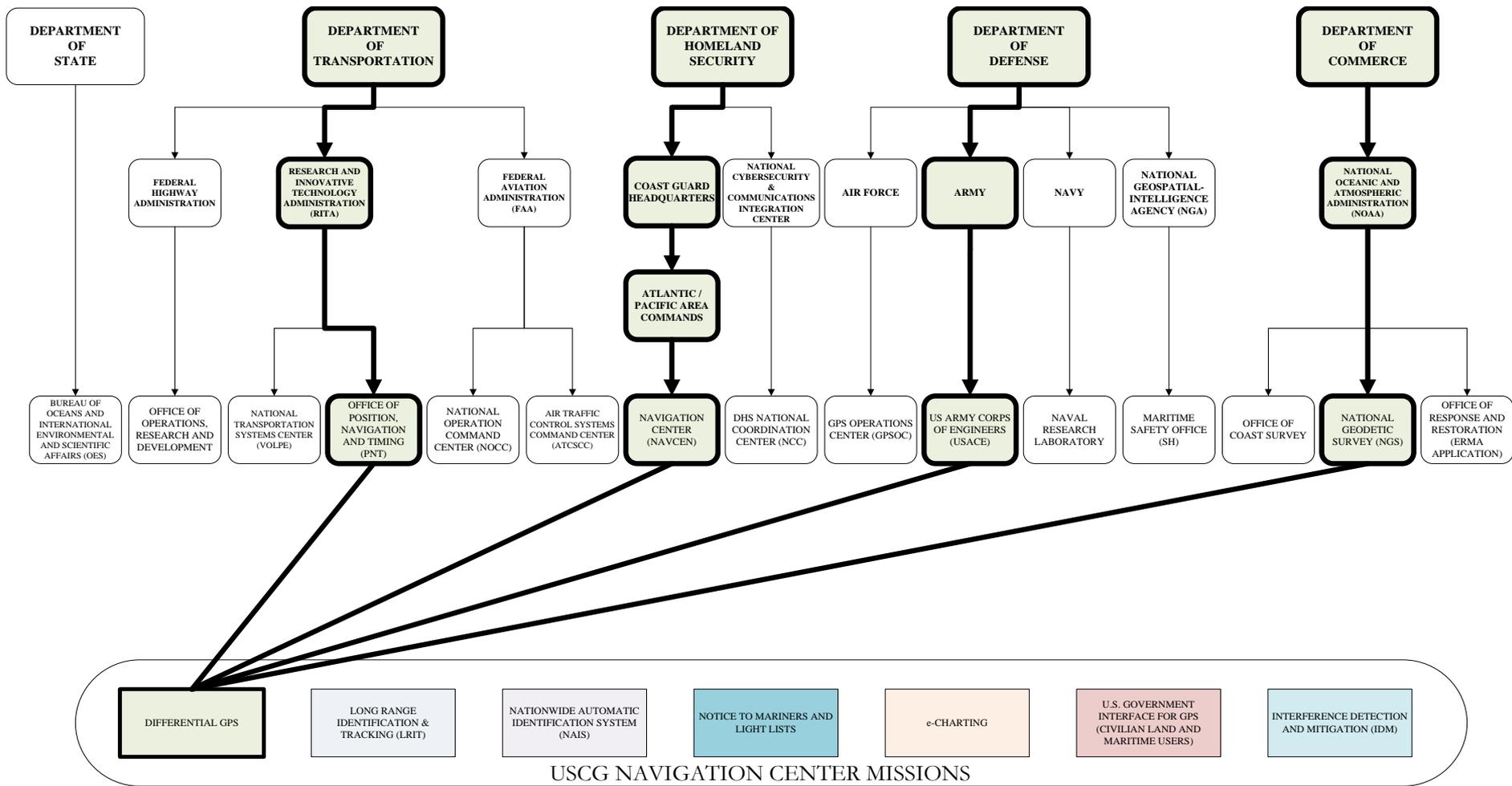
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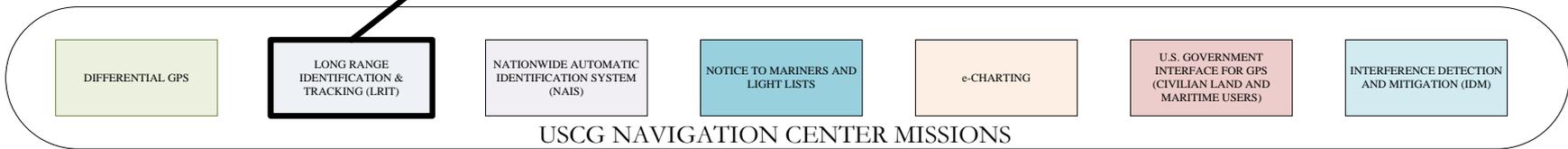
