Navigation RD&T Status 2012

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Technical Director, Navigation
Engineering Research and Development Center
U.S. Army Corps of Engineers

1. RD&T Priorities & Programs
2. Emerging Products
3. Data Integration

31 May 2012
Washington DC

US Army Corps of Engineers
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Navigation R,D&T Strategic Needs & Priorities

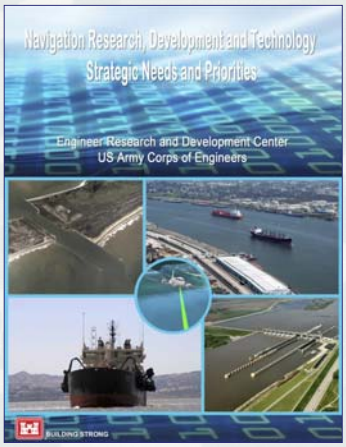
- Extend the useful life of existing navigation infrastructure

✓Operate and manage national waterborne transportation assets as an integrated system

✓Optimize and prioritize channel availability for commercial freight movement

✓Engineering With Nature to enhance ecosystem and navigation processes, benefits and services

✓Implement eNavigation throughout the National MTS



✓ includes dredging related RD&T

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Navigation R,D&T Portfolio

Programs

- ✔ Dredging Operations and Environmental Research
- ✔ Coastal Inlets Research Program
- ✔ Navigation Systems
- Navigation Structures
- ✔ Regional Sediment Management
- ✔ Monitoring Completed Navigation Projects
- ✔ Dredging Operations Technical Support
- ✔ Inland Electronic Navigation Charts
- ✔ National Coastal Mapping Program

✓ includes dredging related RD&T

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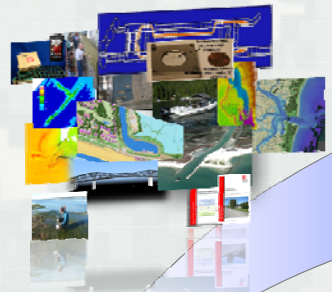
Technology Transfer

Summary of FY11 Products



- >1,000,000 Website Visits
- 449 Tech Reports and Tech Notes
- 279 Conferences & Workshops
- 206 Wiki Pages
- 86 Journal Articles
- 82 Hosted Workshops
- 81 University Collaborations
- 52 DOTS requests / 20 Districts
- 50 WOTS requests / 20 Districts
- 39 Federal Agencies Collaborations
- 37 Webinars

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Navigation RARG 2012

Vicksburg, MS

- 46 Nav RARG attendees
- Every Division Represented
- Included
  - HQUSACE
  - MDC
  - NDC
  - CWG
  - INDT
  - DDNPCX
  - INPCX
  - EN CoP

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Definition of Safe Nautical Depth

Problem: Corps dredges 200 MCY annually and needs to improve efficiency and reduce impacts

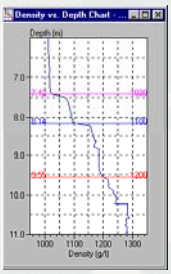
How it addresses the Problem: Will result in long-term cost reductions by defining new safe operational conditions. Will reduce environmental risks associated with dredging and disposal of fluid mud/turbid water.

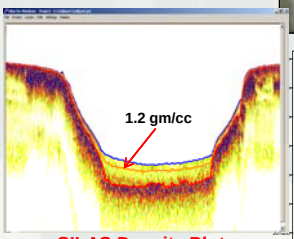
Capabilities for Corps users: Establishing nautical depth at a U.S. port, Gulfport MS.

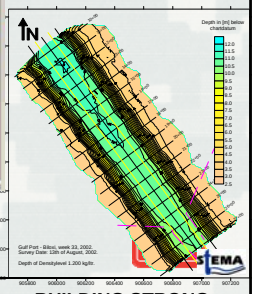
PMP includes local pilots and ship simulation, emerging survey technology, new Operations practices and PIANC collaboration.

