

US Committee on the Marine Transportation System (CMTS) e-Navigation Activities

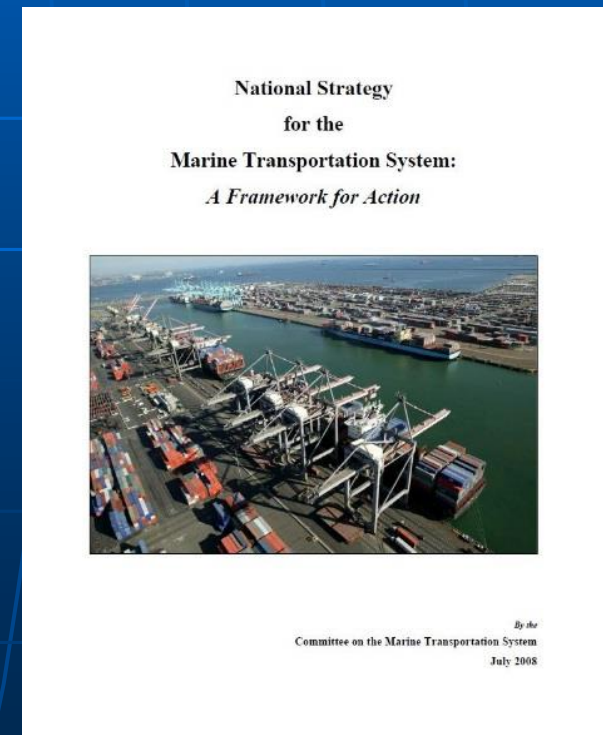
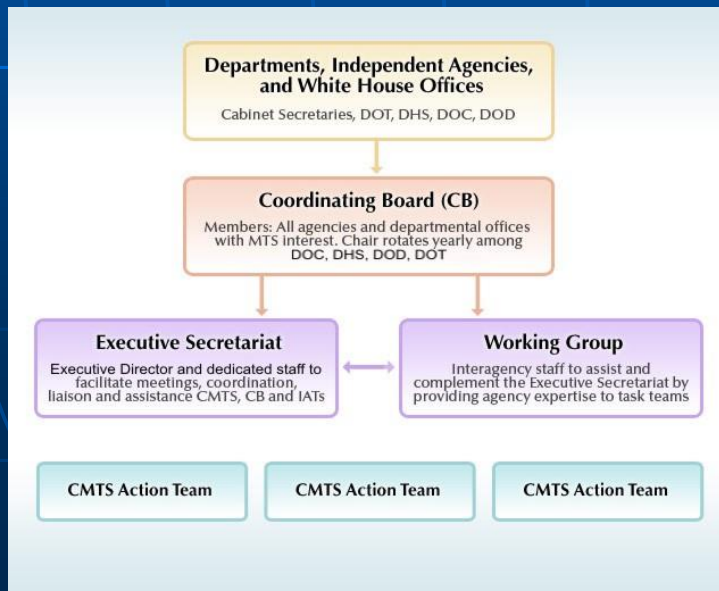


Visualization of Nautical Information

Brian Tetreault, US Army Corps of Engineers
Co-Chair, CMTS Future of Navigation IAT

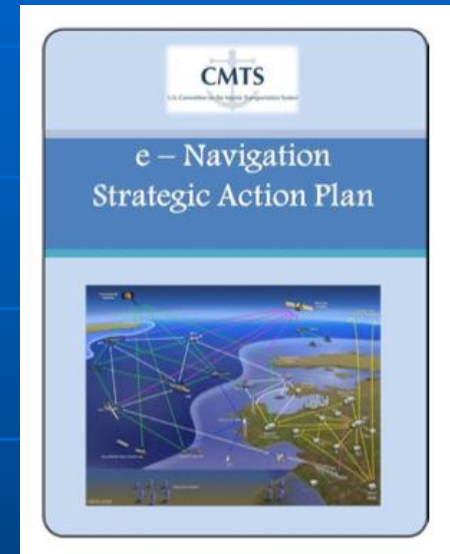
U.S. Committee on the Marine Transportation System (CMTS)

- CMTS - www.cmts.gov
 - 22+ Federal agencies
 - Organization
 - Principals
 - Coordinating Board
 - Working groups
 - Integrated Action Teams (IAT)



CMTS Future of Navigation IAT Terms of Reference

- Purpose: “develop and carry out a work plan for the implementation of the e-Nav Strategic Action Plan.”
- Membership:
 - Open to all CMTS agencies
 - Co-chairs:
 - USCG, USACE, NOAA
- “Communicate and collaborate with MTS stakeholders as appropriate”
- “work through accepted Federal channels to communicate and collaborate with international organizations... and appropriate non-governmental organizations... under the authorities and roles of the agencies participating in the e-Nav IAT.”