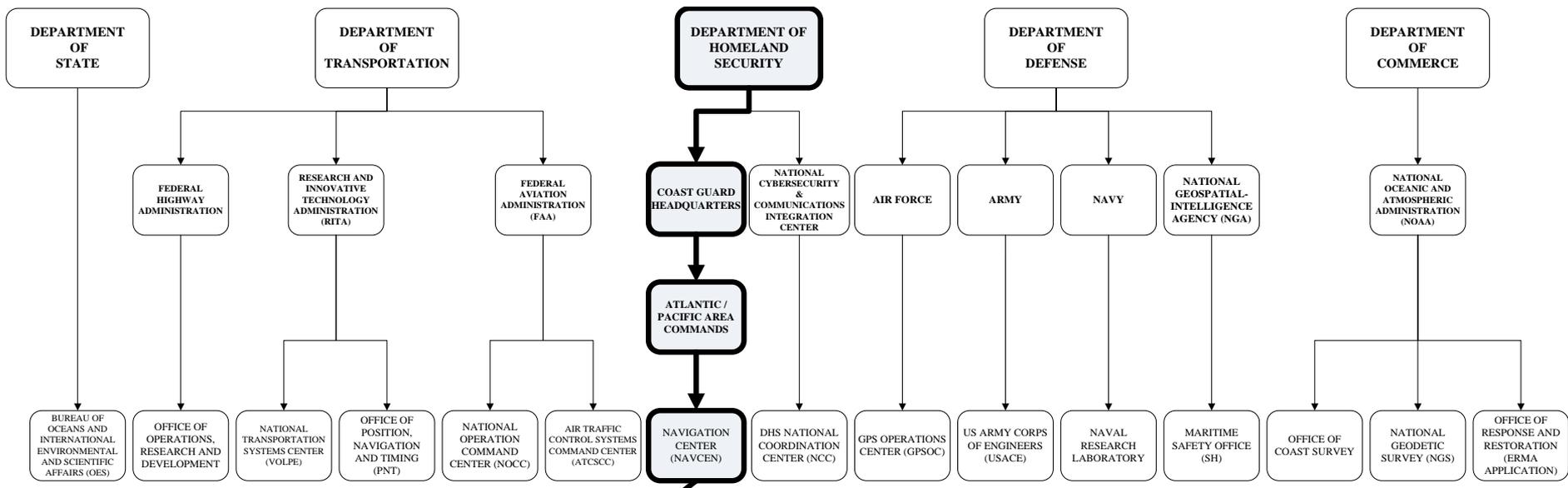


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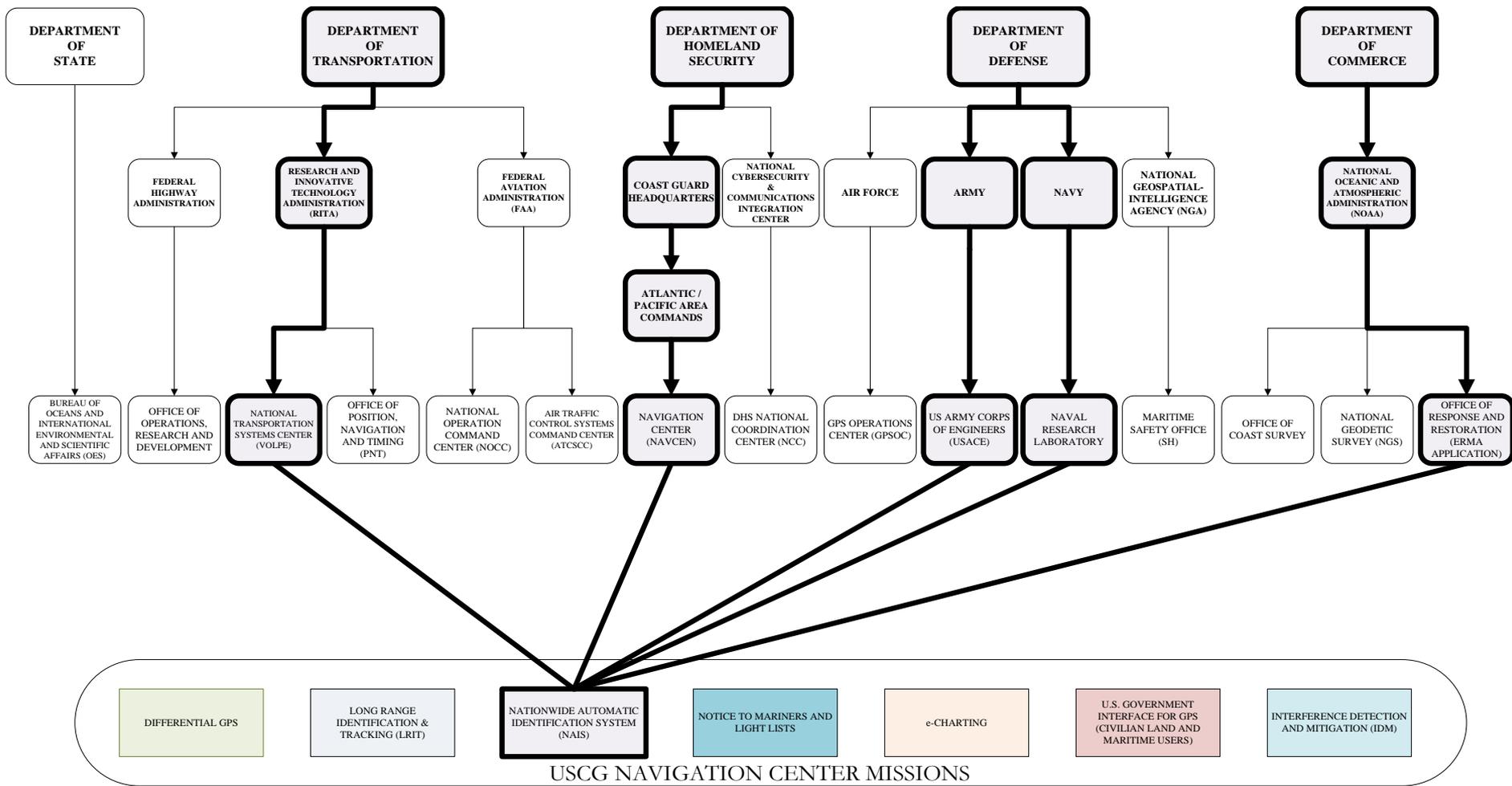