IRVINGTON

Rheotune Probe and Density vs. Depth Output







SILAS Density Plots (Plan and Profile) of Gulfport Ship Channel

DOER & MCNP

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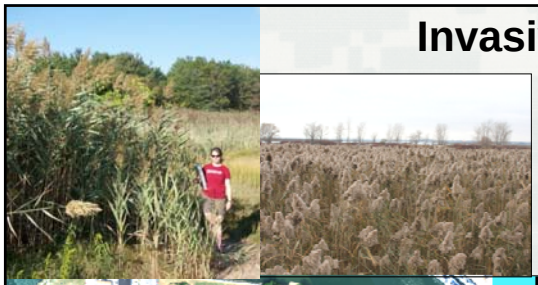
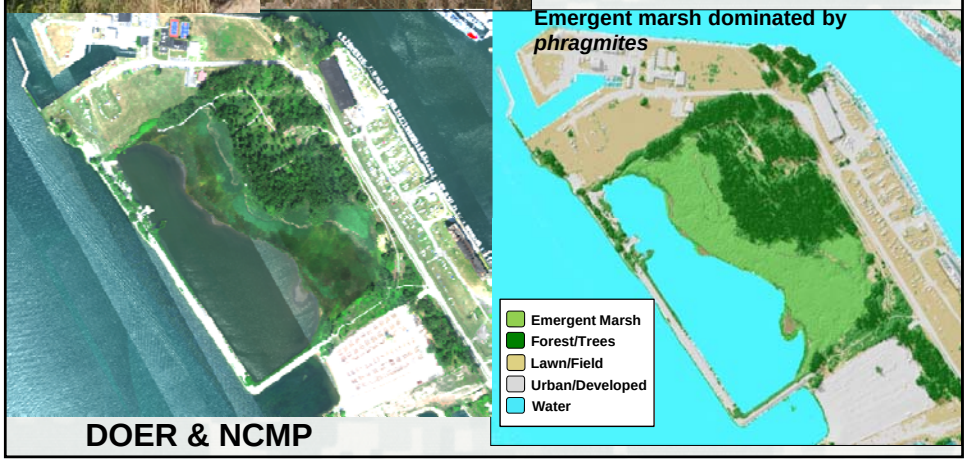
Invasive species detection



Times Beach, Buffalo NY, 2007

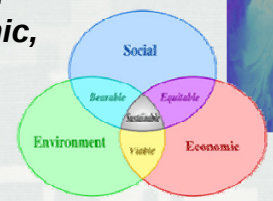
Emergent marsh dominated by *phragmites*



DOER & NCMP

Engineering With Nature

Engineering With Nature is ***the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental and social benefits.***



DOER, RSM & Environmental R&D

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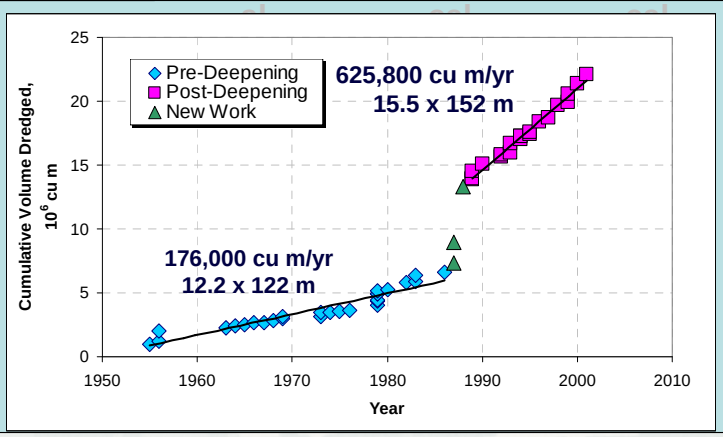
Channel Shoaling Toolbox

Historical Data | Empiric | Analyti | Numeri



CIRP & MCNP

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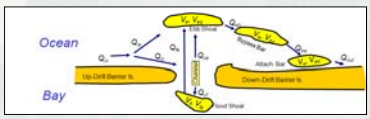
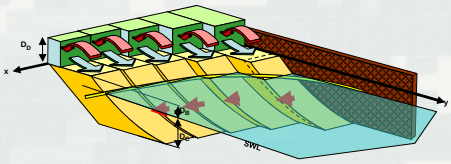
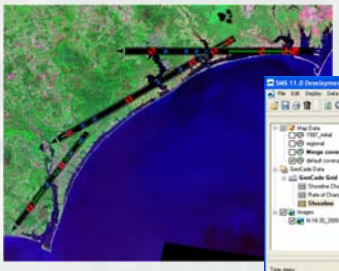
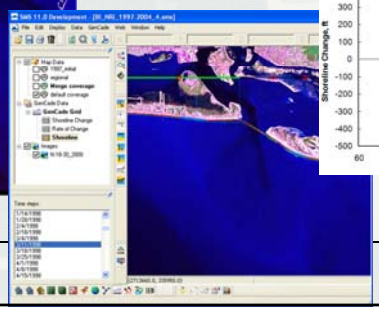
GENCADE: A Regional Shoreline Change and Sediment Transport Numerical Model