CMTS Future of Navigation IAT Work Plan

- Participation in IMO e-Nav implementation
- Outreach
- S-100 Implementation
- Unique identification codes
- Enhanced Marine Safety Information (eMSI)
- Broader use of AIS
- Single window development
- [Data –related efforts – passed to Data IAT]

Enhanced Marine Safety Information (eMSI)

- Current state:
 - Agencies provide MSI in different formats, disseminated through various means
 - Information is sometimes duplicated
 - Users need to know where to go to get information, then apply it
 - Information is not provided in a format best for end users
- eMSI Task Team purpose: Coordinate various government-provided navigation information services
- Goal: Provide an “integrated navigation information bulletin”
 - Accessed and delivered electronically
 - Variety of formats available as web services
 - Facilitate transmission via AIS

Enhanced Marine Safety Information (eMSI) Use Case

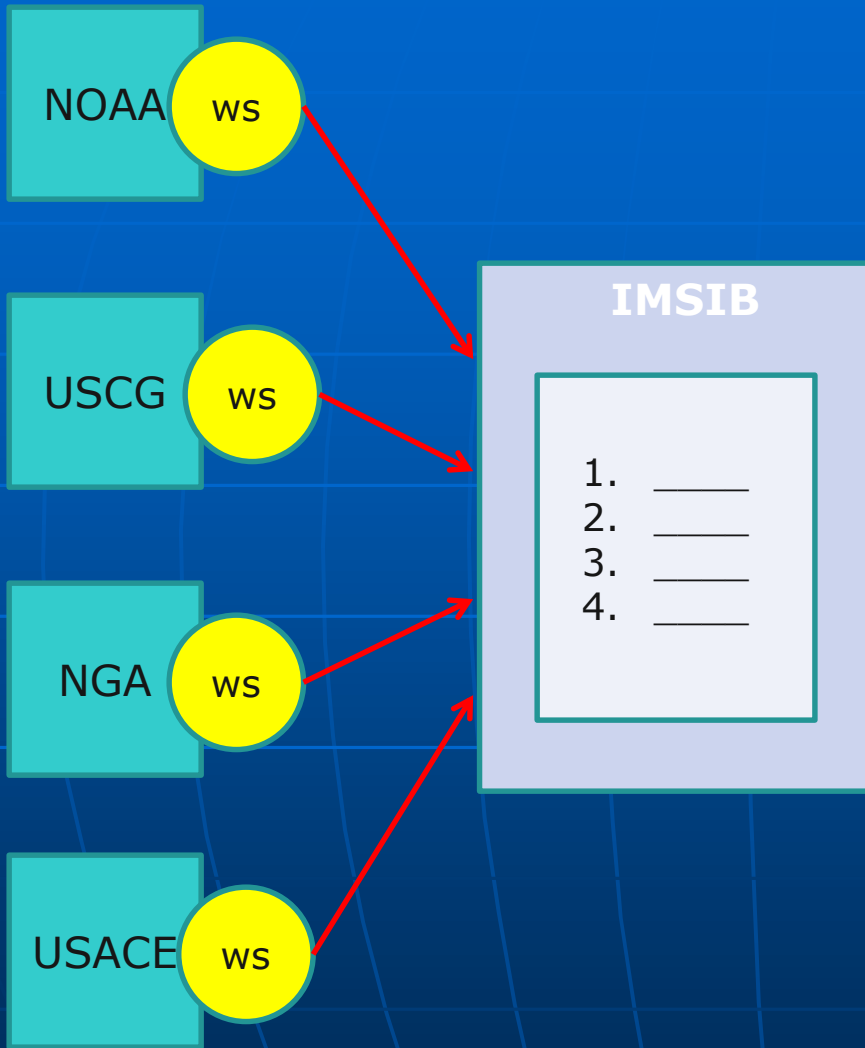
- During voyage planning, navigator determines departure date/time, estimated arrival date/time, route, stops or layovers, other information.
- Navigation system used for voyage planning automatically requests applicable information from eMSI service(s); transparent to the navigator; machine-to-machine.
- eMSI is delivered in usable format for the system(s) that the navigator will use.
- Voyage plan may be modified based on information received – iterative process

Broader definition of MSI

- IHO Special Pub. 53: “navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships”

eMSI task team including additional information such as lock status, AtoN discrepancies, weather observations, infrastructure information, etc.

Enhanced Marine Safety Information (eMSI)



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eMSI proof-of-concept portal

- Tool to aid in harmonizing MSI from various sources
- Using a broad definition of MSI – different from international definition
- Use portal as a place to put information from different sources and attempt to access it
 - Initially through manual user interface
 - Ultimately via machine-to-machine interface (web services)
- Identify areas that need harmonization
- Not intended to be the end product or “one-stop-shop”
- Incorporate into S-100 product specification(s)

eMSI Proof-of-concept portal

Navigation
US Army Corps of Engineers

DISCLAIMER: This application is for demo purposes only. Please send feedback [here](#).