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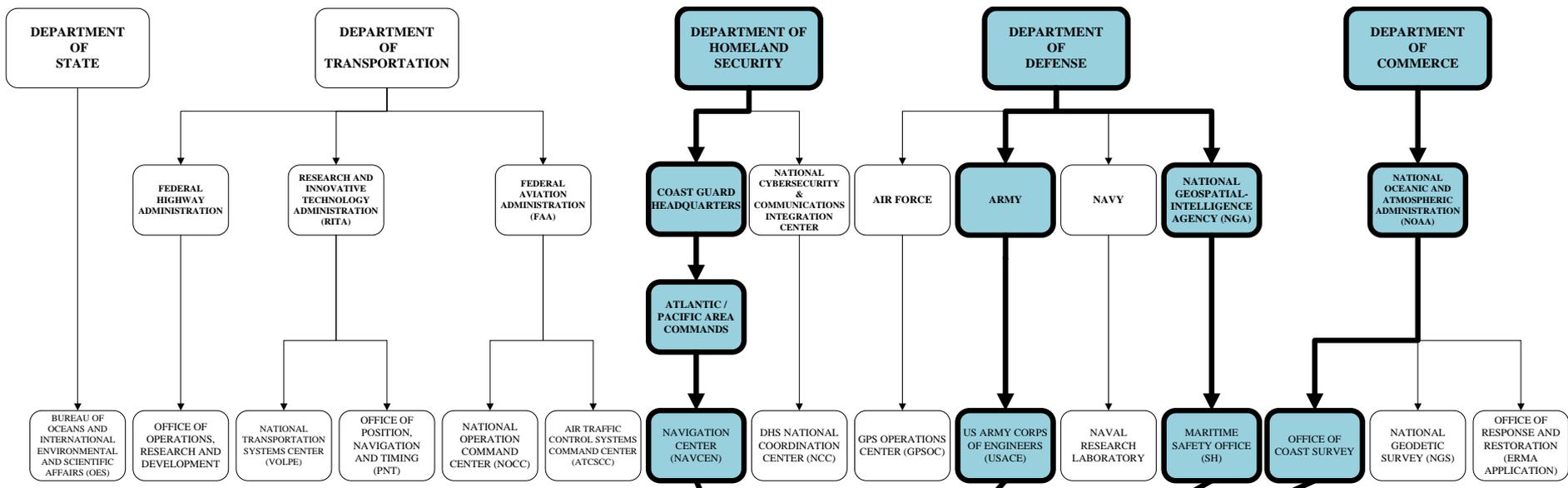