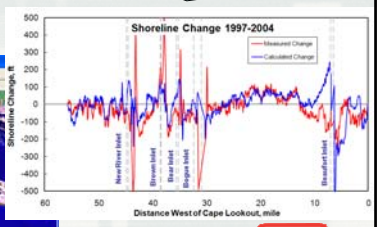
GENESIS + Cascade → GenCade











CIRP & RSM

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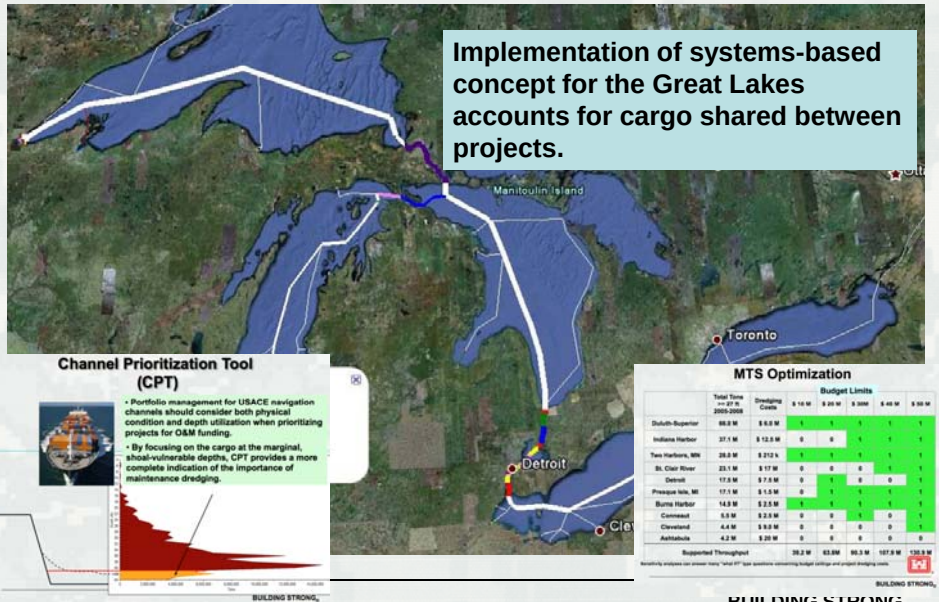
Channel Portfolio Tool



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CIRP, WCSC, NDC & NavSys

DQM – DIS – RMS Linking

DOER & NavSys

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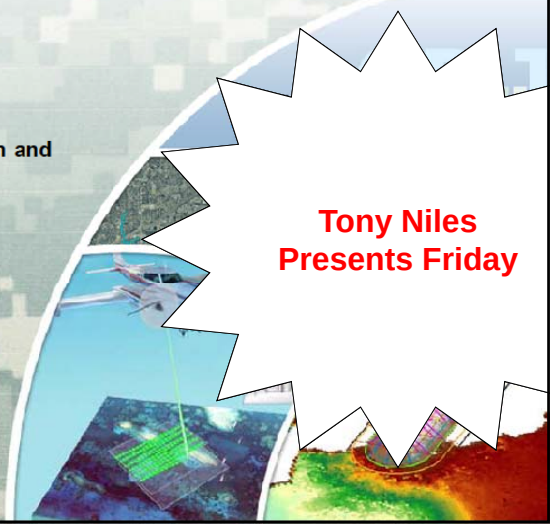
eHydro Hydrographic Survey Pilot Project

Pilot Project Conference Call, March 21st, 2012

Presented by:

