

2007 U.S. Coast Guard Innovation Expo
"U.S. Coast Guard Innovation: Improving Mission Execution and Sustainment"

New Orleans, LA

29 October – 1 November 2007

Agenda

Monday, October 29, 2007
"Operationalizing MDA"

MDA Day ***Welcoming Remarks:***
VADM Robert Papp, USCG, Coast Guard Chief of Staff

"National Concept of Operations for Maritime Domain Awareness", ***Mr. Dana Goward,*** Director, Coast Guard MDA Program Integration (CG-51-M)

Interagency Staff Leads

- ***RDML Lee Metcalf,*** USN, Director, Global Maritime Situational Awareness (GMSA)

"U.S. Coast Guard MDA Projects", ***RDML Rob Parker,*** USCG, Assistant Commandant for Capabilities (CG-7)

Afternoon Session – AIS Data Sharing
"AIS 101 & Nationwide AIS Project", ***CDR Keith Ingalsbe,*** USCG, Project Manager, Coast Guard Nationwide AIS Project

AIS Collection with Satellites

- "Government Satellites – TACSAT", ***Mr. Christopher Huffine,*** Naval Research Lab

Sharing AIS Data

- "Maritime Security and Safety Information System (MSSIS)", ***CDR Ric Callesen,*** USN COMNAVEUR
- "Maritime Administration Efforts", ***Mr. Owen Doherty,*** MARAD
- "MDA Data Sharing Community of Interest", ***Mr. Jay Spalding,*** USCG R&D Center

Program Executive Office Command, Control, Communications, Computers and Intelligence (PEO C4I), ***Mr. Andy Farrar***, U.S. Navy PEO C4I

Tuesday, 30 October 2007

Expo Keynote Session #1
The Honorable ***David Walker,*** Comptroller General, U.S. Government Accountability Office(GAO)

Expo Panel Session: ***Innovations in Government***
Moderated by ***Mr. Rolf Dietrich,*** Deputy Director of Innovation, DHS S&T

Panelists:

- ***Ms. Elizabeth Durham-Ruiz,*** Chief of the Partnership, Group, STRATCOM
- ***CAPT David Newton,*** USCG, Director (acting), Borders & Maritime Security Division, DHS S&T
- ***Mr. Greg Price,*** Special Assistant, Rapid Technology Insertion, DHS S&T
- ***Mr. Kevin Lawson,*** Chief, Applications Development Branch, IT Division, TSA

Expo Keynote Session #2
The Honorable ***Jay Cohen,*** Under Secretary for Science and Technology, Department of Homeland Security

- Navy Littoral Vehicle .wma video file
- Levee Sound Scenario 1 .wma video file
- Levee Sound Scenario 2 .wma video file
- First Shots .mpg video file
- Hersey Bypass .wma video file

Expo Panel Session: ***Innovation that Works - Turning Ideas into Opportunities***
Moderated by: ***Dr. Neil Thornberry,*** Innovation Chair Naval Postgraduate School (NPS)

Wednesday, October 31, 2007

Expo Panel Session: ***Biometrics-at-Sea; Mona Passage Proof of Concept***
Moderated by: CDR Eric Riepe, USCG, Office of CG Law Enforcement

Panelists:

- ***CDR Rick Christoffersen***, USCG, Response Department Head, CG Group Humboldt Bay
- ***LCDR M. Andre Billeaudeaux,*** USCG, Director, CG Auxiliary, 13th CG District
- ***LCDR Christopher Kluckhuhn,*** USCG, Organizational Performance Consultant, 1st CG District ASTC
- ***Mario Vittone,*** USCG, Instructor, CG Rescue Swimmer School, CG Aviation Technical Training Center

Expo Keynote Session #3
"SecondLife", ***Mr. John Lester,*** (ppt format) "Pathfinder Linden", Linden Labs

Acquisition Insights Panel Session: ***USCG Acquisition Directorate (CG-9)***
Moderated by: RADM Gary Blore, USCG, Assistant Commandant for Acquisition

Photo Slide Show

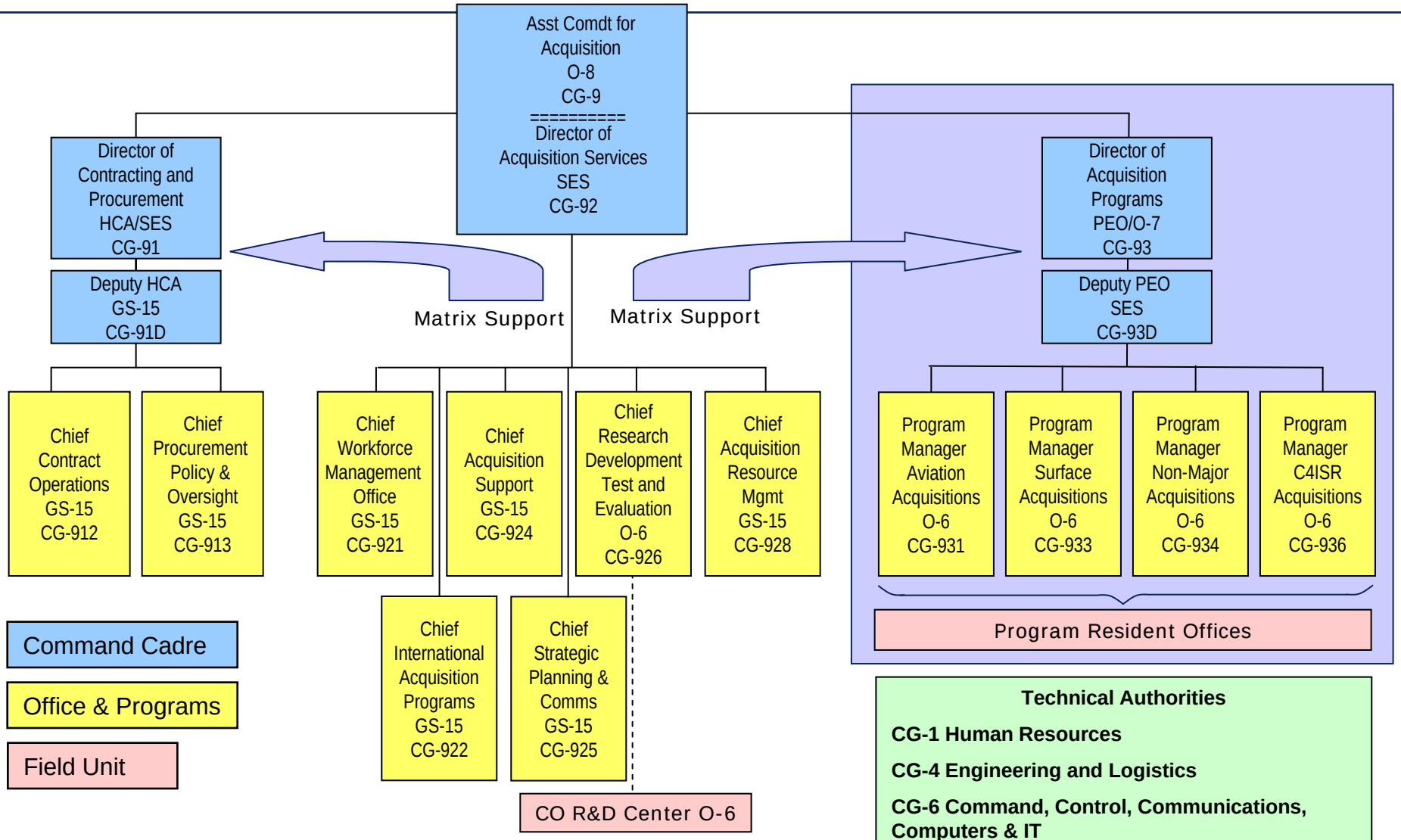
Acquisition Directorate

Acquisition Insights & Transformation

CG-9 | RADM Gary T. Blore

31 October, 2007

CG-9 Full Operational Capability, FY09





Acquisition Directorate



Director of Acquisition Programs (CG-93) – Acquisition Program Update

Surface

- National Security Cutter
- Offshore Patrol Cutter
- Fast Response Cutter
- Coastal Patrol Boat
- Mission Effectiveness Project
- Response Boat Medium
- Ramping Down: Response Boat Small
- Long Range Interceptor / Short Range Prosecutor
- Close Out: Great Lakes Ice Breaker Replacement
- On the Horizon: Inland River Tender Emergency Sustainment

Aviation

- Long Range Surveillance HC-130H & HC-130J
- Medium Range Surveillance HC-144A
- Multi-mission Cutter Helicopter HH/MH-65C
- Medium Range Recovery Helicopter HH/MH-60J/T
- Unmanned Air Systems
- MH-68A/HITRON

C4ISR

- Deepwater C4ISR
- Rescue 21
- Nationwide Automatic Identification System
- On the Horizon: Command 21

Logistics

- Logistics Integrated Management System

Surface Projects



Length 418 Ft
Speed 28 kts
Range 12,000 nm
Endurance 60 Days

National Security Cutter (NSC) : (8)
- Hull #1 BERTHOLF 88% complete
- Hull #2 WAESCHE 32% complete
- Hull #3 on contract (Aug 07)



Length 360 Ft*
Speed 25 kts*
Range 9,000 nm*
Endurance 45 Days*

Offshore Patrol Cutter (OPC): (25)
- Production to begin 2012
- NSC, LCS lessons learned
- ABS Classed

* Preliminary Characteristics



Length 140 - 160 Ft
Speed 30 kts*
Range 4,230 nm*
Endurance 7 Days*

Fast Response Cutter (FRC): (58)
- Competitive FRC-B RFP released June 07
- Parent craft
- ABS Classed

* Preliminary Characteristics



Length 44 Ft
Speed 42 kts
Range 250 nm

Response Boat – Medium (RB-M): (180)
- Twelve under contract
- First to be delivered March 08



Length 87Ft
Speed 25 kts
Range 600 nm

Coastal Patrol Boat (CPB): (73)
- There are currently 8 remaining CPB's on contract
- Final CPB to be delivered Feb 09



Mission Effectiveness Project: (CG Yard)
- 1 – 110′complete, 4 on going, 18 remaining
- 2 – 210′s complete, 2 on going, 10 remaining
- 4 – 270′s availabilities complete,
- Purpose: System Recapitalization

National Security Cutter (NSC)



- **Plan: 8 *Legend*-class cutters**
- **Current Status:**
  - **Hull 1 – BERTHOLF 88 Percent complete**
  - **Hull 2 – WAESCHE 32 Percent complete**
  - **Hull 3 – Production contract awarded to ICGS**

Upcoming:

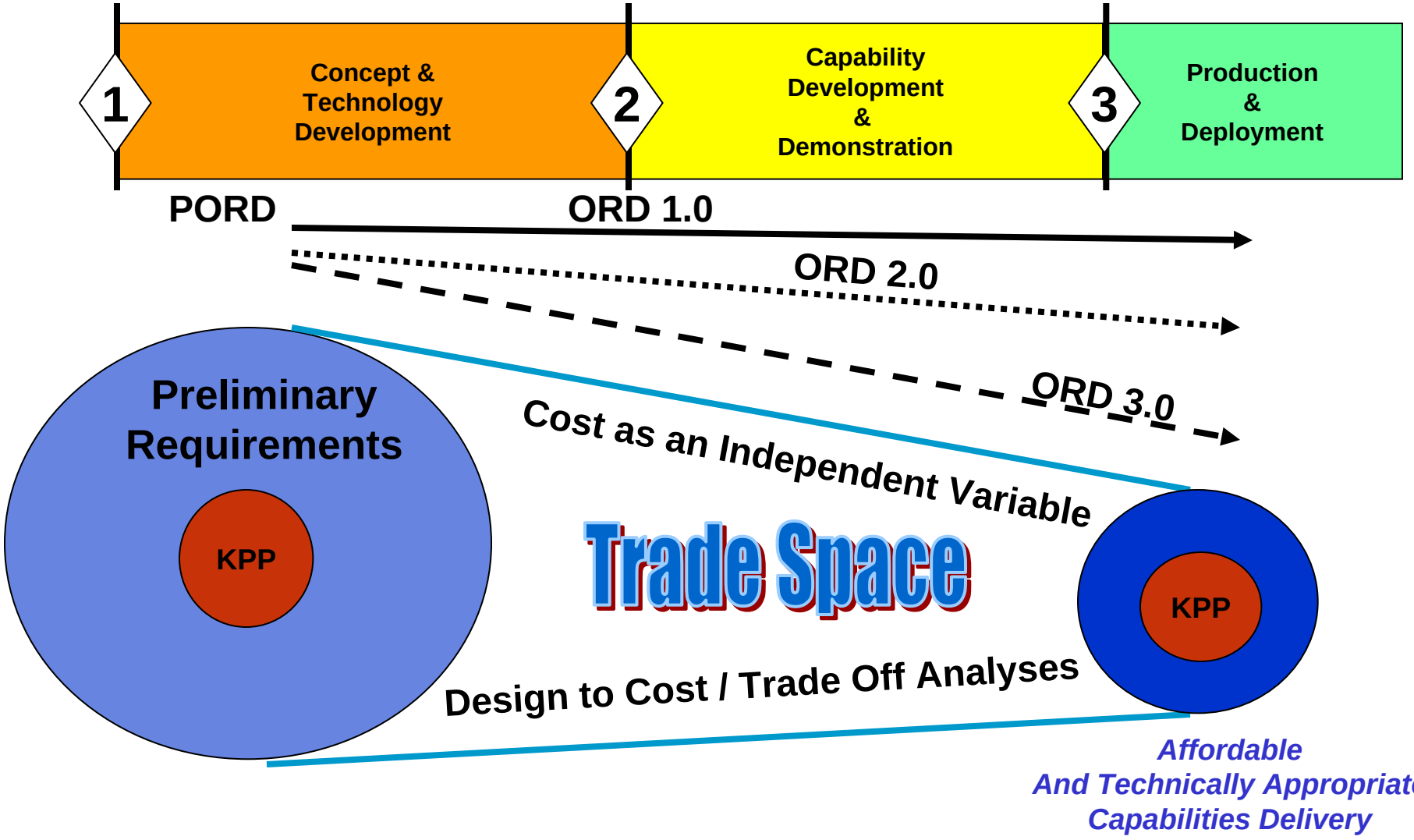
- **Builders trials, machinery trials and acceptance trials**

Offshore Patrol Cutter (OPC)



- **Plan: 25 OPCs**
- **Notional Characteristics: length 360 ft; speed 25 kts; range 9,000 nm; endurance 45 days**
- **Current Status:**
  - **Requirements analysis and conceptual design phase**

MSAM Acquisition Process



Fast Response Cutter (FRC)



- **Plan: 58 FRCs (FRC-B first contract 12-34 hulls)**
- **Notional Characteristics: length 140-160 ft; speed 30 kts; range 4,230 nm; endurance 7 days**
- **Current Status:**
  - **Industry proposals due 1Q FY2008**

Mission Effectiveness Project (MEP)

- 110’
  - 1 complete
  - 4 ongoing
  - 18 remaining
- 210’
  - 2 complete
  - 2 ongoing
  - 10 remaining
- 270’
  - 4 complete
  - 1 ongoing
  - 21 remaining (of 13 hulls total, each undergoes two availabilities)



Response Boat – Medium (RB-M)



- **Plan: 180 RB-M**
- **Current Status:**
  - **12 boats under contract**
  - **First delivery, March 2008**
  - **Additional deliveries follow every 1-2 months**

Long Range Interceptor & Short Range Prosecutor



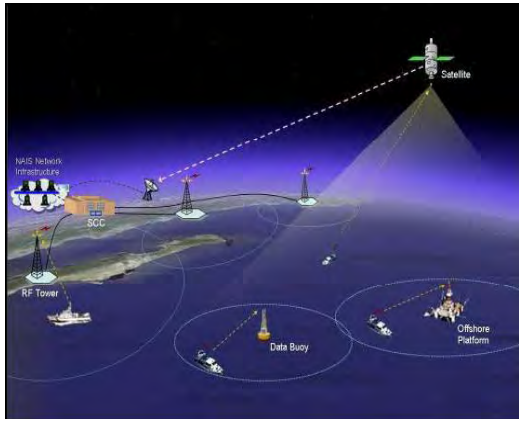


- **Plan: 33 LRI; 91 SRP**
- **Current Status:**
  - **LRI Factory Acceptance Testing complete**
  - **8 SRP delivered for the 123’ WPB project**
  - **SRP 9+ will be acquired through competitive contract**

Command, Control, Communications, Computers, Intelligence, Surveillance & Reconnaissance (C4ISR) Projects



Deepwater C4ISR



Nationwide Automatic Identificati on System



Rescue 21: National Distress and Response System

On the horizon: Command 21

Deepwater C4ISR

- **Overview:**
  - **Legacy Upgrades phases I and II complete on all cutters**
  - **NSC Information Assurance (IA) testing begun**
  - **HC-144A mission pallet installation & testing underway**
  - **C-130J Missionization**
  - **Command Center prototype installation at Miami and San Juan, Puerto Rico**