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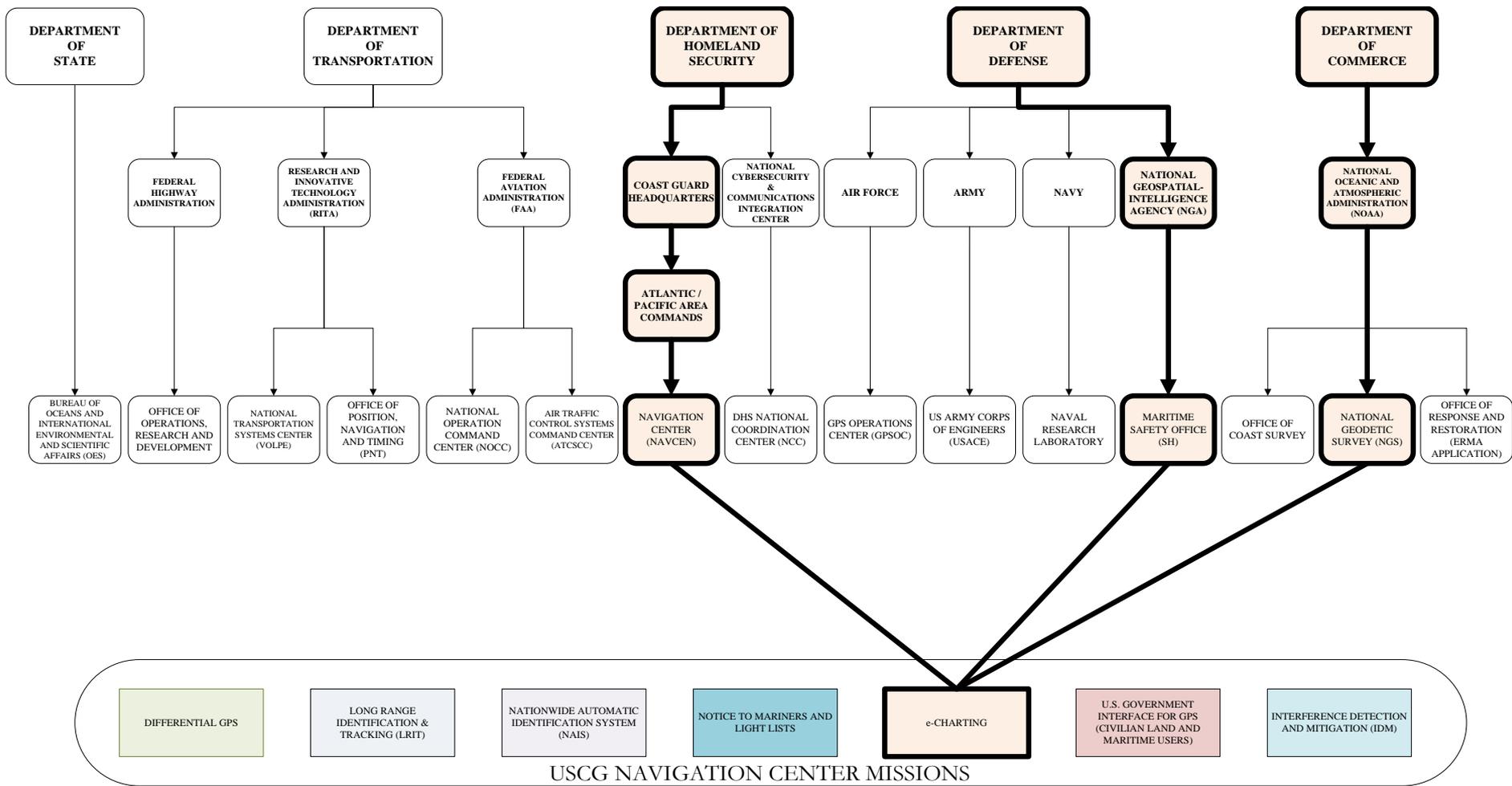
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