Tony Niles
Project Manager
Headquarters, Directorate of Research and Development

Gary Gealy
Software Development Team
Mobile District
Bowhead Contracting



Tony Niles Presents Friday

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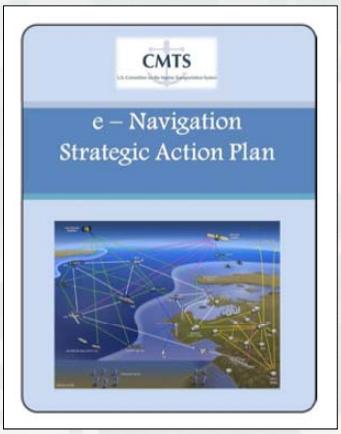
US CMTS e-Navigation Strategic Action Plan

The US vision for e-Navigation is:

"To establish a framework that enables the transfer of data between and among ships and shore facilities, and that integrates and transforms that data into decision and action information."



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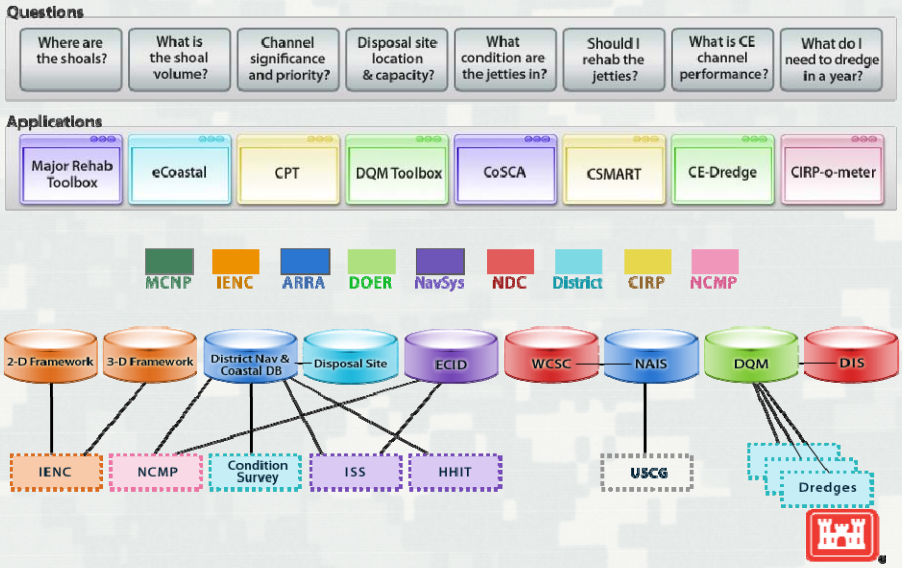
Integrated Navigation Tools & Data



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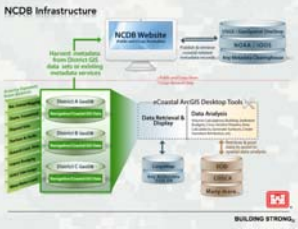
Nexus between Next Generation Tools and Data

Next Gen Applications	NCDB	Channel Framework	NCMP	NCMP	WCSC	DIS / DQM / RMS
	Sturc / DS / CC / DH		DEM / BE / SL / VC / CS	Im / LU / BR / WQ / IS		
AM	X	X	X	X	X	
DQM	X	X				X
DIS		X				X
RMS		X				X
CPT	X	X			X	X
Channel Condition Rpt	X	X				
Channel Performance Index	X	X				X
Std Channel Template	X	X	X	X		
LOMA		X			X	
CMS	X	X	X	X		X
GenCade	X	X	X	X		X
Turtle Warehouse		X				X
CS-Sim	X		X	X		
RSM Portal	X	X	X	X		X
CE-Dredge	X	X	X	X		X
ECID	X	X	X	X		
ODSDODS	X	X				X
SMS Framework	X	X	X	X		



- Integrate efforts on… Dredging & Inland Waterways…

  Dredging Quality Management (DQM)
  Resident Management System (RMS)
  Dredging Information System (DIS)
  Dredging Histories (DH), etc

  River Information System (RIS)
  Lock Operators Management System (LOMA)
  IWR Multi-modal Effort, etc

- To maximize interoperability
- Improve one time data entry
- Facilitate Business Line Decisions and Work Flow

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Thank You !

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