Filters
From: 09/14/2016
To: 09/14/2016

Source Toggle

- LNM Discrepancies
- Green Buoys
- Red Buoys
- Bridges
- Locks and Dams
- Docks
- Notices to Navigation Interests
- Active Dredge Vessels
- AIS Site
- Area of Interest

Legend

- LNM Discrepancies (USCG)
- Green Buoys (USACE)
- Bridges (USACE)
- Red Buoys (USACE)
- Locks and Dams (USACE)
- Docks (USACE)
- Notices to Navigation Interests (USACE)
- Active Dredge Vessels (USACE)
- AIS Site (USACE)

125%

Geographic search

http://navigation.usace.army.mil/ems/

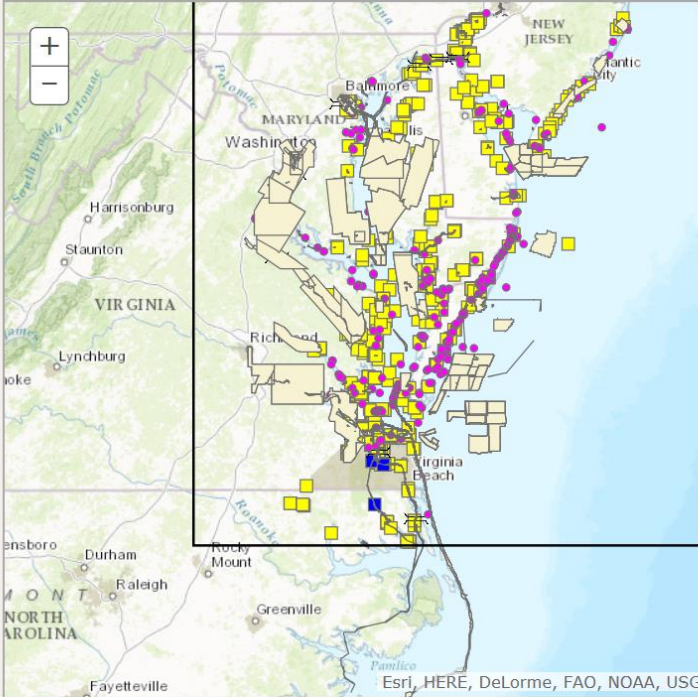
Committee F25 on Ships and ... Vessel Traffic Service (VTS) Saf... CMTS Demo

File Edit View Favorites Tools Help

Google LOMA MyTRB Alio... CEFM... CMTS... Rive... PIAN... ERDC... Mast... Corp... Futu... Spr... LOMA... MDOT... Lock... Test...

US Army Corps of Engineers

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Map showing navigation data for the Chesapeake Bay region, including Maryland, Virginia, and New Jersey. The map displays various navigation features such as LNM Discrepancies (USCG), Green Buoy (USACE), Bridges (USACE), Red Buoy (USACE), Locks and Dams (USACE), Docks (USACE), Notices to Navigation Interests (USACE), Active Dredge Vessels (USACE), and AIS Site (USACE). The map is powered by Esri, HERE, DeLorme, FAO, NOAA, USGS, and EPA.

Filters

From: 09/14/2016
To: 09/14/2016

Source Toggle

- LNM Discrepancies
- Green Buoy
- Red Buoy
- Bridges
- Locks and Dams
- Docks
- Notices to Navigation Interests
- Active Dredge Vessels
- AIS Site
- Area of Interest

Legend

- LNM Discrepancies (USCG)
- Green Buoy (USACE)
- Bridges (USACE)
- Red Buoy (USACE)
- Locks and Dams (USACE)
- Docks (USACE)
- Notices to Navigation Interests (USACE)
- Active Dredge Vessels (USACE)
- AIS Site (USACE)