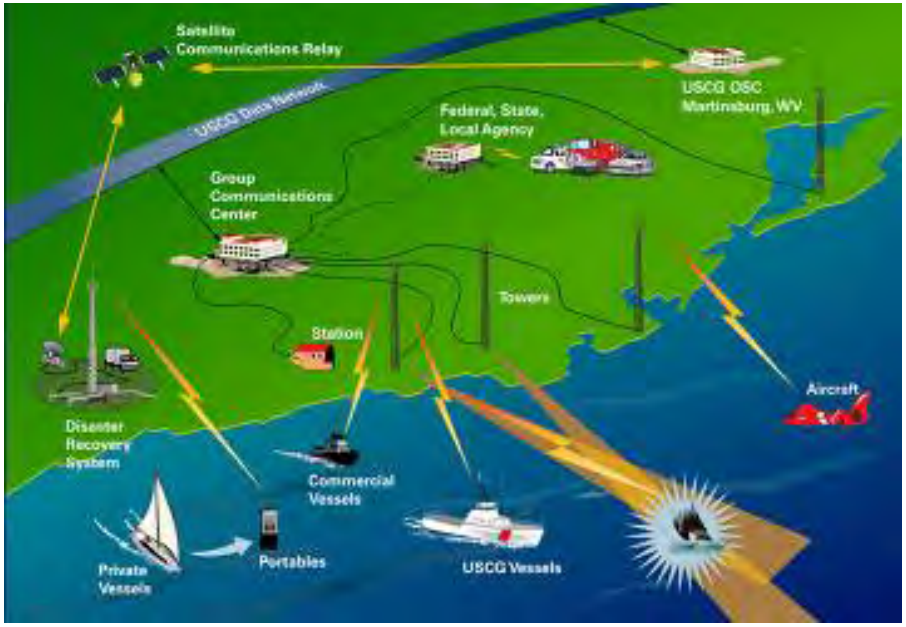
HC-144A Mission System Pallet



Shore Facility Upgrades

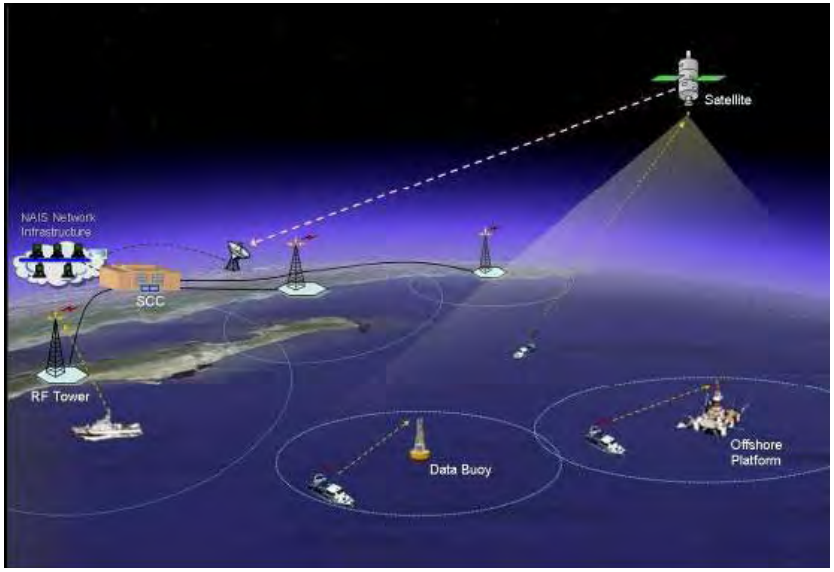
Rescue 21

- **Overview:**
  - **39 Coast Guard Sectors to be outfitted with Rescue 21 capability**
  - **6 Sectors delivered to date**
  - **4 sectors began relying completely on new system in spring 2007**



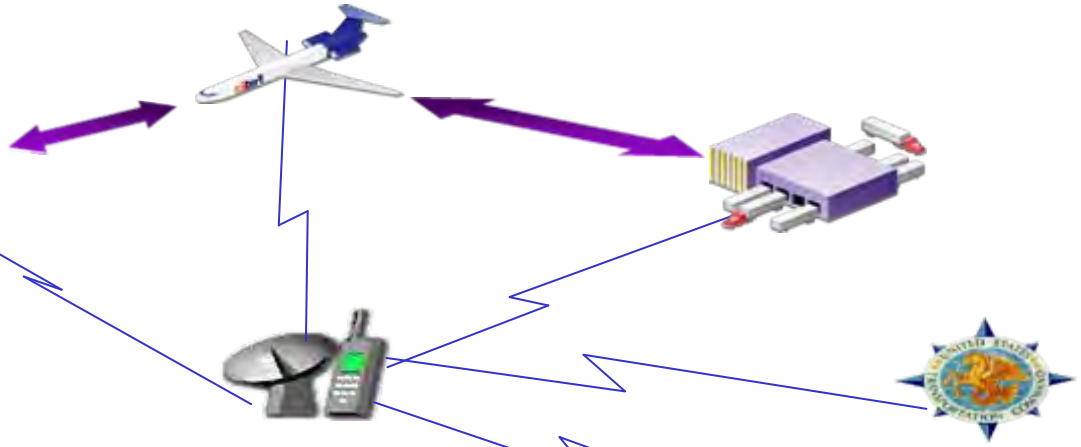
Nationwide Automatic Identification System (NAIS)

- **Overview:**
  - **165 AIS sites provide receive coverage in 55 designated critical ports and 9 coastal areas**
  - **Increment 1 completed by end of CY2007**
  - **Increment 2 provides additional transmit and receive capability**



Integrated Logistics Systems (ILS)





- **Overview:**
  - **USCG transitioning from commercial (Contractor Logistics Support) to organic (Government) logistics foundation**
  - **USCG leads lifecycle logistics functions**
  - **Logistics Information Management System (LIMS) in development for service-wide application**

Coast Guard Logistics Systems: CG-1, CG-4, CG-6

Aviation Projects Summary



Speed 175 kts
Range 400 nm
Endurance 4 hrs

HH-65C: (95)
- 95 re-engined HH-65 helicopters delivered. 40% more power
- All air stations flying HH-65C's
- First AUF delivered to ATC Mobile



Speed 170 kts
Range 600 nm
Endurance 6 hrs

HH-60J: (42)
- Conversion to upgrade avionics and extend service life
- First Conversion to MH-60T undergoing tests at AR&SC



Speed 170 kts
Range 420 nm
Endurance 4 hrs

Helicopter Interdiction Tactical Squadron Ten (HITRON) (8)
- MH-68 Stingrays under contract
- Expires Jan 08



Speed 236 kts
Range 1,565 nm
Endurance 8.7 hrs

Maritime Patrol Aircraft: (36)
- Aircraft #1, #2 & #3 at AR&SC
- #4-#8 on contract
- MSP – 3 on contract



Speed 330 kts
Range 5,500 nm
Endurance 21 hrs

Long Range Search Aircraft HC-130J: (6)
- HC-130J aircraft will be missionized in Greenville, NC by Lockheed Martin Aero
- HC-130H initiative: (16) APS-137 radar replacement, avionics upgrade. 16 total HC-130H retained for DW
- Remaining aircraft to be retired



Speed 185 kts
Range 100 nm
Endurance 3 hrs

Deepwater's Eagle Eye: (45)
- VUAV zeroed funding
- Stop work issued
- PEO charted 3 phase study
  - Evaluation of Eagle Eye & Fire Scout
  - Interim alternatives, manned and unmanned
  - Analysis of Phase II alternatives

HC-130J/Long Range Surveillance Aircraft

- **$120M Design to Cost , Task Order signed September 2005.**
  - **6 aircraft**
  - **Mission System design based on Medium Range Surveillance HC-144A**
  - **Belly mount radar, EO/IR, Flight Deck Mission System, Observer Stations**
- **First aircraft complete: Feb 2008**
- **Program complete: Sep 2008**



HC-144A / Medium Range Surveillance Aircraft

- **Replacement for the HU-25 Falcon Maritime Patrol Aircraft**
  - **Aircraft 1 accepted Dec 2006**
  - **Aircraft 2 accepted Feb 2007**
  - **Aircraft 3 accepted Apr 2007**
  - **Mission Systems Pallet (MSP) 1-3 Acceptance Testing ongoing**
  - **Aircraft 4 thru 8 under contract as of 21 July 2007**





Mission Systems Pallet

HC-144A / Medium Range Surveillance Aircraft



M/HH-65C/Multi-mission Cutter Helicopter

- **Phase I - Complete**
  - **95 re-engined HH-65 helicopters delivered**
- **Phase II - Begun**
  - **Obsolete component modernization and Aircraft Ship Integrated Secure and Traversing System (ASIST)**
  - **Airborne Use of Force (AUF)**
- **Phase III – Begun**
  - **AFCS, cockpit upgrade and IDS C4ISR capabilities**



H-60 / Medium Range Recovery Helicopter

- **Service Life Extension Program**
  - **Radar/FLIR Replacement**
  - **Engine Sustainment**
  - **Avionics Upgrades**
- **First conversion to MH-60T undergoing tests at AR&SC**



Unmanned Aircraft Systems (UAS)

- **R&D Center is conducting UAS analysis studies**
- **UAS programs are being re-evaluated to available technology appropriate to USCG missions**
- **Possible joint UAS effort with other DHS agencies**

Acquisition Directorate

Thank You

www.uscg.mil/acquisition

NDIA

PROMOTING NATIONAL SECURITY SINCE 1919



2007 U.S. COAST GUARD INNOVATION EXPO

U.S. COAST GUARD INNOVATION:
IMPROVING MISSION EXECUTION AND SUSTAINMENT

Back this year!

2007 Maritime Domain Awareness Day

(aka "MDA Day")

Event #823A

Monday, October 29, 2007

(a 1-day forum)

http://ww.ndia.org/meetings/823A



OCT. 29 - NOV. 1, 2007

http://www.ndia.org/meetings/8230

ERNEST N. MORIAL CONVENTION CENTER ▶ NEW ORLEANS, LA ▶ Event #8230

USCG Innovation Expo Updated Agenda

(USCG Expo conference registration badge required in order to attend -
There is an additional cost for those who registered for the 1-day MDA Forum only -
MDA Day only badge no longer valid)

Sunday, October 28, 2007

8:00 a.m. - 7:00 p.m.
Decorator set-up & Exhibitor Registration & set-up
Exhibit Hall E foyer; 1st level
Ernest N. Morial Convention Center

Monday, October 29, 2007

8:00 a.m. - 12:00 p.m.
Decorator set-up & Exhibitor set-up (continues)
Exhibit Hall E foyer; 1st level
Ernest N. Morial Convention Center

8:00 a.m. - 7:30 p.m.
Exhibitor Registration (continues)
Exhibit Hall E foyer
Ernest N. Morial Convention Center

7:00 a.m. - 7:30 p.m.
"MDA Day" & USCG Innovation Expo Attendee Registration Check-in
La Nouvelle Orleans Ballroom Foyer; 2nd level
Ernest N. Morial Convention Center

7:00 a.m. – 8:00 a.m.
MDA Forum Attendees Continental Breakfast
La Nouvelle Orleans Ballroom Foyer

3:00 p.m. - 7:30 p.m.
Expo Floor Opens
Exhibit Hall E; 1st level

6:00 p.m. - 7:30 p.m.
NDIA Welcome Reception - Expo Floor

Tuesday, October 30, 2007

7:00 a.m. - 5:30 p.m.
USCG Innovation Expo Attendee Registration Check-in (continues)
La Nouvelle Orleans Ballroom Foyer; 2nd level
Ernest N. Morial Convention Center

7:00 a.m. - 8:00 a.m.
Continental Breakfast
La Nouvelle Orleans Ballroom Foyer

8:00 a.m. - 5:00 p.m.
Exhibitor Registration (continues)
Exhibit Hall E foyer; 1st level
Ernest N. Morial Convention Center

8:00 a.m. - 5:00 p.m.
Expo Floor Opens
Exhibit Hall E; 1st level

Tuesday, October 30, 2007 (continued)

8:00 a.m. – 9:00 a.m.
USCG Expo Opening Session
La Nouvelle Orleans Ballroom

- USCG Welcome & Opening Comments
  CAPT Joe Re, USCG
  Chairman, USCG Innovation Council
- NDIA Welcome & Opening Comments
  Lt Gen Lawrence P. Farrell, Jr., USAF (Ret.)
  President & CEO
  NDIA
- New Orleans Welcome
  Mayor C. Ray Nagin
- Louisiana Welcome
  The Honorable Kathleen Babineaux Blanco *(Invited)*
  Governor
- USCG Opening Remarks
  VADM Robert Papp, USCG
  Chief of Staff
  United States Coast Guard
- USCG Commandant Opening Remarks
  ADM Thad Allen, USCG
  Commandant
  United States Coast Guard

8:00 a.m. - 5:00 p.m.
Floor Open
Exhibit Hall E; 1st level

9:00 a.m. - 10:00 a.m.
Expo Keynote Session #1
La Nouvelle Orleans Ballroom

- The Honorable David Walker
  Comptroller General, U.S. Government Accountability Office (GAO)

10:00 a.m. - 10:30 a.m.
Coffee Break in Exhibit Hall

10:30 a.m. - 11:30 a.m.
Expo Panel Session
La Nouvelle Orleans Ballroom
Innovations in Government
Moderated by Mr. Rolf Dietrich,
Deputy Director of Innovation,
DHS S&T Directorate

Panelists: TBA

USCG Innovation Expo Updated Agenda (continued)

All session times, topics, and speakers subject to change

Tuesday, October 30, 2007 (continued)

11:30 a.m. - 1:00 p.m. Buffet Lunch
Exhibit Hall D

1:00 p.m. - 2:00 p.m. Expo Keynote Session #2
La Nouvelle Orleans Ballroom

- The Honorable Jay Cohen
  Under Secretary for Science and Technology
  Department of Homeland Security

2:00 p.m. - 3:00 p.m. Expo Panel Session - Innovation that Works: Turning Ideas into Opportunities
Moderated by: Dr. Neil Thornberry
Innovation Chair Naval Postgraduate School (NPS)

Panelists: Don Cutey Jr.,
IBM Global Business Development Executive
Dr. Marc Ventressa,
Naval Postgraduate School
Mr. Ron Pierantozzi,
Former Vice President, Coporate Venturing

3:00 p.m. - 3:30 p.m. Coffee Break in Exhibit Hall

3:30 p.m. - 4:30 p.m. Expo Break-out Sessions: "Innovation that Works"
Ernest N. Morial Convention Center

Expo Break-out Session #1
Room TBA; 2nd level
- Differentiating Ideas from Opportunities: The Problem with Great Ideas

Expo Break-out Session #2
Room TBA; 2nd level
- Creating a Culture of Innovation: Identifying Neutralizing Innovation Killers

Expo Break-out Session #3
Room TBA; 2nd level
- The Innovators Within: Identifying & Enabling Innovative People Drivers

Expo Break-out Session #4
Room TBA; 3rd level
- Sustaining Innovation: Building Innovation "Engines"

5:30 p.m. - 7:30 p.m. Annual "Cutter" Expo Reception
"Bamboula"
Spanish Plaza/Riverwalk
(shuttle bus service from convention center to Spanish Plaza)

Wednesday, October 31, 2007

7:00 a.m. - 5:30 p.m. USCG Innovation Expo Attendee Registration Check-in (continues)
La Nouvelle Orleans Ballroom Foyer; 2nd level
Ernest N. Morial Convention Center

7:00 a.m. - 8:00 a.m. Continental Breakfast
La Nouvelle Orleans Ballroom Foyer

8:00 a.m. - 4:00 p.m. Exhibitor Registration (continues)
Exhibit Hall E foyer; 1st level

8:00 a.m. - 5:30 p.m. Expo Floor Opens
Exhibit Hall E

8:00 a.m. - 9:00 a.m. Expo Panel Session
La Nouvelle Orleans Ballroom
Biometrics-at-sea; Mona Passage Proof of Concept
Moderated by: Coast Guard Office of Law Enforcement & Biometrics Team

9:00 a.m. - 10:00 a.m. Expo Panel Session
Leading from the Middle: Showcasing CG Innovators
Moderated by: CAPT Joe Re, USCG, Chairman CG Innovation Council

Panelists: LCDR Christopher Kluckhuhn, USCG
Mr. Mario Vittone, ASTC
LCDR Michael Billeaudeaux, USCG
CDR Rick Christoffersen, USCG
CDR Gregory Buxa, USCG

10:00 a.m. - 10:30 a.m. Coffee Break in Exhibit Hall

10:30 a.m. - 11:30 a.m. Expo Keynote Session #3
La Nouvelle Orleans Ballroom

- "SecondLife"
  Mr. John Lester, "Pathfinder Linden"
  Linden Labs

11:30 a.m. - 1:00 p.m. Box Lunch Exhibit Hall
Exhibit Hall D; 1st level

1:00 p.m. - 3:00 p.m. Expo Keynote #4
La Nouvelle Orleans Ballroom

- Acquisition Insights & Transformation
  RADM Gary Blore, USCG,
  Assistant Commandant for Acquisition

- Acquisition Insights & Transformation Panel Session
  Moderated by: RDML Ronald Rabago, USCG
  Director of Acquisition Programs,
  USCG Acquisition Directorate

  Panelists: Ms. Claire Grady,
  Mr. Michael Tangora,
  CAPT Matt Sisson, USCG

3:00 p.m. - 3:30 p.m. Coffee Break in Exhibit Hall

USCG Innovation Expo Updated Agenda (continued)

Wednesday, October 31, 2007 (continued)

3:30 p.m. - 5:30 p.m.

Expo Keynote
RDML Thomas Atkin, USCG
Commander, Deployable Operations Group (DOG)

- Panel Session Featuring:
  DOG Components and Operational Commander Panel Session

~ *Evening Free - Enjoy New Orleans* ~

Thursday, November 1, 2007

7:00 a.m. - 12:00 noon

USCG Innovation Expo Attendee Registration Check-in (continues)
La Nouvelle Orleans Ballroom Foyer; 2nd level
Ernest N. Morial Convention Center

7:00 a.m. - 8:00 a.m.

Continental Breakfast
La Nouvelle Orleans Ballroom Foyer; 2nd level

8:00 a.m. - 10:30 a.m.

Exhibitor Registration (continues)
Exhibit Hall E foyer; 1st level

8:00 a.m. - 10:30 a.m.

Expo Floor Opens
Exhibit Hall E; 1st level

10:00 a.m. - 10:30 a.m.

Coffee Break in Exhibit Hall

10:30 a.m

Expo Floor Closes

11:00 a.m. - 7:00 p.m.

Exhibitor Move-out

10:30 a.m. - 12:00 noon

USCG Expo Closing Session
La Nouvelle Orleans Ballroom

Speakers:

- ADM Thad W. Allen, USCG
  23rd Commandant
  United States Coast Guard
- VADM Vivien S. Crea, USCG
  Vice Commandant
  United States Coast Guard
- VADM Robert J. Papp, Jr., USCG
  Chief of Staff
  United States Coast Guard

USCG Innovation Award Presentations

The National Graduate School
- Honorary Doctorate presented to ADM Allen

Closing Remarks by ADM Thad Allen, USCG

Thursday, November 1, 2007

12:00 p.m.

