US Army Corps of Engineers
e-Navigation Projects

AAPA Harbors and Navigation Committee Meeting
Port of Seattle 13 August 2014

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e-Navigation: International definition

“e-Navigation is the harmonised collection, integration, exchange, presentation and analysis of maritime information onboard and ashore by electronic means to enhance berth to berth navigation and related services, for safety and security at sea and protection of the marine environment”

MSC85/26/Add.1 annex 20
e-Navigation: “three sides of the coin”

“harmonized collection, integration, exchange, presentation and analysis of maritime information onboard”

“harmonized collection, integration, exchange, presentation and analysis of maritime information ashore”

e-Navigation: “Analog to Digital”

- Paper charts
- Manual positioning
- Voice communications
- Visual aids to navigation
Electronic navigation charts (ENC/IENC)
• Additional information provided as overlay to IENC:
  • Weather
  • Water levels
  • Lock status
USACE e-Navigation projects

- Inland Electronic Navigation Charts (IENCs)
- Hydrographic surveys
- Lock Operations Management Application (LOMA)
- Lock approach current modeling
- Notices to Navigation Interests - “eMSI”
USACE Inland Electronic Navigational Chart
Program Status - 2014

• 106 charts of inland rivers available on web
• ~7000 miles available in Inland Standard 2.2, shapefiles and KML
• US Coast Guard buoys chart overlay available
• Program managed via Army Geospatial Center & Louisville District

• Monthly Update cycle, can update weekly as needed
• 100% traceable audit trail for source data
• RSS and XML catalogs available for all data
• IENC data on WWW (Amazon Cloud & Web Services)

• R&D: IENC mobile apps for Android
• Mississippi River SW Pass overlay near release.
• 265 Miles of the White River, AR to be released in June 2014.
Inland Electronic Navigation Charts (IENCs)

Corps of Engineers, Inland Waterways

NOAA, Coastal and Great Lakes

More consistent and reliable channel data from Corps for NOAA charts

Coordination of adjoining charts for seamless use by chart systems
Miss River Southwest Pass
Jefferson County Port Authority Proposed Fleeting Area
Will It Affect Navigation?
Proposed Fleet Location

Low Water Buoys from USCG (St. Louis -3.5')
CPAF (Jefferson County Proposed Fleet)
Upper Mississippi River miles 150-153
20140530

This is a testing area for a proposed fleet. The virtual fleets will never change position and virtual buoys are indicative of where they have been set in the past at -3.5 St. Louis River Gage. This is not the actual buoy positions in current state.

The U.S. Coast Guard is asking for feedback from all pilots transiting that area on whether this would be considered a hazard to navigation in the "Extreme Low water Phase". Please send feedback to SUMRWATERWAYS@uscg.mil.

Please provide feedback no later than 11 June 2014.
USACE Development - eHydro

- HQ Channel Availability Report
- Channel Shoaling & Analysis Tool
- Channel Portfolio Tool
- Navigation Asset Management

Coastal District Channel Surveys
Purpose:
- Provide end users information needed for decision support

Goals:
- Increase lock operator situational awareness
- Provide vessel operators better information
- Provide better information to Corps management
- Exchange information with external users

AIS is the central LOMA technology
LOMA current capabilities

- Lock operator situational display
- AIS vessel information
- Zone management
- Playback capability
LOMA equipment deployment
• Additional information provided as overlay to IENC:
  • Weather
  • Water levels
  • Lock status

Vessels awaiting lockage

Upper and lower gage readings
Lock approach current modeling

- Vessel operators need river current information at critical locations (e.g., lock approaches)
  - Sensors are expensive to install and maintain; provide limited information
Lock approach current modeling
Lock approach current modeling
Lock approach model data via AIS

Model output
101100011101
01001000110
1001001000
010

Convert to ASM

LOMA

AIS units at Locks

AIS message

Payload

Model input:
- Bathymetry
- Structure plans
- Dam discharge
- Surface elevation (pool)
Enhanced Marine Safety Information (eMSI)

- **Purpose:** Coordinate various government-provided navigation information services:
  - USCG: Notices to Mariners (NTM)
  - USACE Notices to Navigation Interest
  - NOAA: Chart corrections/updates
  - NGA: International NTM

- **Provide an “integrated navigation information bulletin”**
  - Accessed and delivered electronically
  - Variety of formats available as web services
  - Transmitted via AIS

- **Status**
  - ~Monthly interagency meetings
  - Identifying common data fields, connectivity between agency systems
  - Goal: Demonstration web services by 30 Sep 14
Integrated “eMSI Bulletin” concept

- NOAA
- USCG
- NGA
- USACE

IMSIB

1. _______
2. _______
3. _______
4. _______
Olmsted Lock and Dam Construction project
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Summary

- e-Navigation
  - “Three sides of the coin;” “analog to digital”
- Emerging technologies
  - LOMA
  - Expanded use of AIS
  - Enhanced Marine Safety Information (eMSI)
- More information:
  - “Future of Navigation” outreach effort
  - National Harbor Safety Committee Conference, Philadelphia, 25-27 August 14
Thank you for your attention!

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