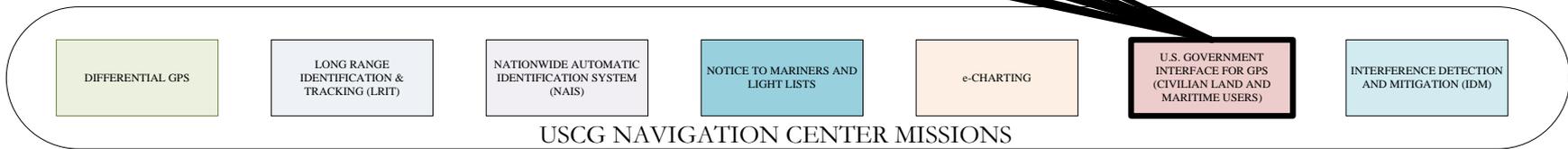
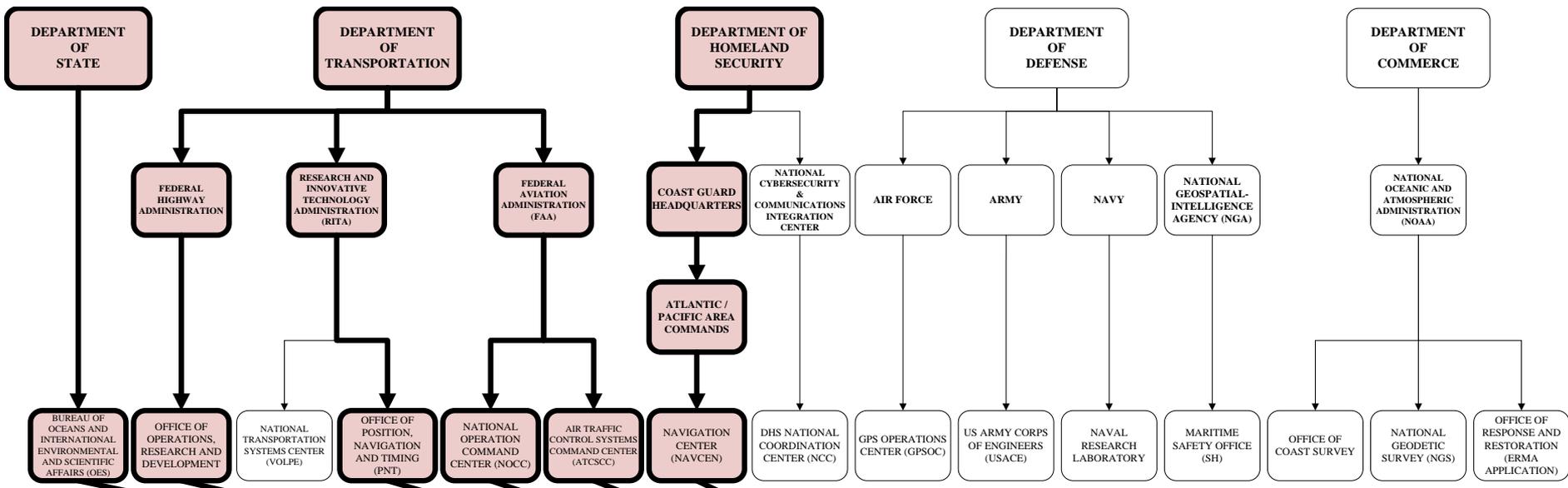


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