2007 USCG Expo Adjourns

Citizen's Action Network

Putting the "Home" in Homeland Security

- **"The maritime threat environment of the 21st Century *requires* broader scope and a more comprehensive vision.**

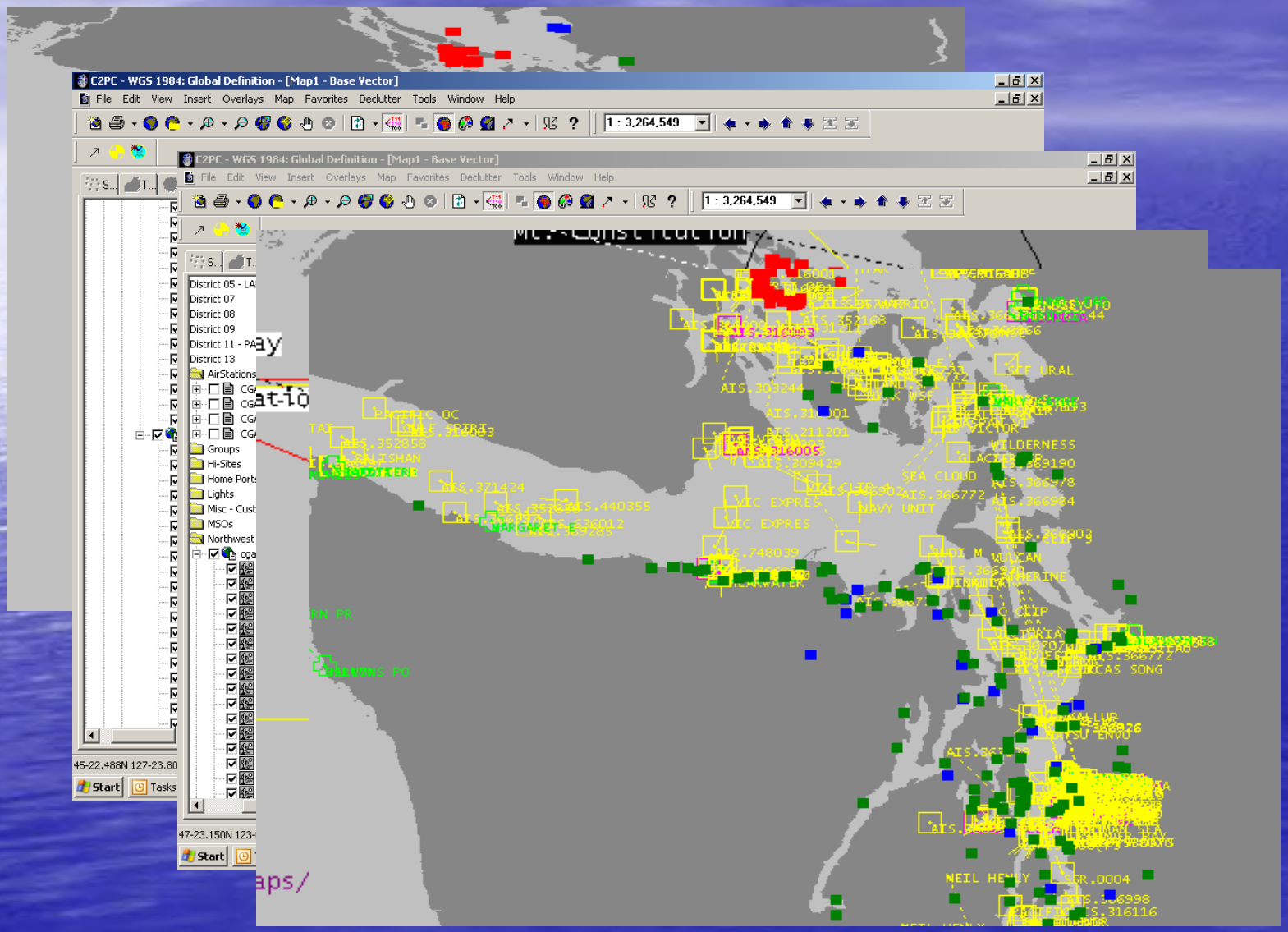
- **We *must* look beyond traditional surveillance of ports, waterways, and oceans, and continuously adapt to new challenges and opportunities.**

- **We *must* set priorities for existing and developing capabilities to efficiently minimize risks while contending with an uncertain future."**

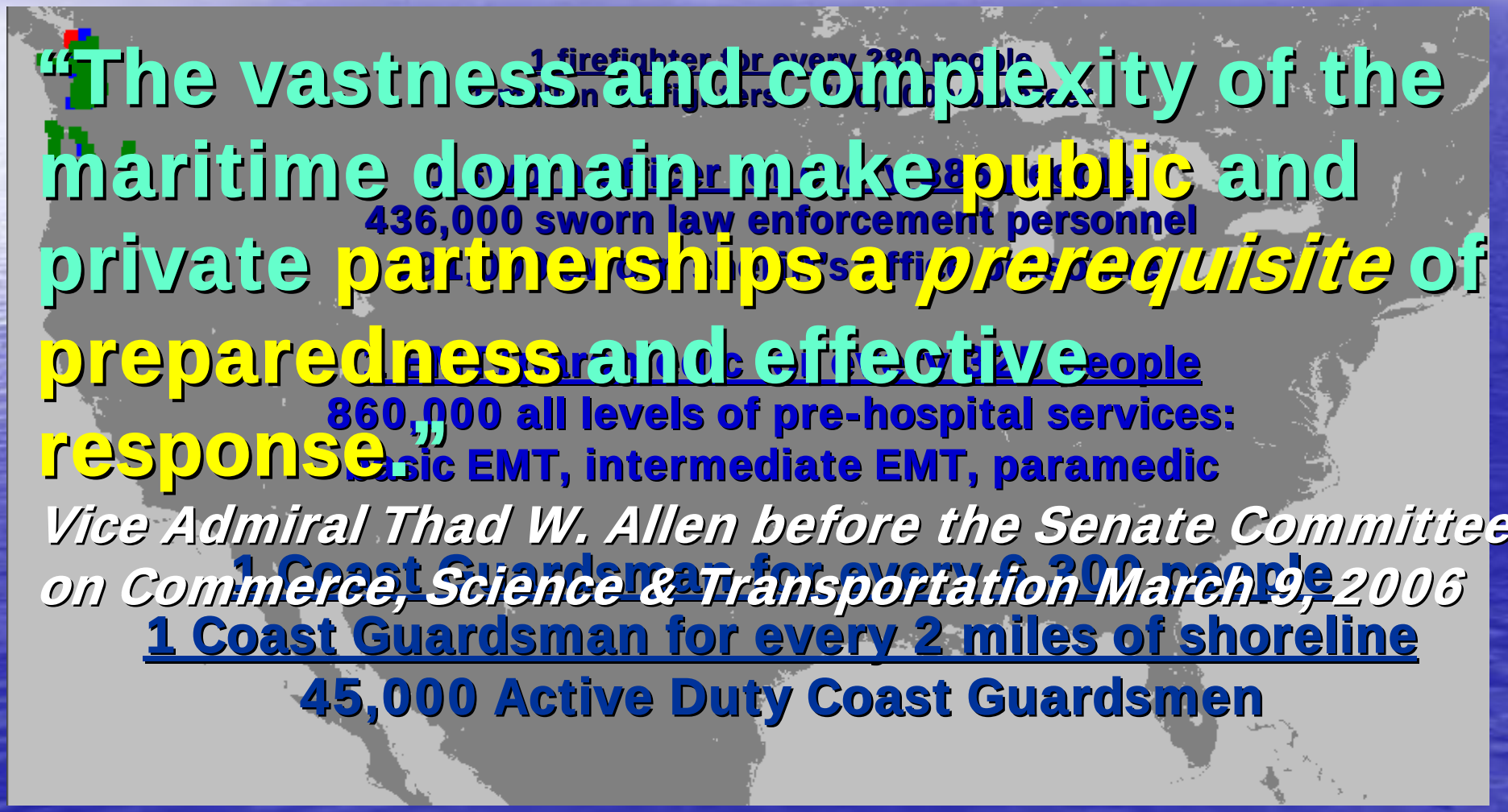
- ***The National Plan to Achieve Maritime Domain Awareness for the National Strategy for Maritime Security Oct 2005***

Membership maintained in C2PC

A NATIONAL SYSTEM



Current State of Citizen's Action Network



"The vastness and complexity of the maritime domain make public and private partnerships a *prerequisite* of preparedness and effective response."

Vice Admiral Thad W. Allen before the Senate Committee on Commerce, Science & Transportation March 9, 2006

Questions?



U.S. Coast Guard Current Border Security Initiatives:

Biometrics at Sea

Homeland Security

Biometrics

Pilot Operational Area



Biometric Process Cycle



CG Patrol

Migrant Interdiction





Publicize & Deter



Biometric Collection





Course Of Action

Electronic Transmission



Fleet 55 satellite communications

Database Response

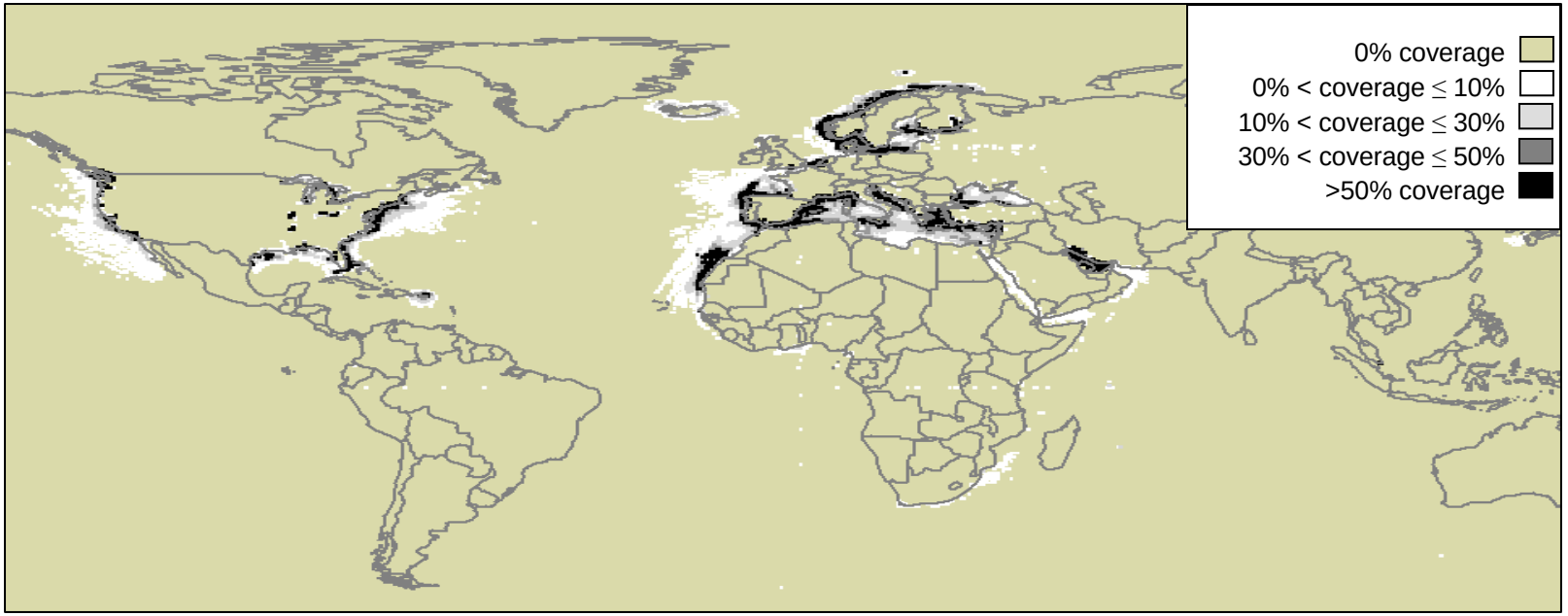
US-VISIT



Homeland Security

Maritime Security and Safety Information System

October 29, 2007

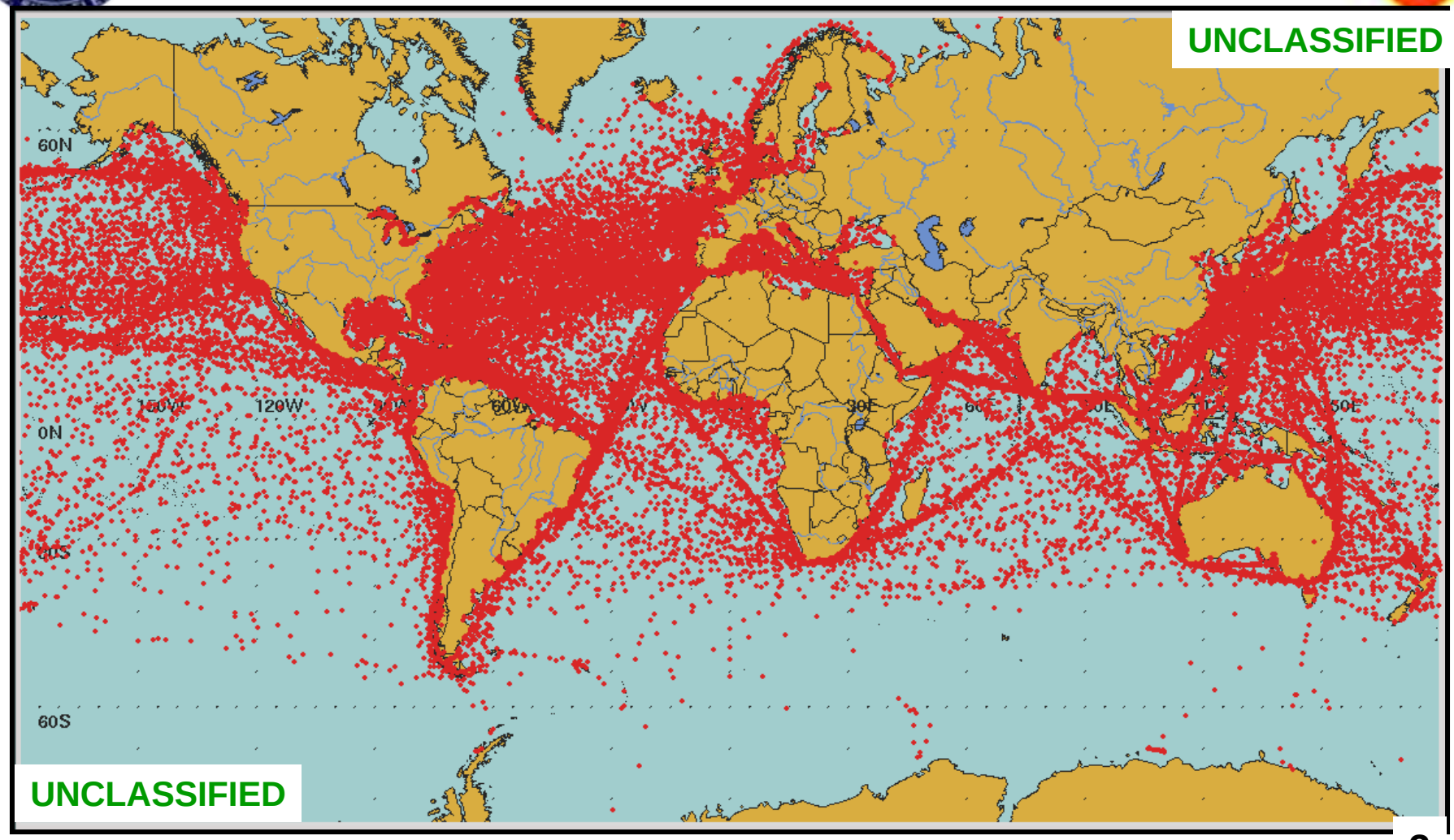


CDR Ric Callesen
Director, TMFC
CNE-C6F

Topics

- ✓ Challenge
- ✓ Guiding Principles
- ✓ Direction
- ✓ Idea
- ✓ Big Idea
- ✓ MSSIS
- ✓ MSSIS Africa
- ✓ RMAC
- ✓ MSSIS Progression
- ✓ MSSIS in the National Effort

The Challenge



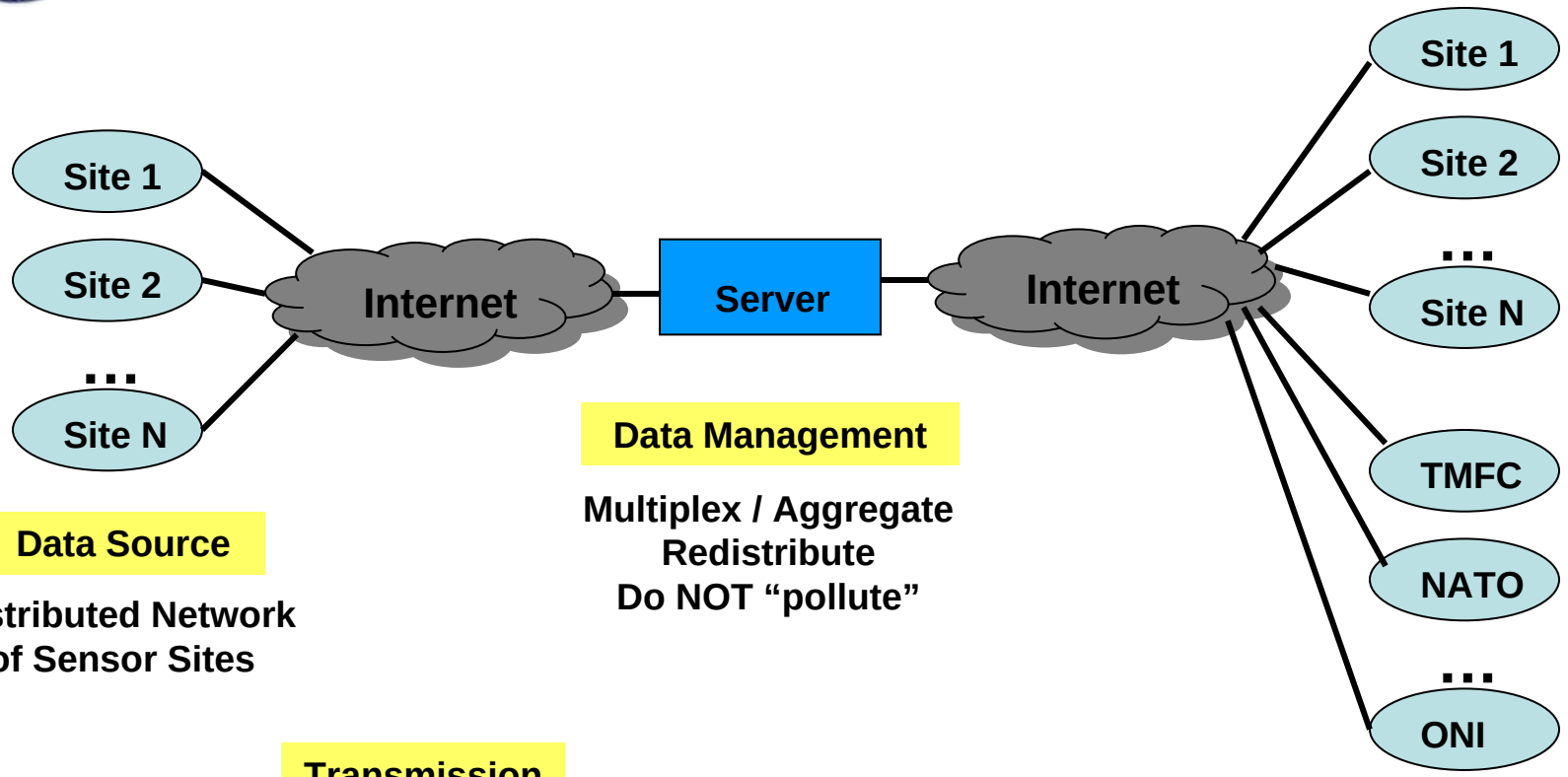
Guiding Principles for MDA

- *Regional problems require regional solutions*
- *Interagency teamwork - Not just navies and traditional partners*
- *Be Transparent - Share information widely*
- *Keep it simple, keep it low cost*
- *Keep it UNCLASSIFIED - Needless classification weakens the network*
- *Open Architecture – The Tools are Out There*
- *Network Based - Leverage the Internet*
- *Provide the software to sort MSA data*