Polygon Freehand Polygon Rectangle Triangle Circle Ellipse

Clear Routes Routing

LNM Discrepancies Notifications

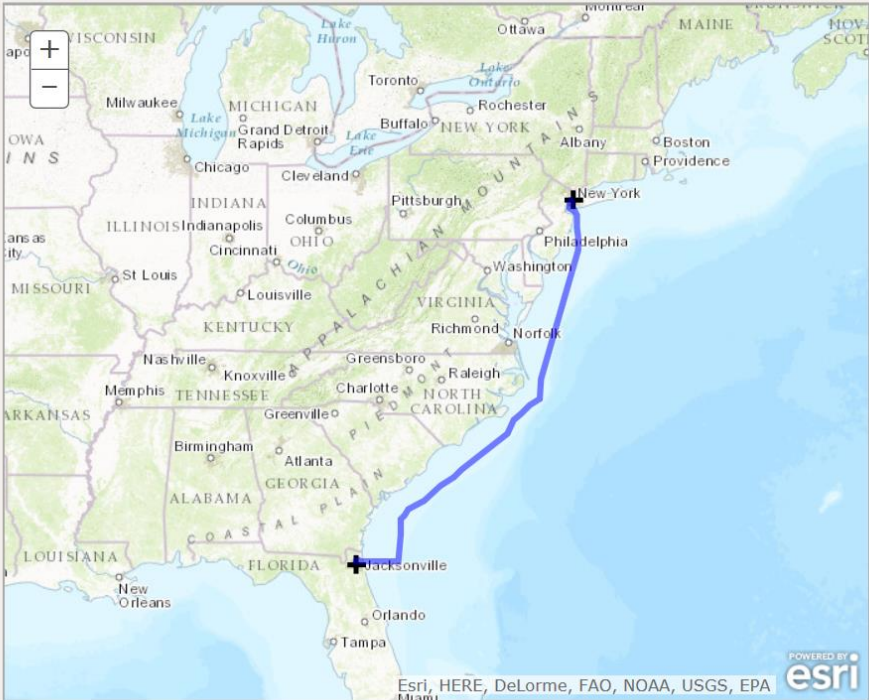
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Track line search

http://navigation.usace.army.mil/ems/ Committee F25 on Ships and ... Vessel Traffic Service (VTS) Saf... CMTS Demo

File Edit View Favorites Tools Help
Google LOMA MyTRB Alio... CEFM... CMTS... Rive... PIAN... ERDC... Mast... Corp... Futu... Spr... LOMA... MDOT... Lock... Test...

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Filters
From: 09/14/2016
To: 09/14/2016

Source Toggle
 LNM Discrepancies
 Green Buoys
 Red Buoys
 Bridges
 Locks and Dams
 Docks
 Notices to Navigation Interests
 Active Dredge Vessels
 AIS Site
 Area of Interest

Legend
◆ Green Buoys (USACE)
● LNM Discrepancies (USCG)
◆ Red Buoys (USACE)
⌘ Bridges (USACE)
■ Locks and Dams (USACE)
■ Docks (USACE)
◆ Notices to Navigation Interests (USACE)
⚓ Active Dredge Vessels (USACE)
📶 AIS Site (USACE)

Polygon Freehand Polygon Rectangle Triangle Circle Ellipse Clear Routes Routing

LNM Discrepancies Notifications

OBJECTID	MARINENAVIGATIONAIDDPK	SDSFEATURENAME	SDSFEATUREDESCRIPTION	MEDIAIDFK
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125%

List of selected MSI

Browser navigation bar showing address bar with URL <http://navigation.usace.army.mil/ems/>, search icon, and tabs for "Committee F25 on Ships and ...", "Vessel Traffic Service (VTS) Saf...", and "CMTS Demo".

Navigation menu with the following items:

- LNM Discrepancies Notifications
- Green Buoys
- Red Buoys
- Bridges
- Lock and Dams
- Docks
- Notices To Navigation Interest
- Active Dredge Vessels
- AIS Sites
- Area of Interests

The "Area of Interests" section contains a table with the following data:

OBJECTID	SouIDkappID	NoCorrect	ENCPosted	BSBPosted
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16991			1430122495000	
16951			1471421397000	
16910			1383309018000	
16899			1411376580000	
16898			1377007809000	
16897			1400744447000	
16896			1469800273000	
16887			1372961372000	
16874			1403090808000	
16826			1372961372000	
16534			1473318717000	
16527			1473240258000	
16526			1472714032000	
16525				147271521100
16524				147271520700
16523				147271522500

Lessons learned

- What time is it?
 - All data sets have date-time fields
 - Different meanings, formats, etc.
- Where are we?
 - Location codes, waterway IDs, etc.
- Who's got the conn?
 - International: IHO, IALA, WMO, ???
 - US: Various agencies, regulations, laws, requirements
 - Industry: Similar efforts with existing data access

eMSI Road Map tasks

- Establish eMSI application presentation interface (API)
- Compile list of existing interagency bilateral efforts
- Address chart update issues
- Identify common navigation information fields
- Get USCG BNMs into digital format
- Develop a graphic/matrix displaying current status of navigation information and who's responsible for it.
- Create eMSI S-57 products from portal data - similar to existing inland buoy overlay
- Current listing and status of S-100 product specification development efforts related to eMSI
- Take route exchange format from ECDIS standard and build the capability to accept and return eMSI based on this
- Determine best way to reach out to software/equipment manufacturers

Discussion points

- Recommendations on approach
 - Priorities
 - Services to include
- Testing
- Test products
 - S-57 product
 - API
- What are applicable S-100 product specifications
 - Gaps
 - Overlap
- Other comments, suggestions

Thank you for your attention!



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