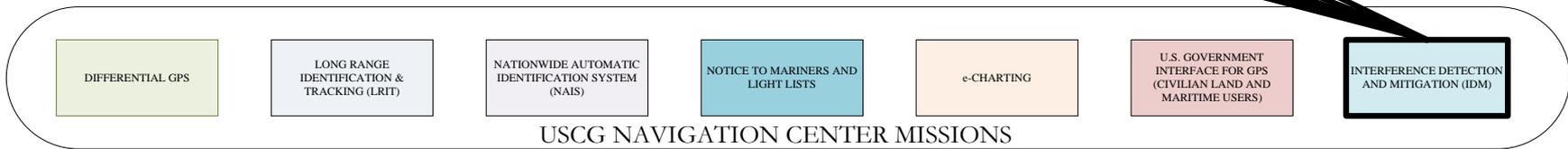
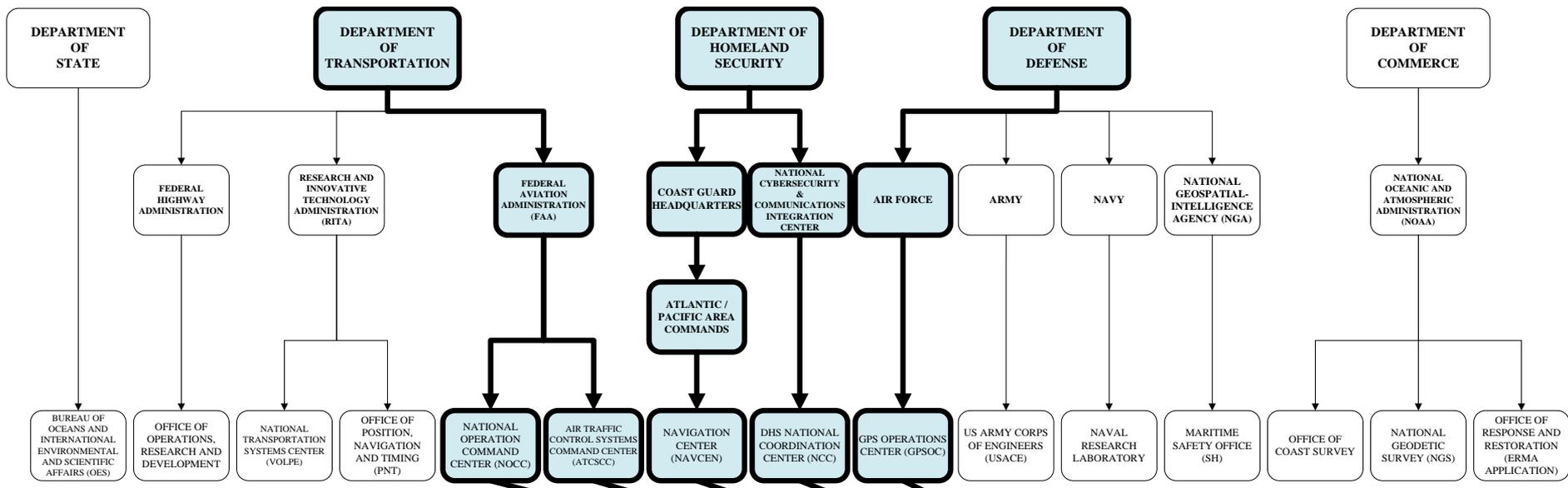
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