The Direction

- **Connect our Enduring and Emerging Partners together**
  - **Level the playing field**
  - **Keep it unclassified and Open Source and keep it Freely shared**
  - **No Bi-Lats**
- **Support all National MDA efforts**

The Idea ~ July 2005



Data Source

Distributed Network
of Sensor Sites

Data Management

Multiplex / Aggregate
Redistribute
Do NOT "pollute"

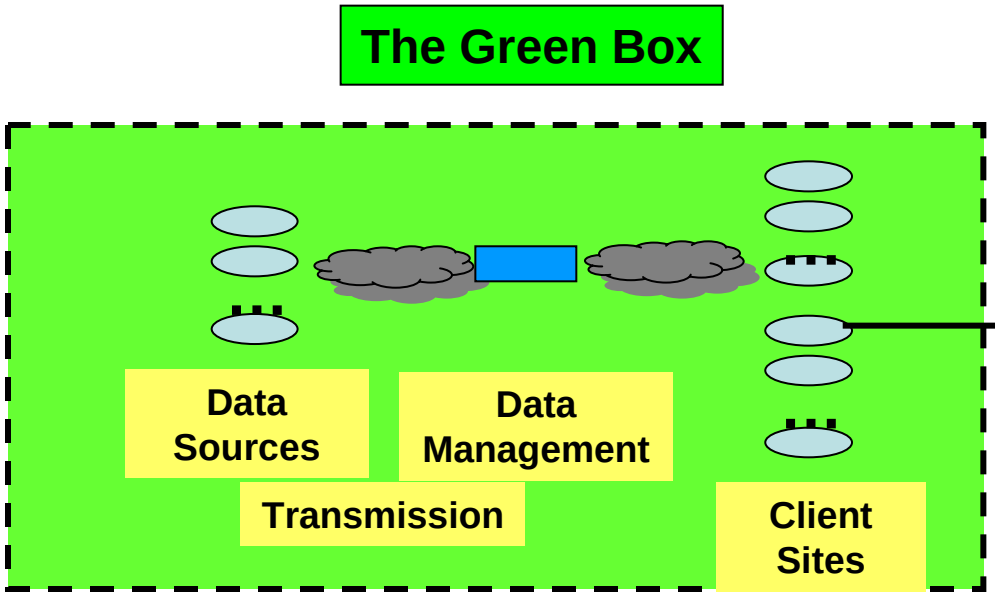
Transmission

Commercially
encrypted Internet
data transmission

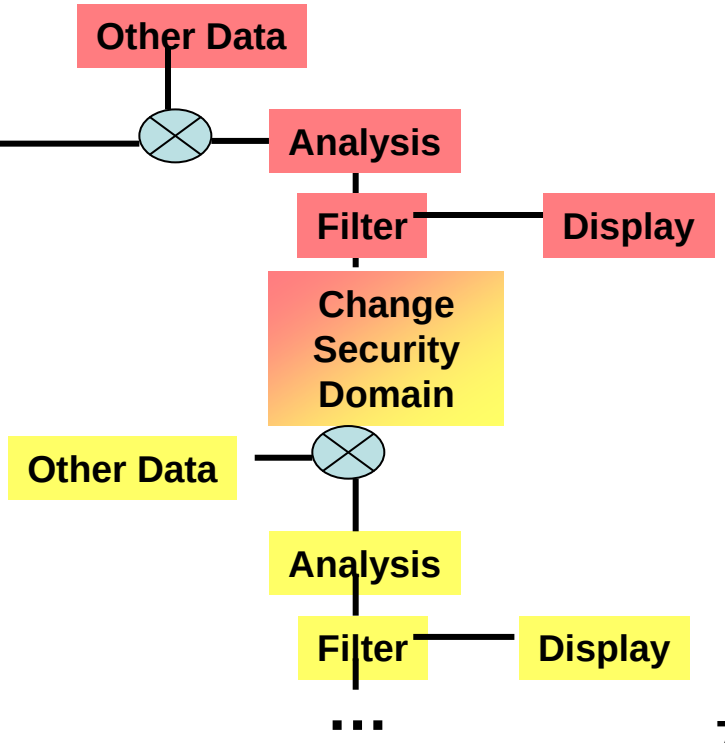
Client Sites

Graphical Use Interface
Other available functionality
(e.g. Vessel Traffic Management)

Big Idea ~ July 2005



What's done
"OUTSIDE"
The Data Sharing Framework
is the Clients' Business

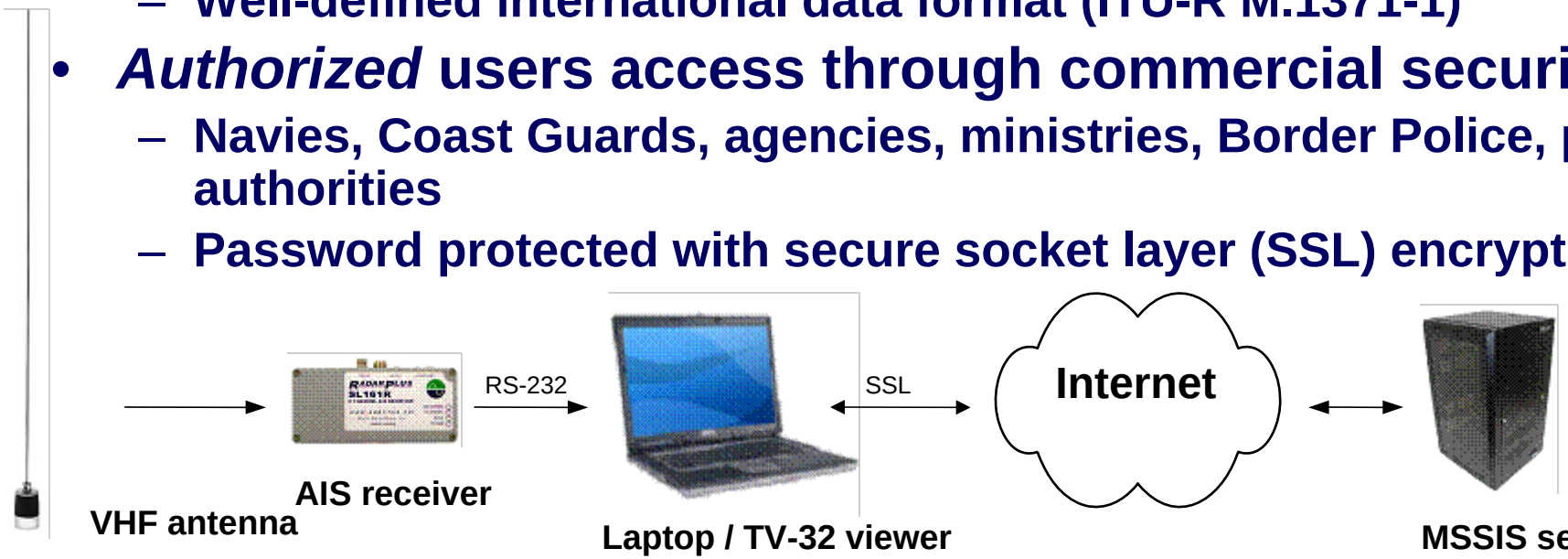


PRIMARY ATTRIBUTES

- **UNCLASSIFIED Data**
- **Freely SHARED Data (e.g. AIS)**
- **INTERNET Data Path**
- **Non-military Data Management**

Maritime Safety and Security Information System (MSSIS)

- **Genesis: US Department of Transportation (DoT)**
  - **Network for US Coast Guard with data viewer (TV-32)**
- **Simple, unclassified, freely shared, open architecture**
- **Uses Internet to share data**
  - **Well-defined international data format (ITU-R M.1371-1)**
- ***Authorized* users access through commercial security**
  - **Navies, Coast Guards, agencies, ministries, Border Police, port authorities**
  - **Password protected with secure socket layer (SSL) encryption**



MSSIS Africa - 1206

- **Obtained $2.6M in FY07 1206 funding for AIS installations in 15 nations in Africa to participate.**
- **Applied for $28M in FY08 1206 funding to increase Maritime Security Capability Enhancement (MSCE)**

  - **11 African nations**

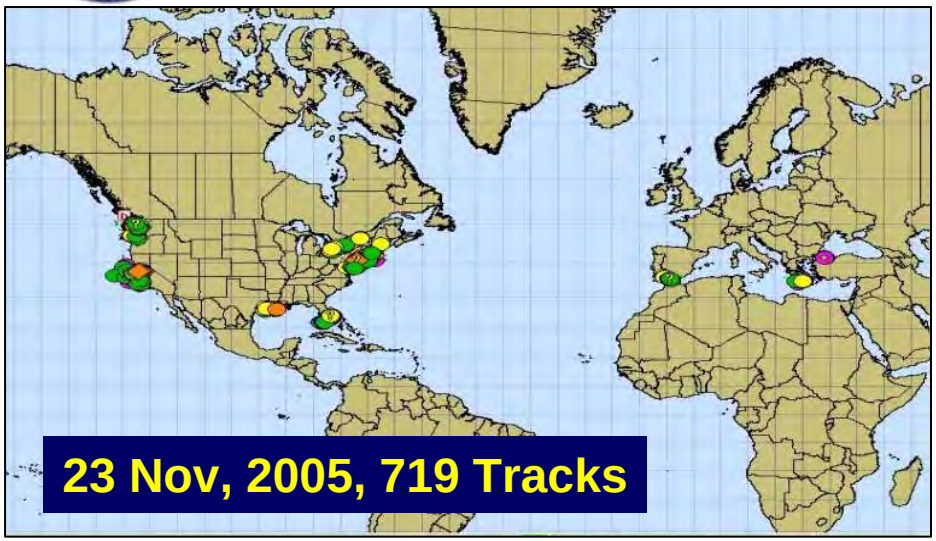
  - **MSCE is integrated AIS, Radar, Camera with OP center display and VHF communications capability**

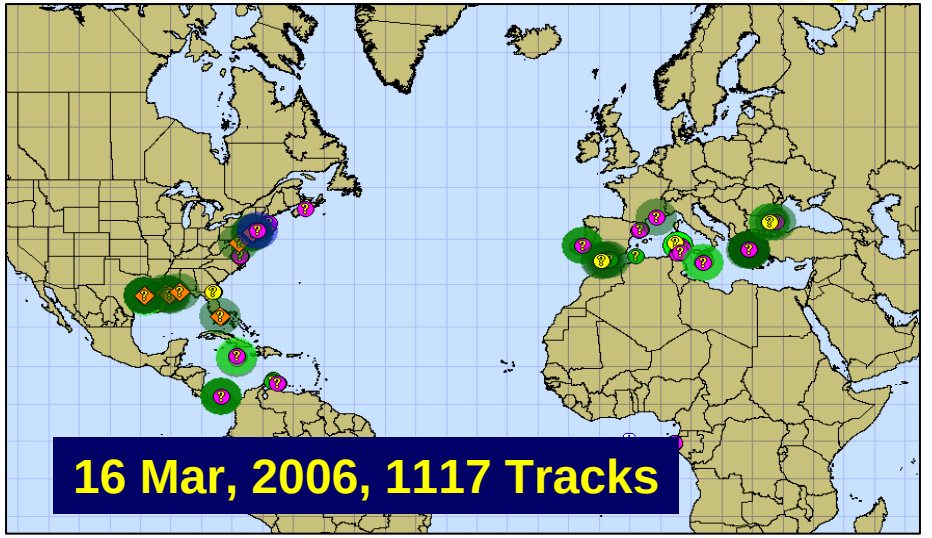
Regional Maritime Awareness Capability (RMAC)
Joint Capability Technology Demonstration (JCTD)

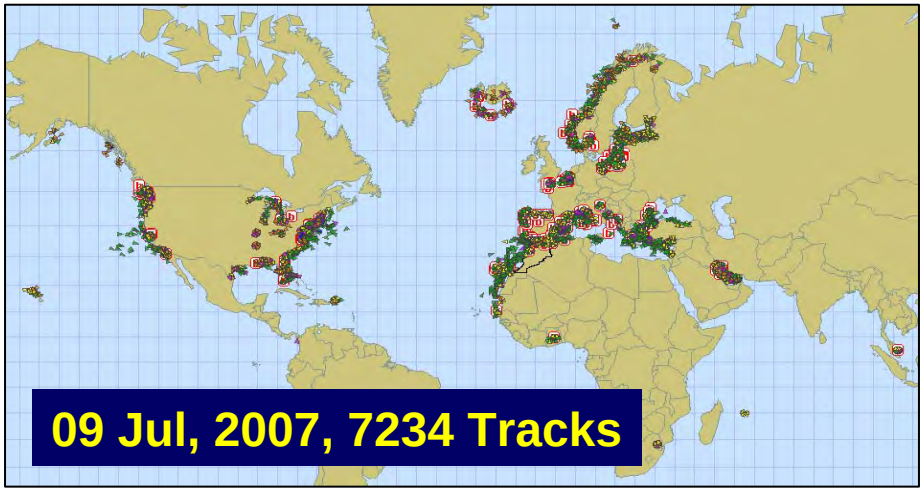


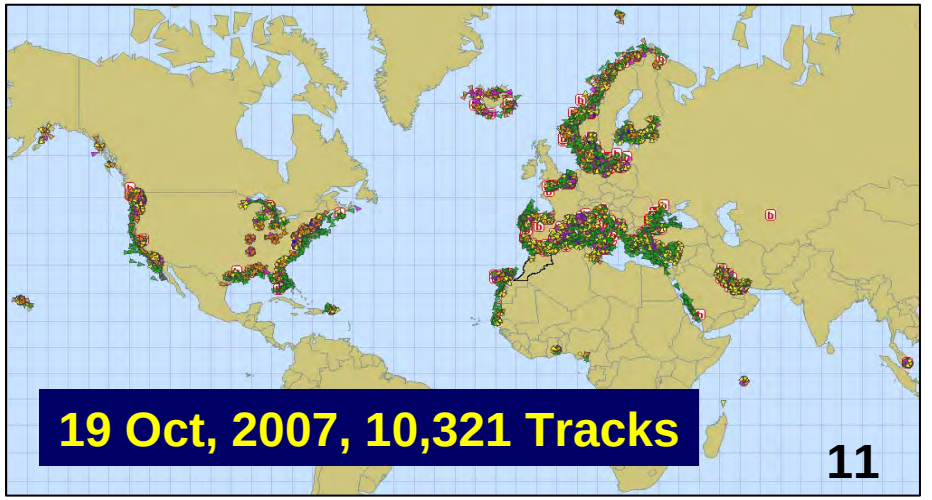
- **History**
  - Directed by EUCOM. Initiated July 2006 – Concluding Sep 2008
- **Synchronization with CNE MDA efforts**
  - Improve Maritime Security and Safety
  - Help to define technology requirements and maritime awareness capabilities for integrating AIS, Radar, and Video into maritime awareness process
- **Current Status and Schedule**
  - **Sao Tome and Principe**: Coast Guard Ops Center executing daily maintenance/trouble-shooting SOPs
    - Installation completed – Nov 07; IOC for Operations Training in mid-Feb 08
  - **Nigeria**: Nigerian OPR in flux; Ops Center equipment ready to be installed.
    - Joint CONOPS – Oct 07; Lagos Install – Dec 07
- **Issues and Prognosis**
  - Technology solution not optimized for Africa/Third World partners/infrastructure
  - JCTD and TSC mission/timelines/success criteria are not good fit
  - Capacity/capability will be demonstrated in Sao Tome; Nigeria will remain problematic.
  - Without US funding to keep capability going long enough (2-3 years) to build budget for country's self-sustainment, capability will not be sustained in either country
  - RMAC will not represent an off-the-shelf solution for future emerging partners.

Progression of MSSIS





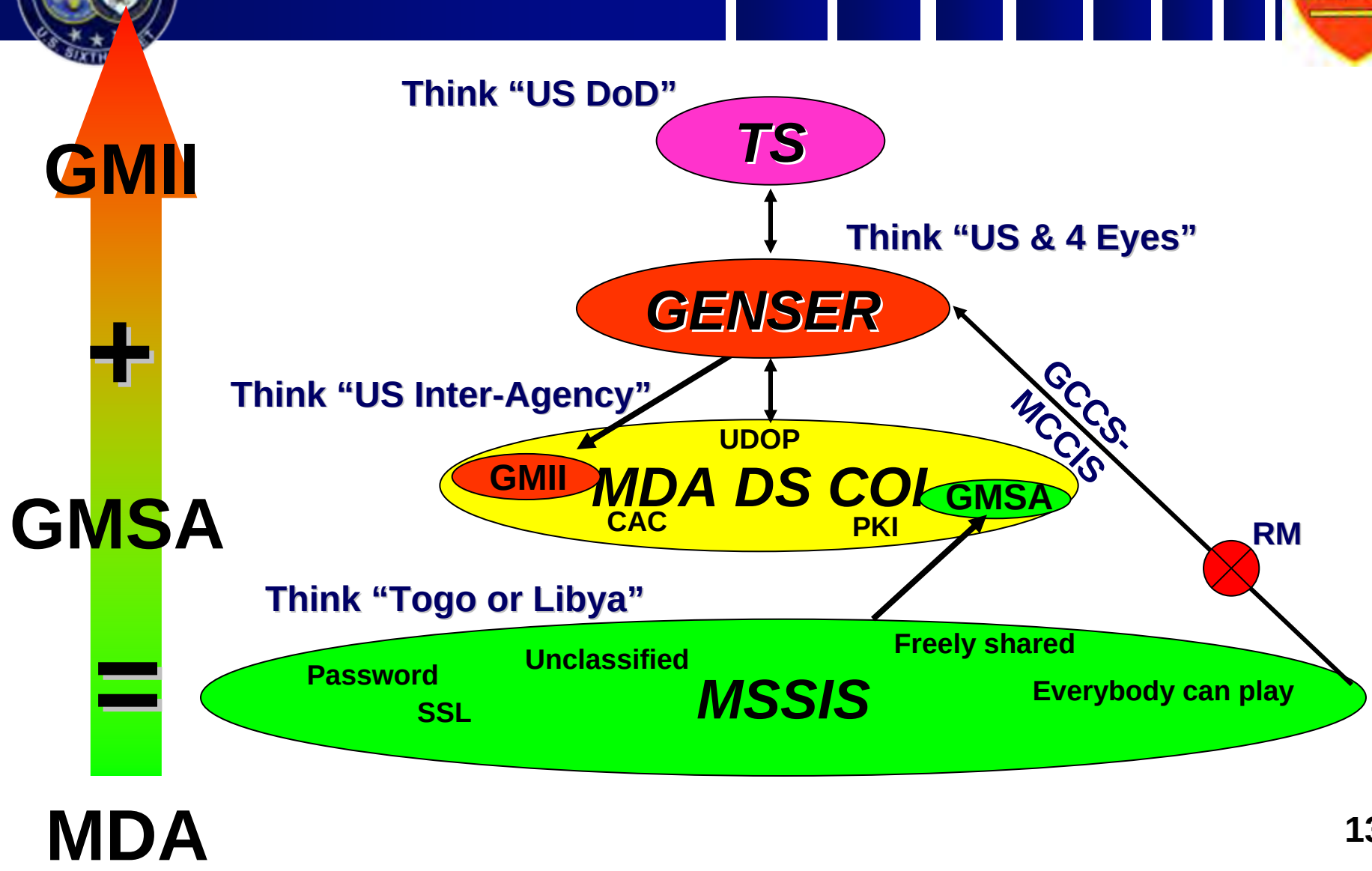




Impediments to Success

- Data sharing agreements require interagency support
- Distrust of the United States
- Insufficient international regulations
- Non-compliance with international regulations
- Inadequate enforcement of international regulations
- Lack of cooperation among maritime states
- Commercial resistance - mistrust of competitors
- Paucity of sensors

Supporting The Nat'l Effort



Complex Shared Challenges



How can we make our networks stronger than theirs?

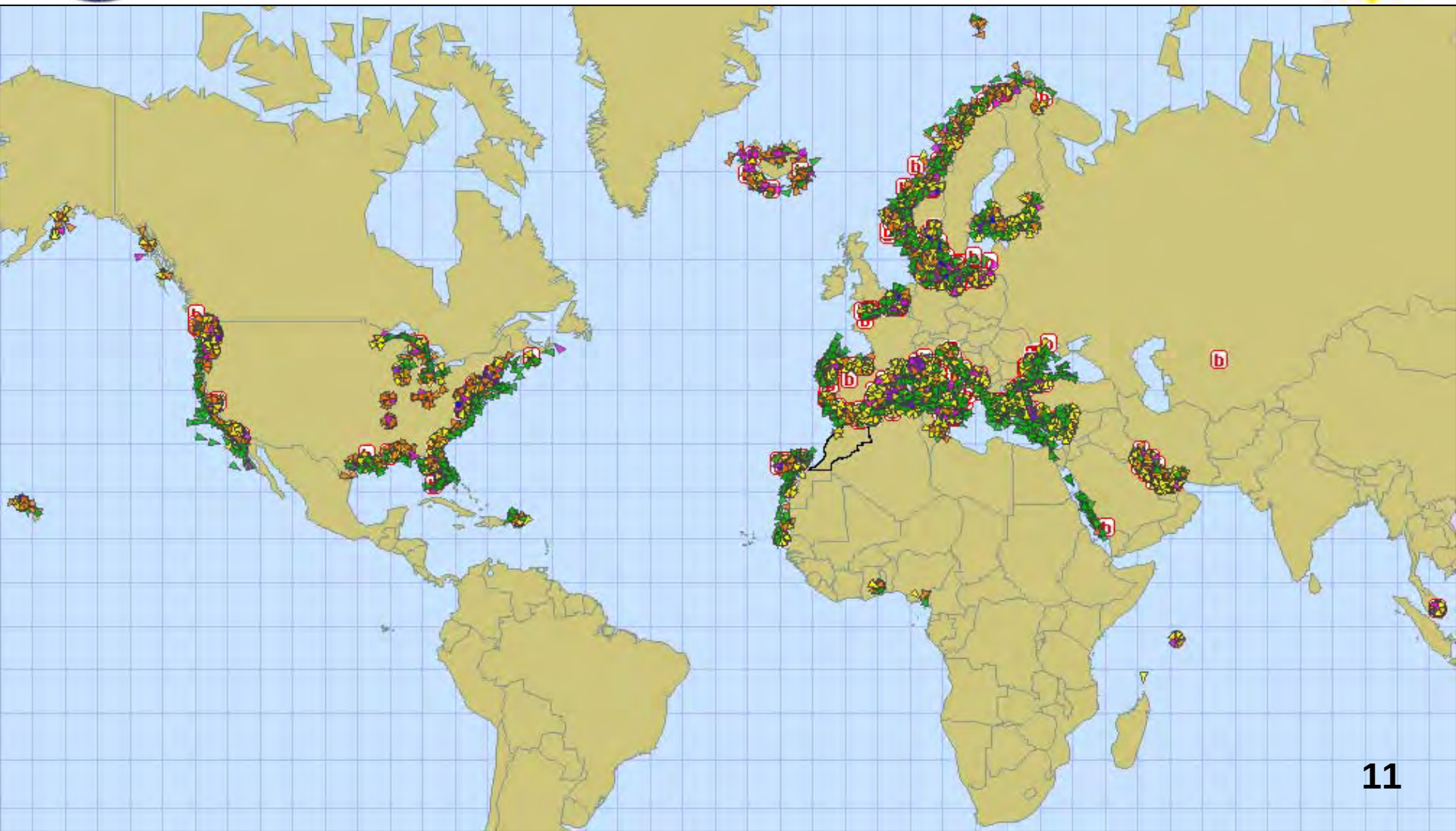
MSSIS Phase Two

FASTC2AP and BRITE

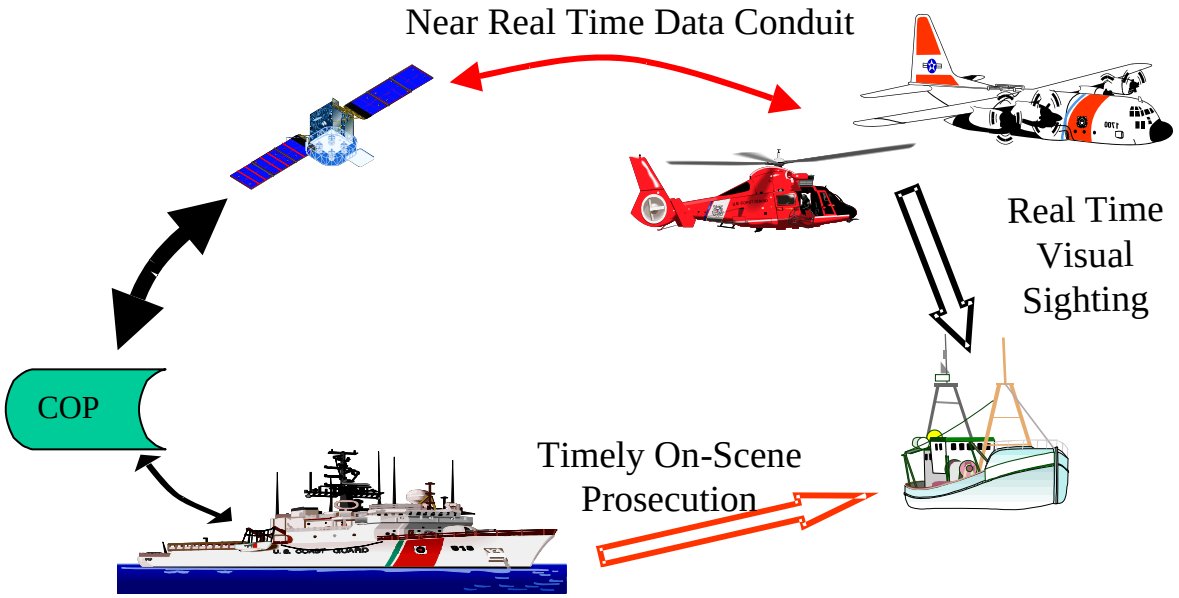
- ***Fast C2AP*** is a DARPA-sponsored program demonstrating the application of agent-based technologies to operational information management requirements in support of Maritime Domain Awareness. Fast C2AP was designed to be used by the watch floor operators. DARPA will install Fast C2AP at the Second Fleet's new Maritime Headquarters with Maritime Operations Center.

- ***Baseline for Rapid Iterative Transformational Experimentation (BRITE)*** is a NATO ACT sponsored program is an experimentation framework which allows for the rapid implementation of new ideas and capabilities to support experimentation. BRITE has been developed as part of the TIDE (Technology for Information, Decision and Execution superiority) initiative and is intended to rapidly improve the IT capabilities of the NATO Alliance by reusing existing systems/components and by steering current and future projects towards greater openness and cooperation in a common framework. .

Comments



Airborne Data Communication System



CDR Rick Christoffersen

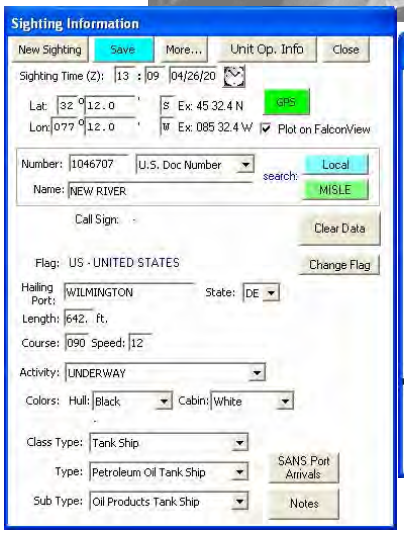
History

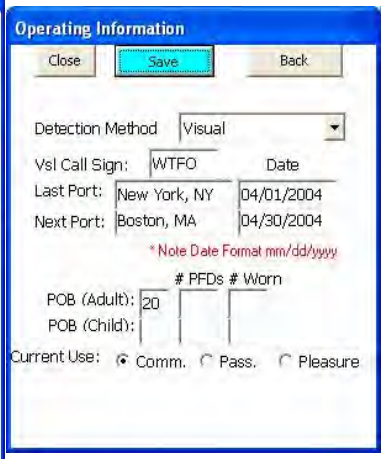
- 2003 - MBP (Team of 5)
- 2004 - COMDT Authorizes Project
- 2007 - Contract with Navy & LM Technology Services



Scope

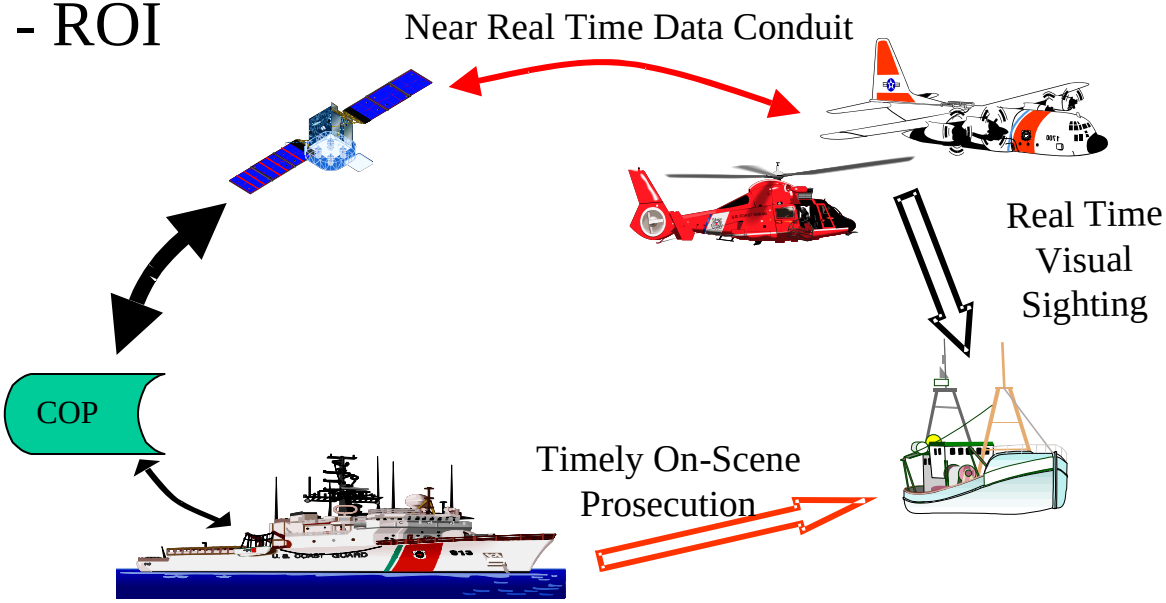
- Near-Real-Time exchange of Vessel Sighting Data.
- Automated Asset Tracking





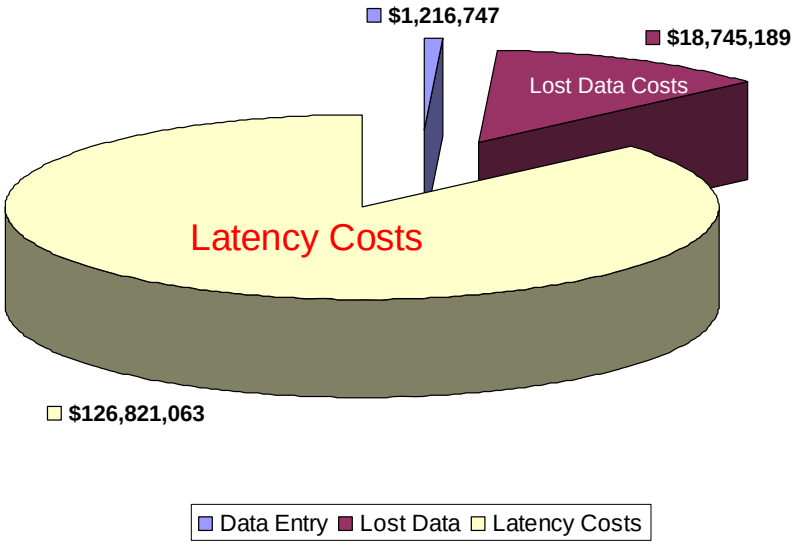
Great Idea, Great Process, Great Success

- Alignment with Organizational Goals
- Process Analysis
- Cost Driver Analysis
- Stakeholder Alignment
- Tangible Results - ROI



Cost Driver Analysis - 2003

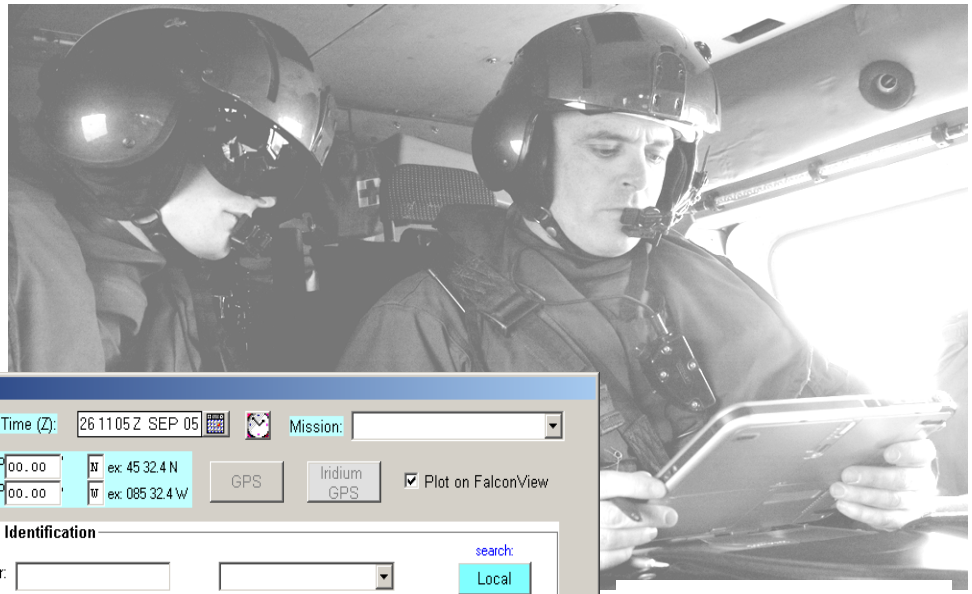
- $20M in lost sightings and duplicate data entry
- $127M of LE/MDA aircraft resource hours sub-optimized.

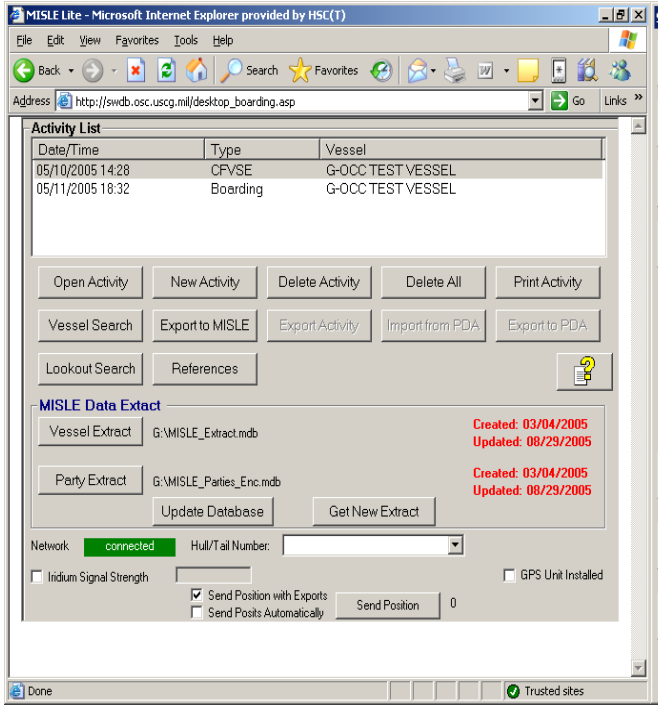


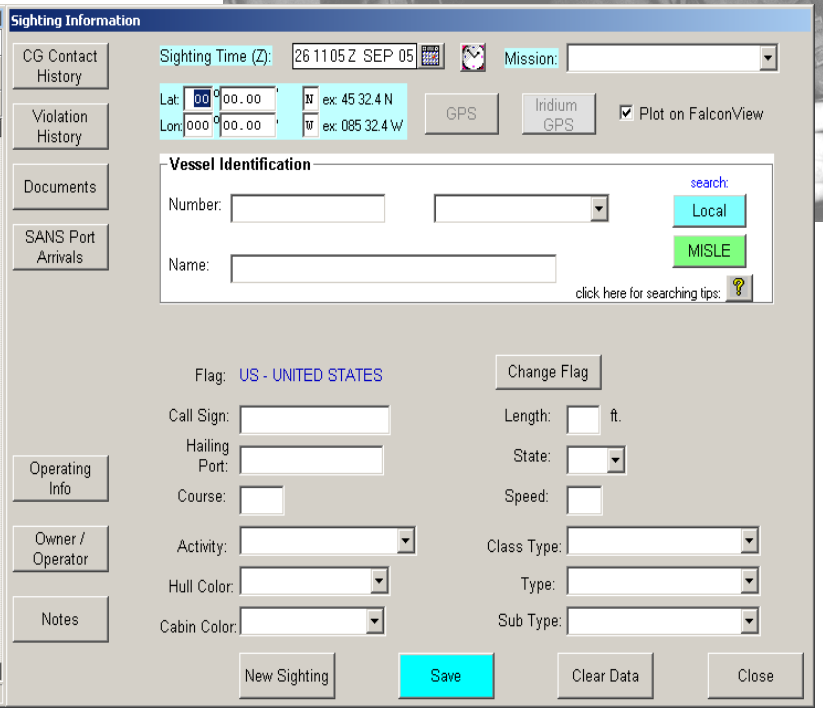
CG-Mission Planning System

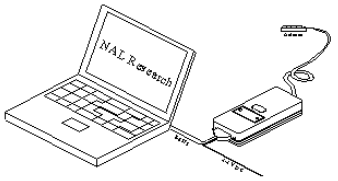


MISLE Lite &
FalconView

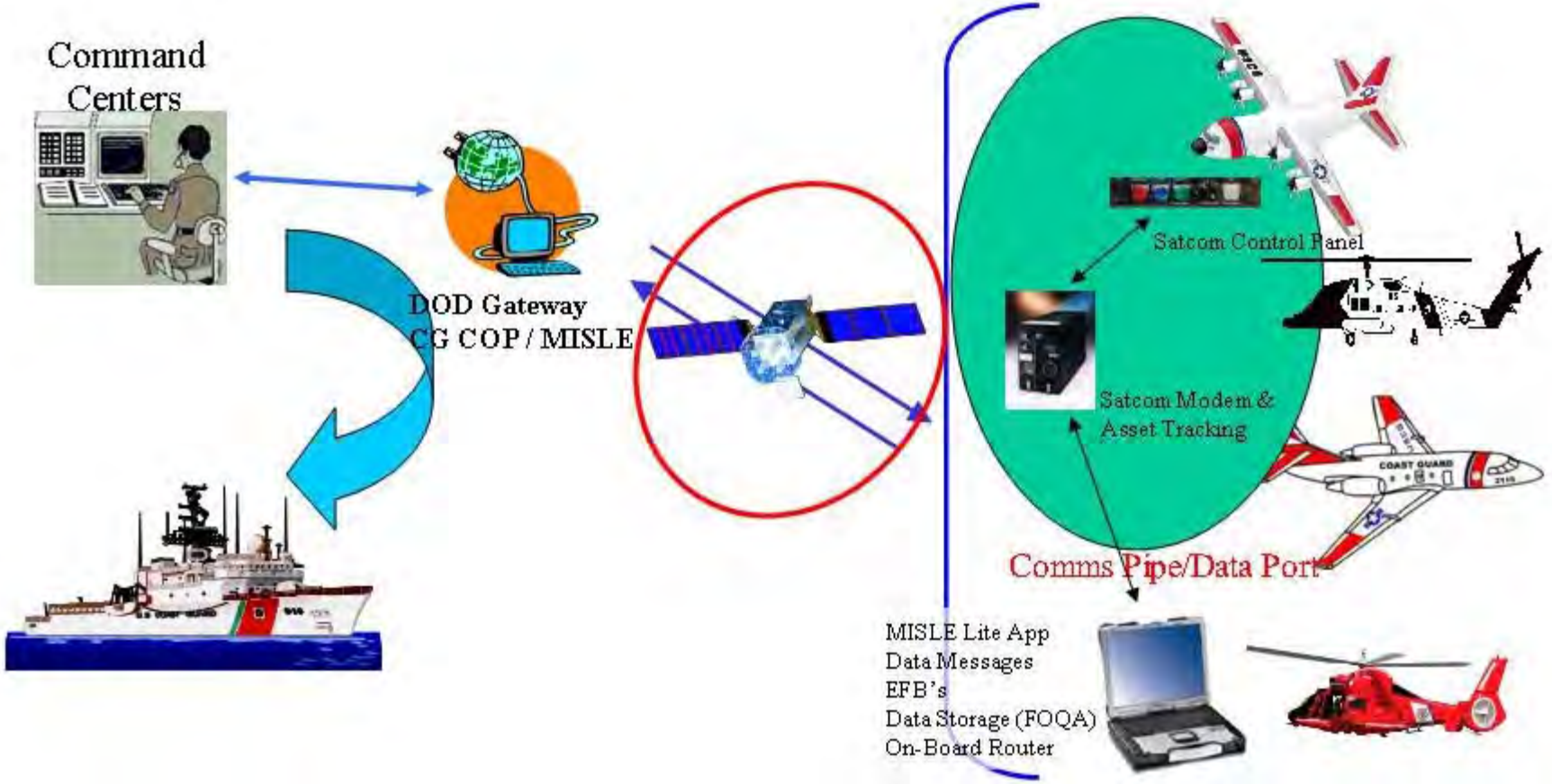








ADCS "Comms" Architecture

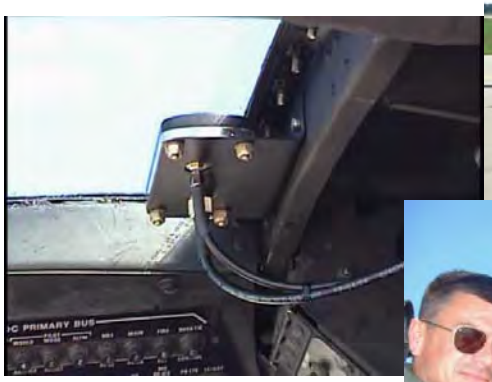


Proof of Concept

- Airborne Test – 22 Sep 2004
- Passed EMI Soft-test
- Maintained comms link in forward flight –
  - 120kts
  - 30 degrees angle of bank
- Transmitted data to MISLE & COP
- ~Time to displayed on COP: 57 seconds









U.S. COAST GUARD

Homeland Security

Return On Investment

Note: 2003/2004 stats	Before	After		Advantages
Asset Status (Asset Position Reports)	Voice 15/30min (Radio & Paper)	Automated into COP (SPS 3.3.x Information Exchange)	→	Timeliness Accuracy Safety
Process Steps (VSL ID to data entry)	34	13	→	21 Less Steps
Cycle Time (Data Transfer)	210 Minutes (3.5 hours)	< 5 Minutes	→	98% Faster Cycle Time
Costs (Latency & Lost Data)	$146.7 M (Waste)	$8.5 M (Project Cost)		**ROI 83:1**

U.S. COAST GUARD

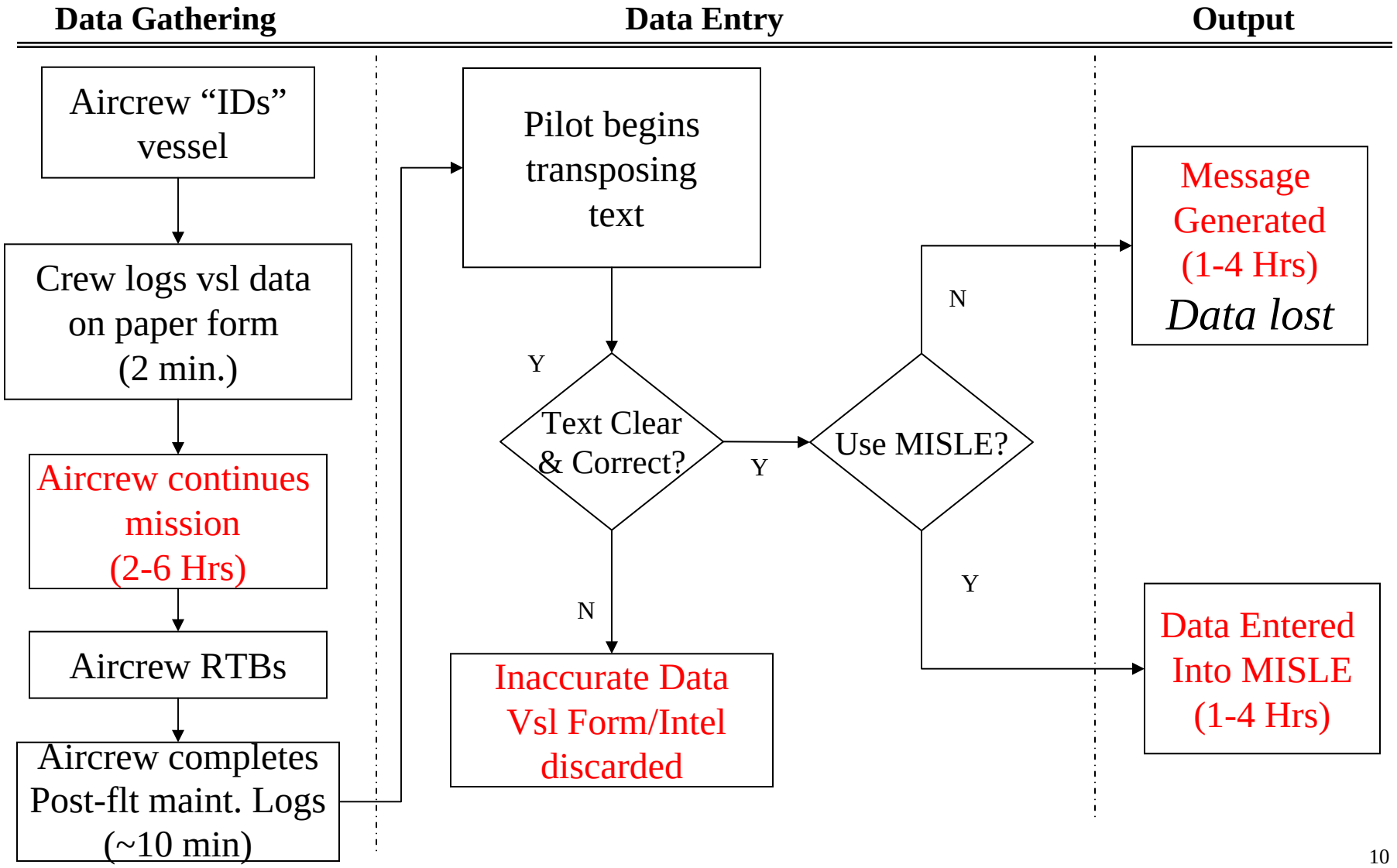
Homeland Security



- MISLE Lite Pgm Mature
- Comms Pathway Dev'l
- MISLE data feeds COP
- COTS products
- Common Avionics System
- ADCS C-130 contract

CDR Rick Christoffersen

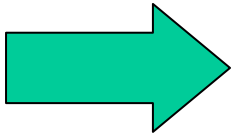



Data Gathering
Data Entry
Output
Aircrew "IDs" vessel
Crew logs vsl data on paper form (2 min.)
Aircrew continues mission (2-6 Hrs)
Aircrew RTBs
Aircrew completes Post-flt maint. Logs (~10 min)
Pilot begins transposing text
Text Clear & Correct?
Y
N
Use MISLE?
Y
N
Message Generated (1-4 Hrs) Data lost
Data Entered Into MISLE (1-4 Hrs)
Inaccurate Data Vsl Form/Intel discarded

Linkages

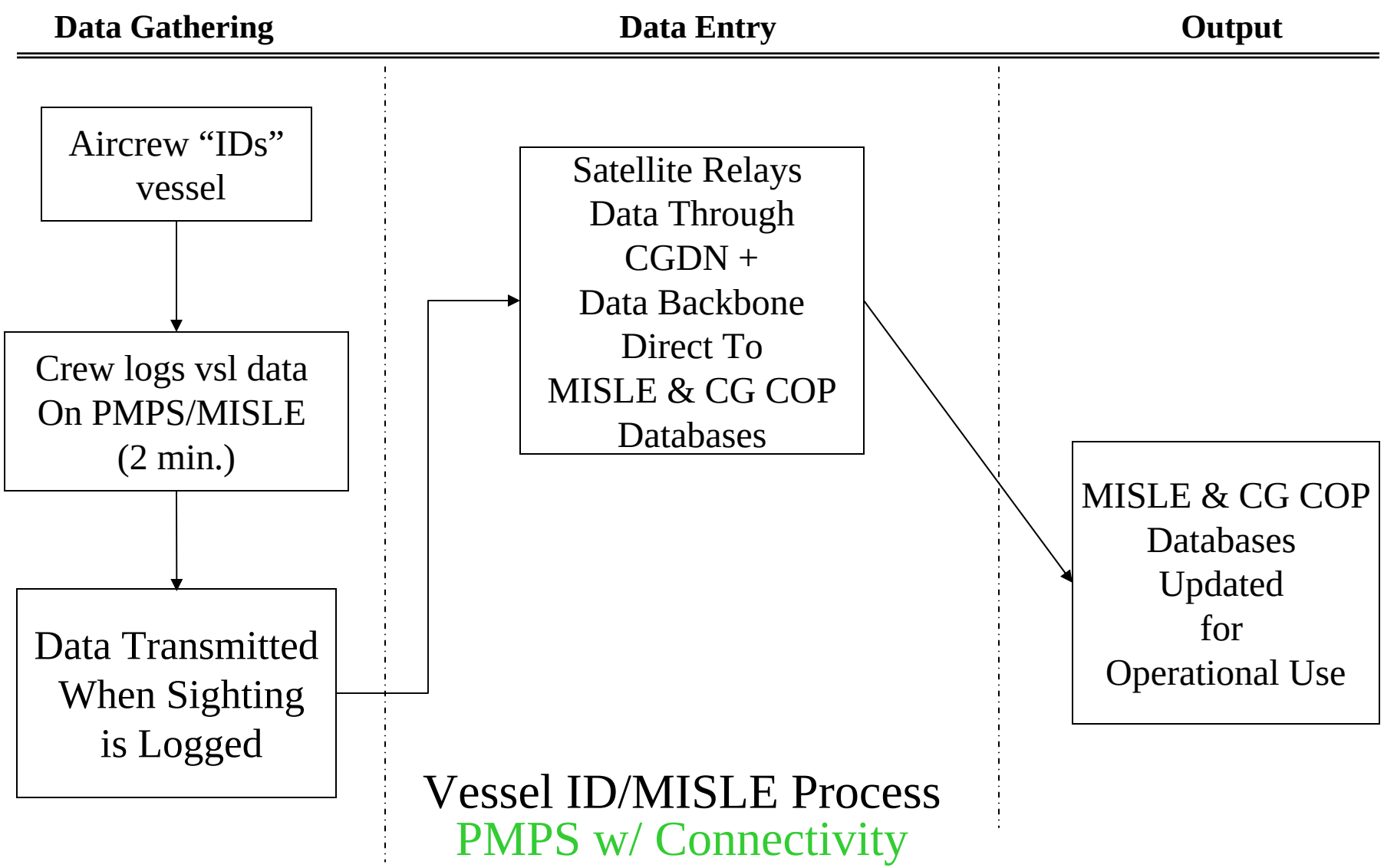
Project Goals

- Near-Real Time Data Exchange
- Connectivity
- Data Integrity



Organizational Goals

- Mission Effectiveness
- Operational Excellence
- Enhanced MDA
  - ALCOAST 160/04
    (Est. MDA Office)
  - CG COP/MISLE



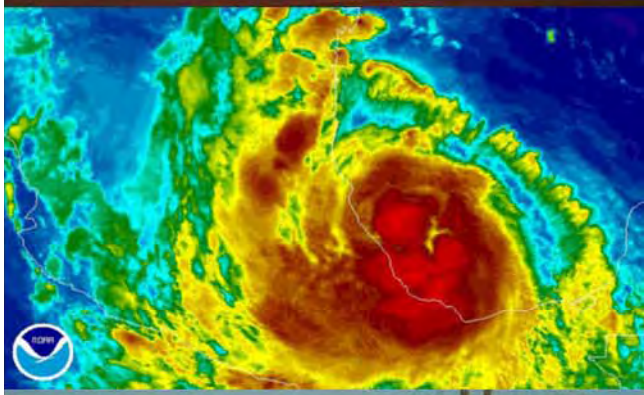
Vessel ID/MISLE Process
PMPS w/ Connectivity

U.S. Department of Homeland Security



2007 U.S. Coast Guard Innovation Expo

October 30, 2007 • New Orleans, Louisiana





Presented by:

Jay M. Cohen
Under Secretary for Science and Technology
U.S. Department of Homeland Security

Homeland Security









Homeland Security

U.S. Coast Guard Cutter *Eagle*



Homeland Security



Homeland Security



Homeland Security



Homeland Security



Homeland Security



Homeland Security

One Year Ago

The Senate said:

“This component is a rudderless ship without a clear way to get back on course.”

“The Committee is extremely disappointed with the fiscal year 2007 President’s budget submission and accompanying Department congressional justification material.”

“Not being able to clearly articulate and justify the funding request is simply unacceptable.”

Homeland Security

S&T Goals

Consistent with the Homeland Security Act of 2002

- Accelerate delivery of enhanced technological capabilities to meet requirements and fill capability gaps to support DHS Agencies in accomplishing their mission
- Establish a lean and agile GS-manned, world-class S&T management team to deliver the technological advantage necessary to ensure DHS Agency mission success and prevent technology surprise
- Provide leadership, research and educational opportunities and resources to develop the necessary intellectual basis to enable a national S&T workforce to secure the homeland

DHS S&T Investment Portfolio

Balance of Risk, Cost, Impact, and Time to Delivery

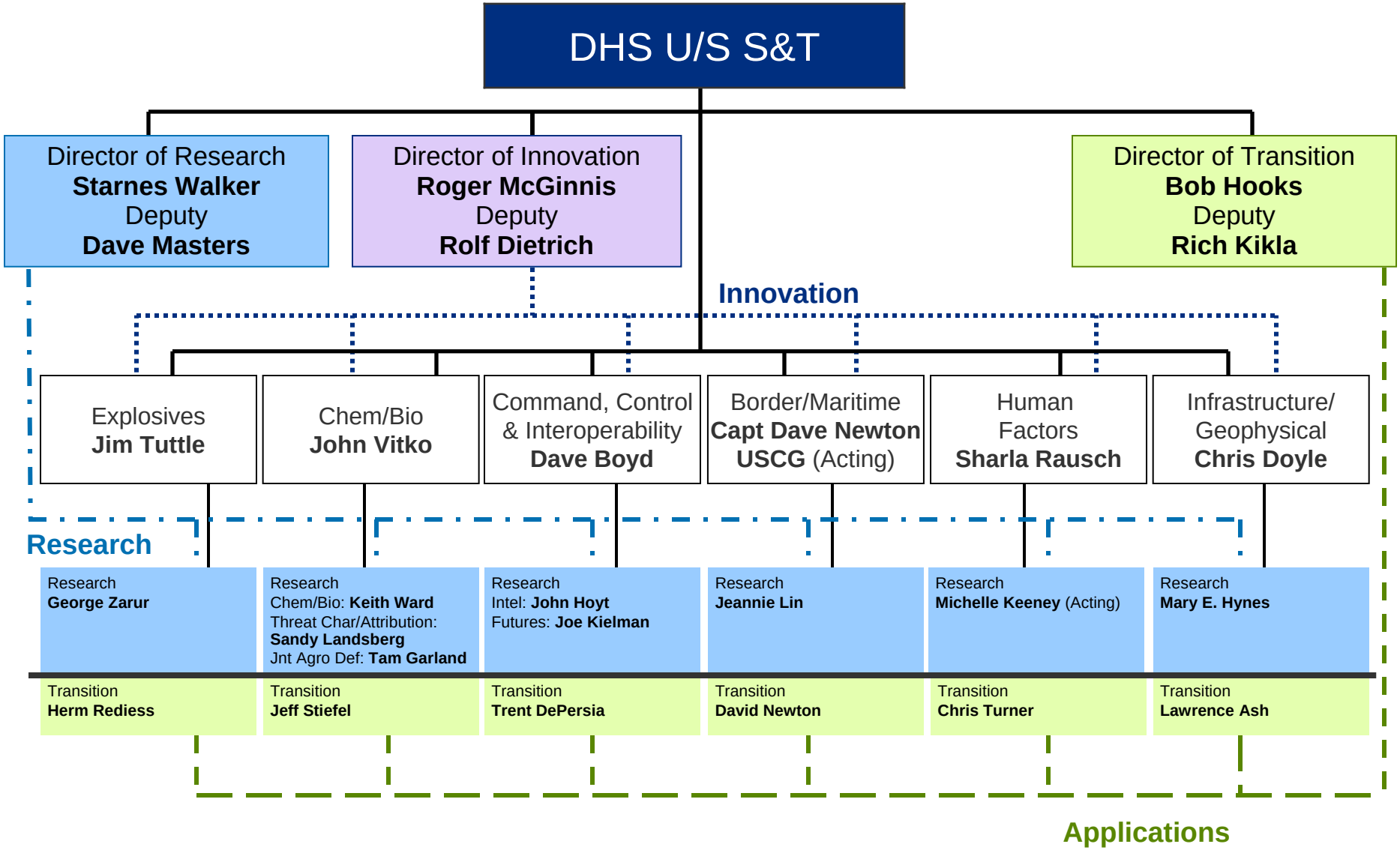
Product Transition (0-3 yrs) ▪ Focused on delivering near-term products/enhancements to acquisition ▪ Customer IPT controlled ▪ Cost, schedule, capability metrics	**Innovative Capabilities (1-5 yrs)** ▪ High-risk/High payoff ▪ "Game changer/Leap ahead" ▪ Prototype, Test and Deploy ▪ HSARPA
Basic Research (>8 yrs) ▪ Enables future paradigm changes ▪ University fundamental research ▪ Government lab discovery and invention	**Other (0-8+ yrs)** ▪ Test & Evaluation and Standards ▪ Laboratory Operations & Construction ▪ Required by Administration (HSPDs) ▪ Congressional direction/law

Customer Focused, Output Oriented

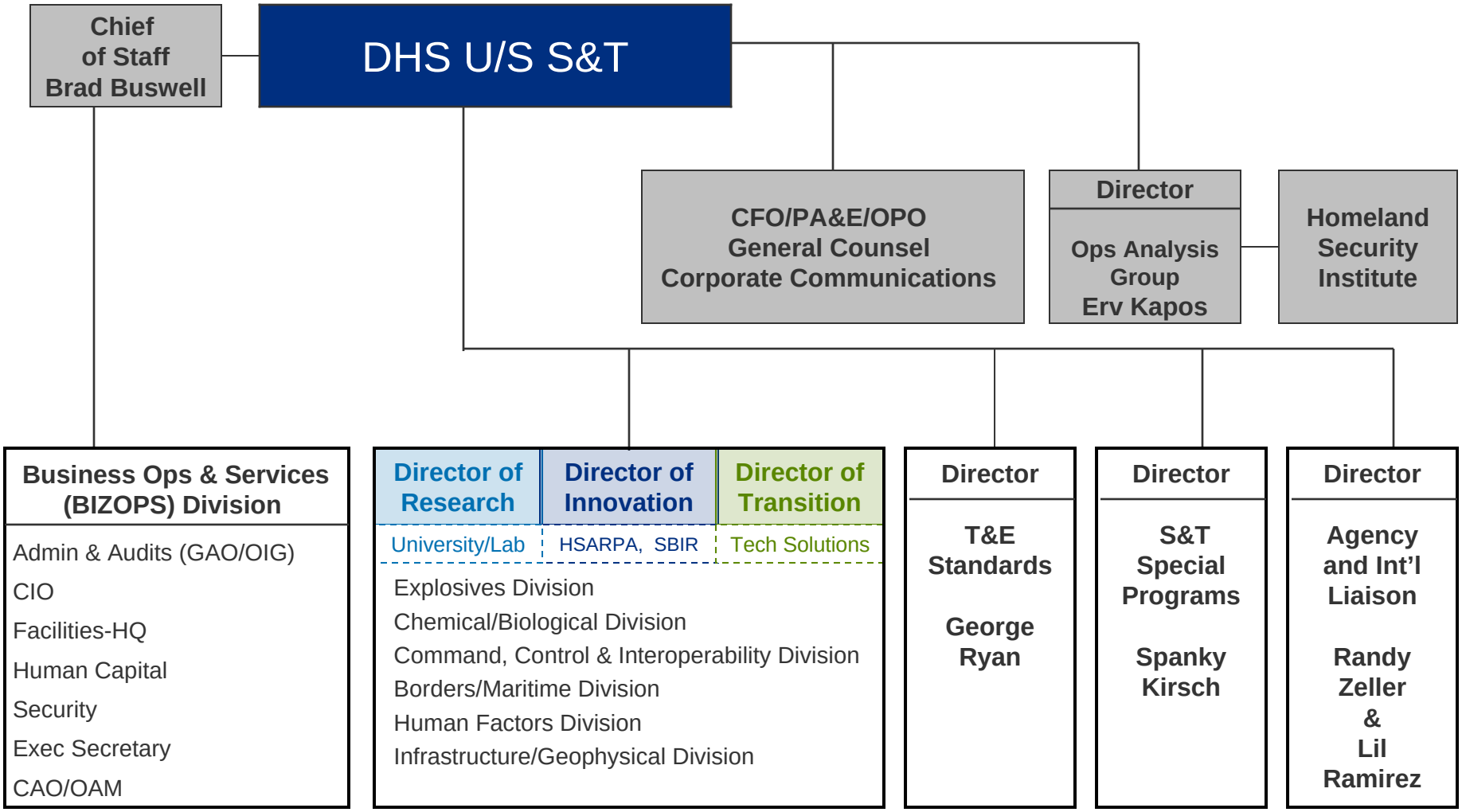
Homeland Security

Bombs – Borders – Bugs – Business

S&T Organization



DHS S&T Directorate

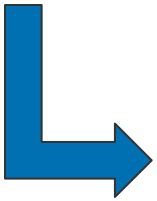


Homeland Security

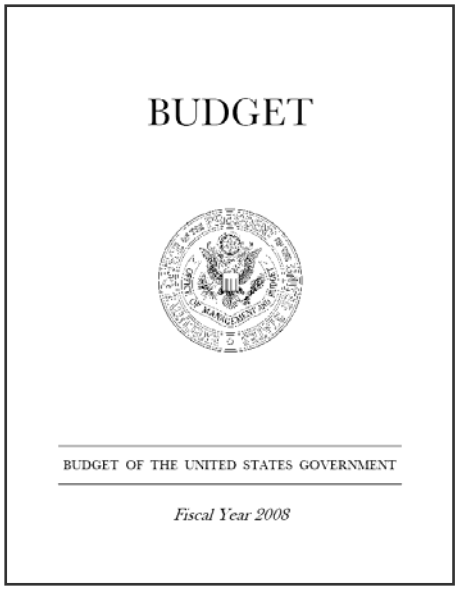
Timeline: Re-Org to Reprogramming Funds

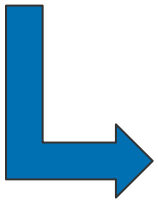


- AUG/SEP/OCT 2006 - Briefed all six DHS House and Senate Oversight Committees on new DHS S&T organization and portfolio content



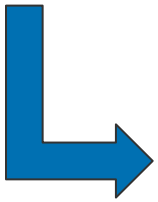
- Early OCT 06 - OMB directs PRESBUD FY08 that reflects revised S&T portfolio content





- Late OCT 06 House & Senate DHS Committees request DHS S&T submit an “omnibus reprogram” in order to reflect new DHS S&T portfolio content (submitted DEC 06) to “kickstart” S&T Innovation

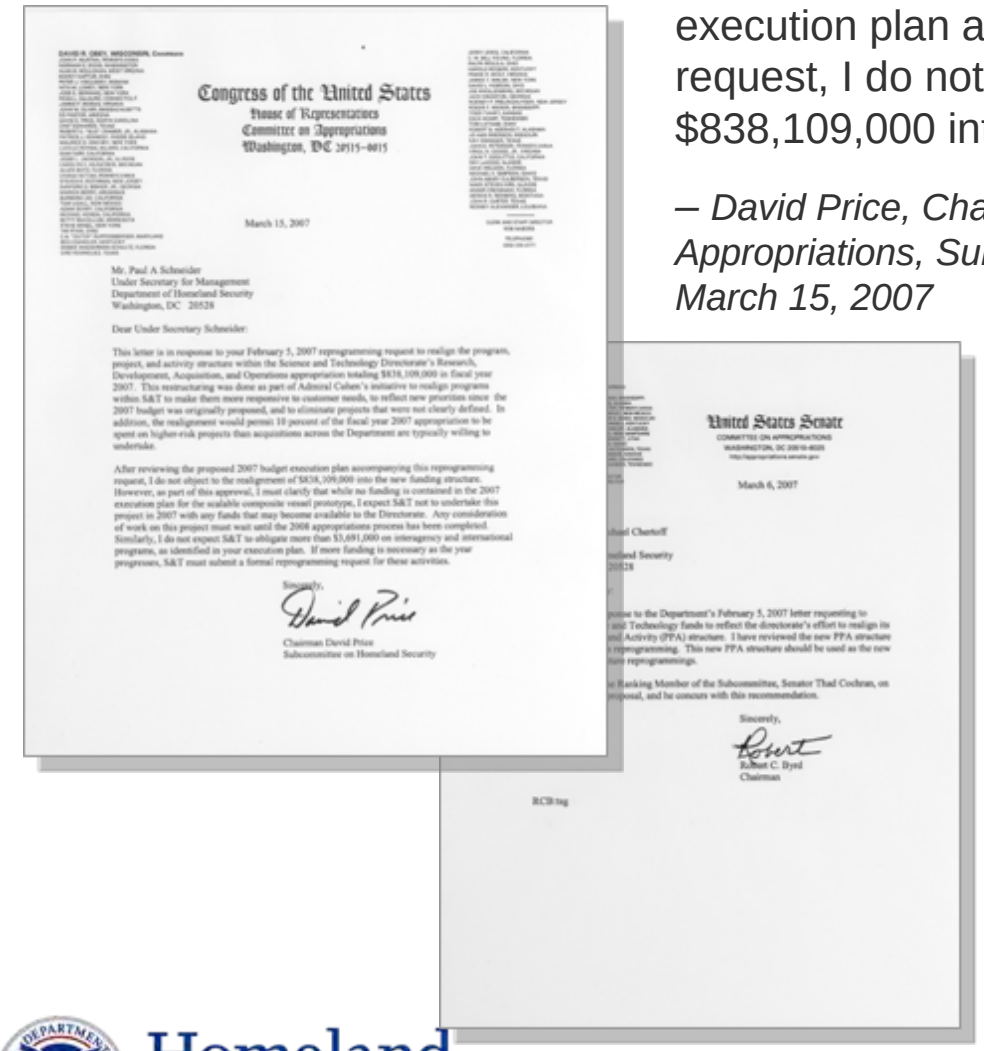




- March 2007 - Congressional approval to reprogram S&T funds

Homeland Security

Bi-Partisan Congressional Leadership Reprogramming of DHS S&T FY07 Funds to "kickstart" effort to make the Nation safer before FY08!



Congress of the United States
House of Representatives
Committee on Appropriations
Washington, DC 20515–6015

March 15, 2007

Mr. Paul A Schneider
Under Secretary for Management
Department of Homeland Security
Washington, DC 20528

Dear Under Secretary Schneider:

This letter is in response to your February 5, 2007 reprogramming request to realign the program, project, and activity structure within the Science and Technology Directorate's Research, Development, Acquisitions, and Operations appropriation totaling $838,109,000 in fiscal year 2007. This restructuring was done as part of Admiral Cohen's initiative to realign programs within S&T to make them more responsive to customer needs, to reflect new priorities since the 2007 budget was originally proposed, and to eliminate projects that were not clearly defined. In addition, the realignment would permit 10 percent of the fiscal year 2007 appropriation to be spent on higher-risk projects than acquisitions across the Department are typically willing to undertake.

After reviewing the proposed 2007 budget execution plan accompanying this reprogramming request, I do not object to the realignment of $838,109,000 into the new funding structure. However, as part of this approval, I must clarify that while no funding is contained in the 2007 execution plan for the scalable composite vessel prototype, I expect S&T not to undertake this project in 2007 with any funds that may become available to the Directorate. Any consideration of work on this project must wait until the 2008 appropriations process has been completed. Similarly, I do not expect S&T to obligate more than $3,691,000 on interagency and international programs, as identified in your execution plan. If more funding is necessary as the year progresses, S&T must submit a formal reprogramming request for these activities.

Sincerely,

David Price

Chairman David Price
Subcommittee on Homeland Security

United States Senate
COMMITTEE ON APPROPRIATIONS
WASHINGTON, DC 20510–6025

March 6, 2007

Sincerely,

Robert C. Byd
Chairman

"After reviewing the proposed 2007 budget execution plan accompanying this reprogramming request, I do not object to the realignment of $838,109,000 into the new funding structure."

– David Price, Chairman, House Committee on Appropriations, Subcommittee on Homeland Security, March 15, 2007

"I have reviewed the new Program, Project, and Activity (PPA) structure and approve of this reprogramming. This new PPA structure should be used as the new baseline for any future reprogrammings."

– Robert C. Byrd, Chairman, Senate Committee on Appropriations, March 6, 2007

Homeland Security

Today

The Senate says:

“The Committee is pleased with the rapid progress S&T appears to be making toward resolving past deficiencies.”

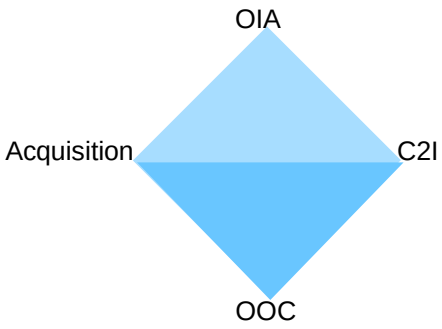
“The new Under Secretary has restructured the directorate’s programs, worked to obligate resources in a timely fashion, and instituted a capable budget office able to deliver timely, accurate, and comprehensible documents.”

Homeland Security

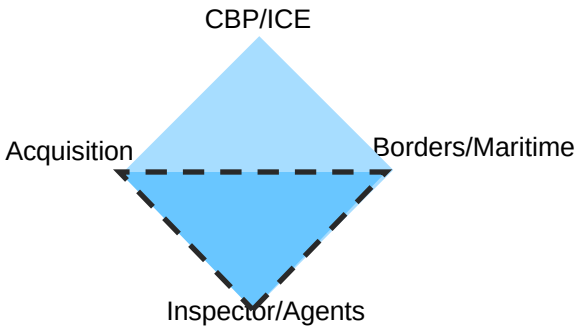
DHS Requirements/Capability Capstone Integrated Product Teams

DHS S&T Product – "Enabling Homeland Capabilities"

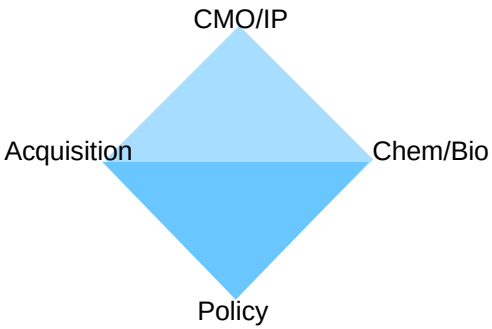
Information Sharing/Mgmt



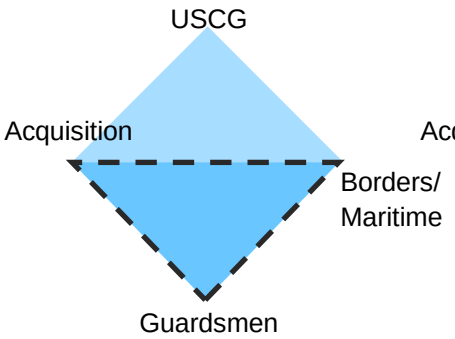
Border Security



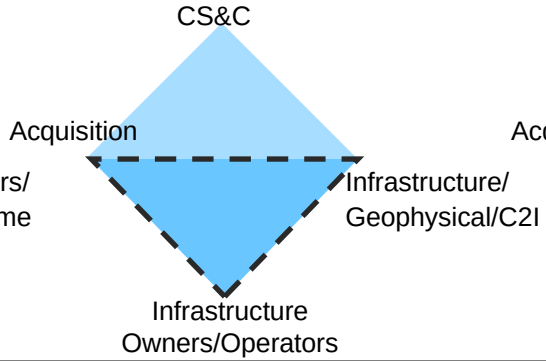
Chem/Bio Defense



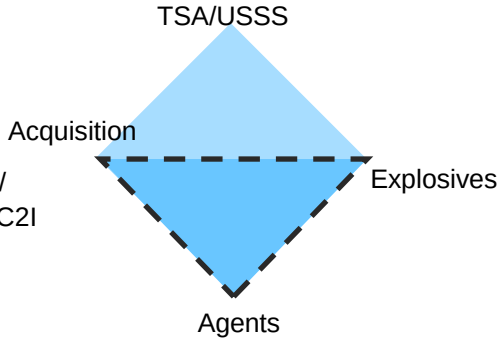
Maritime Security



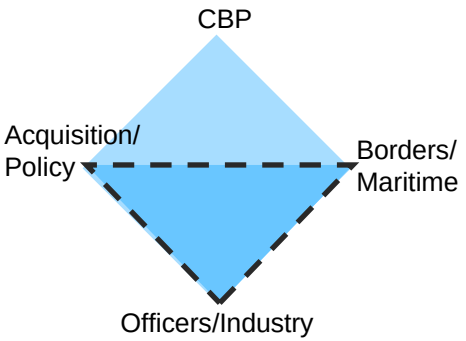
Cyber Security



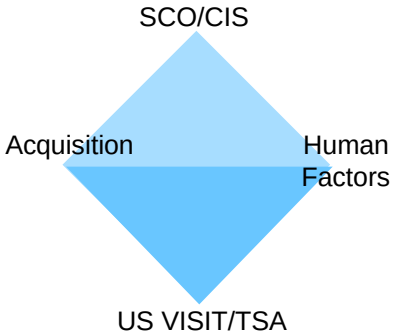
Explosive Prevention



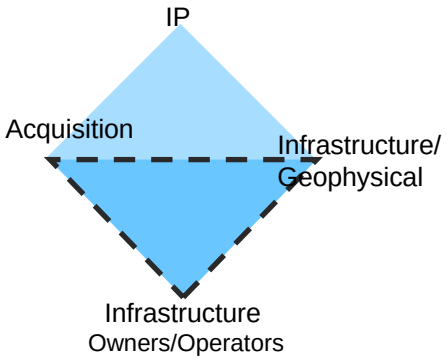
Cargo Security



People Screening

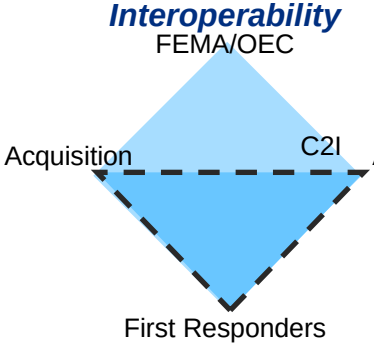


Infrastructure Protection

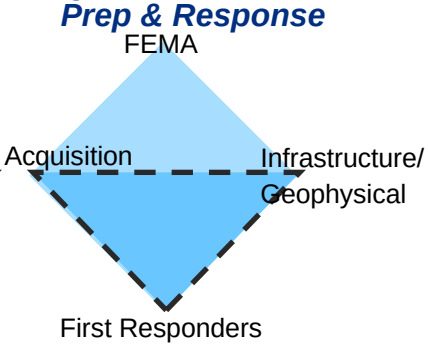


Incident Management

Interoperability



Prep & Response



Capstone IPTs defined requirements and customer capability gaps

NOW to Fill Those Gaps, Project IPTs Need to Engage

Information Sharing/Mgmt

- Information Fusion and Visualization to Support the Common Operating Picture (COP)
- Network Identity Management
- Cross-Agency Information Sharing

(19)

Border Security

- Border Officer Tools and Safety
- Sensor and Data Fusion
- Border / Maritime Domain Awareness Technologies

(50)

Chem/Bio Defense

- Agrodefense
- Biodefense
- Chemical Defense

(42)

Maritime Security

- Border Officer Tools and Safety
- Sensor and Data Fusion
- Border / Maritime Domain Awareness Technologies

(32)

Cyber Security

- Research Tools & Technology
- Information Infrastructure Protection
- Next Generation Technologies

(12)

Explosive Prevention

- Standoff Detection
- Homemade Explosives
- Checked Baggage
- Check Point
- Response
- Canine explosive detection
- Blast Mitigation
- Standoff Projectile Mitigation

(45)

Cargo Security

- Container Security
- Cargo Security
- Cargo Inspection

(15)

People Screening

- Biometrics
- Credentialing
- Hostile Intent
- Group Violent Intent Modeling

(10)

Infrastructure Protection

- Analysis & Decision Support Systems
- Advanced Infrastructure Architecture & Systems Design
- Detection & Sensor Systems
- Response, Recovery and Reconstitution

(10)

Incident Management

Interoperability

- Advanced communication
- Digital voice communication
- Seamless data exchange

(14)

Prep & Response

- First Responder Equipment
- Common Operating Picture & Situational Awareness
- Incident Modeling, Mapping & Simulation

(7)

•The Capstone Execution Arm

- Detailed Customer Schedule and Requirements
- Detailed S&T Performance Parameters
- Coordinated Programmatic Alignment
- Codified Technology Transition Agreements

Red number indicates # of projects reviewed

256 Total

To Deliver Technology on Schedule with Requisite Performance

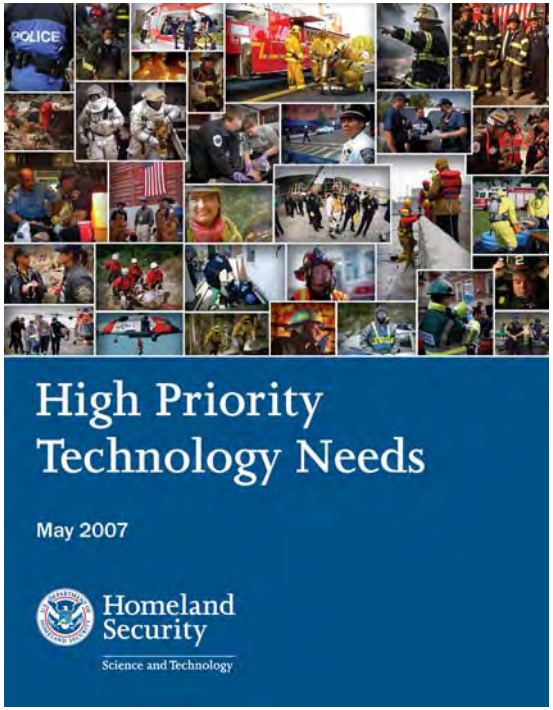
Rarely Seen Photo of a Capstone IPT Meeting



Inteegrated Product Team (IPT) Initial Outcome

High Priority Technology Needs

- 11 Capstone IPTs have identified 77 High Priority Technology Needs for DHS components and their customers
- Identified in brochure and posted at www.hsarpabaa.com
- Baseline established for conducting an iterative, dynamic IPT process on an annual cycle aligned with DHS funding and acquisition processes



IPT Next Steps:

- Focus on delivering product to customers
- Detail proposed technology solutions
- Clarify deliverable and transition plans
- Develop Technology Transition Agreements to establish customer requirements and technical specifications

Customer Focused…Output Oriented

Maritime Security IPT:
Representative Technology Needs

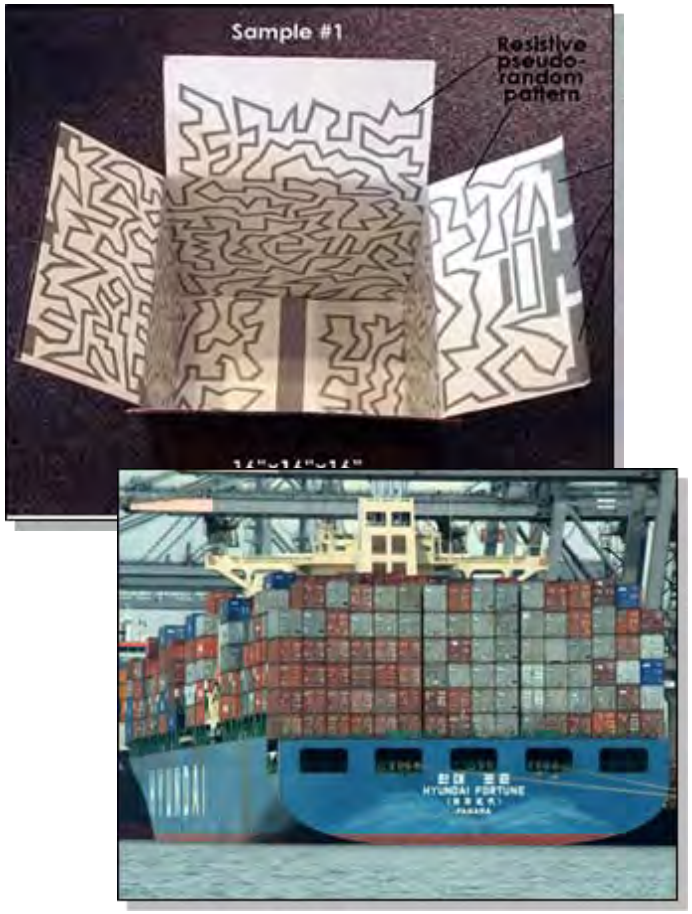


- Wide-area surveillance from the coast to beyond the horizon; port and inland waterways region - detect, ID, and track
- Data fusion and automated tools for command center operations
- Vessel compliance through non-lethal compliance methods
- Enhanced capability to continuously track contraband on ships or containers
- Improved ballistic personal protective equipment for officer safety
- Improved WMD detection equipment for officer safety; improved screening capability for WMD for maritime security checkpoints

S&T Lead Division: Border/Maritime

Homeland Security

Cargo Security IPT:
Representative Technology Needs

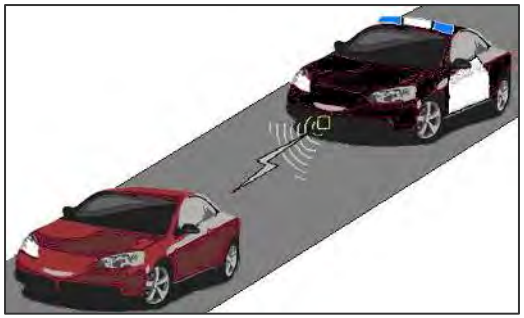


- Enhanced screening and examination by non-intrusive inspection
- Increased information fusion, anomaly detection, Automatic Target Recognition capability
- Detect and identify WMD materials and contraband
- Capability to screen 100% of air cargo
- Test the feasibility of seal security; detection of intrusion
- Track domestic high-threat cargo
- Harden air cargo conveyances and containers
- Positive ID of cargo and detection of intrusion or unauthorized access

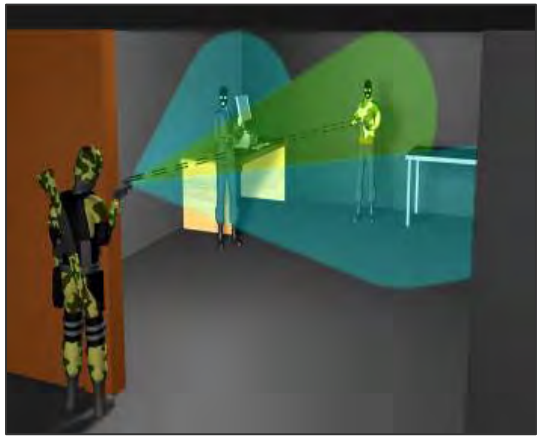
S&T Lead Division: Border/Maritime

Homeland Security

Border Officer Tools and Safety



Microwave Vehicle Stopper



Light Emitting Diode Incapacitator



Officer Safety Load Carriage System







Integration of Mobile Biometrics

Homeland Security

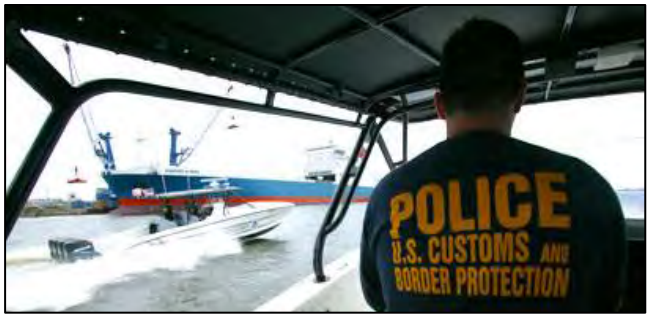
Maritime Security



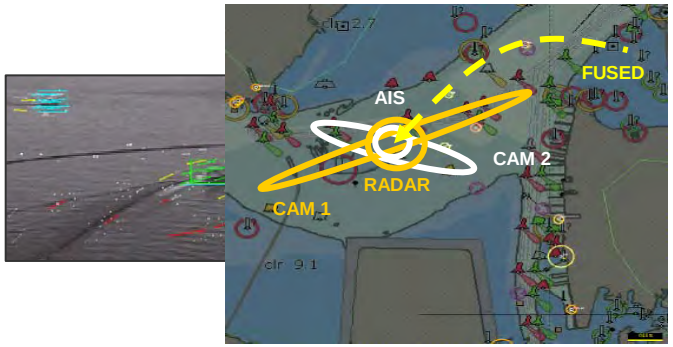
Port and Coastal RADAR Improvement



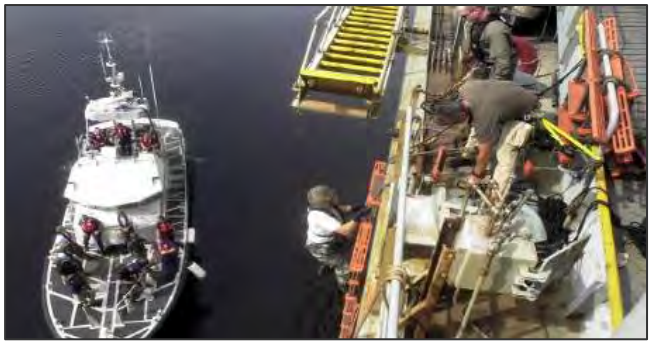
Affordable Wide-Area Surveillance (WAS)



Vessel Stopping



Automated Scene Understanding



Boarding Team Communications

Homeland Security

Maritime Biometric Identification System:

Handheld Biometric System Pilot in the Mona Pass

Pilot Description

Real-world operational pilot of Coast Guard maritime mobile biometrics technologies in the Mona Pass. The pilot will identify strengths and shortfalls associated with the use of mobile biometrics. The pilot will:

- assess feasibility and utility of ship-to-shore communications for the biometric device,
- conduct operational testing and evaluation,
- collect performance metrics, and
- produce a technology development roadmap to guide procurement and acquisitions supporting Coast Guard operations.



Planned Pilot/Deliverables/Transitions

- Conduct program coordination and requirements gathering – Q2 FY08 to Q1 FY09
- Participate in relevant working groups – Q2 FY08 to Q1 FY09
- Report on selection criteria for 2 additional handheld biometric collection devices for field testing – Q2 FY08
- Deliver system performance reports on fielded devices – Q2 FY08 to Q1 FY09
- Deliver hand quality study – Q1 FY09
- Deliver detailed transition plan – Q1 FY09

S&T and Homeland Security Payoff

- Timely identification of interdicted immigrants to determine if they are on a watch or wanted list
- Results of pilot will inform S&T's FY09 Mobile Biometric transition project of specific real-world operational shortfalls that exist with the use of mobile biometrics devices
- Customer(s) – USCG with lessons learned for CBP, US-VISIT

	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Total Funding ($K)	$ 723	$0	$0	$0	$0	$0	$0

Deliverables/Demos -

Transitions / TRL -

Cost
Sched
Tech

Homeland Security

Homeland Security Act of 2002

HSARPA will….

“Support basic and applied homeland Security research to promote *revolutionary* changes in technologies; advance the development, testing and evaluation, and deployment of critical homeland security technologies; and accelerate the prototyping and deployment of technologies that would address homeland security vulnerabilities.”



Homeland Security

HIPS and HITS

Homeland Innovative Prototypical Solutions (HIPS) are designed to deliver *prototype-level demonstrations* of game-changing technologies in two to five years. Projects are moderate to high risk, with high payoff

High Impact Technology Solutions (HITS) are designed to provide *proof-of-concept* answers within one to three years that could result in high-payoff technology breakthroughs. While these projects are at considerable risk for failure, they offer the potential for significant gains in capability

Homeland Security

Science and Technology

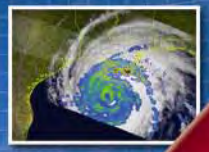
FY-08 Planned Demonstration Timeline

Homeland Innovative Prototypical Solutions (HIPS)

High Impact Technology Solutions (HITS)

HURRICANE & STORM SURGE MITIGATION

FY08 4Q – Storm surge mitigation system concept demonstration at the Army Corps of Engineers, Vicksburg, MS



LEVEE STRENGTHENING

FY08 4Q – New survey methods demonstration using a variety of geophysical sensors on multiple platforms and address weak levees at the Army Corps of Engineers, Vicksburg, MS



SENSIT

FY08 4Q – Liquid explosives field demonstration of a screening prototype for TSA 3-1-1 bags in a coin size tub at Los Alamos National Laboratory, NM



RESILIENT TUNNEL

FY08 3Q – Trial prototype inflatable plug device at the West Virginia Memorial Tunnel



REG

FY08 2&4Q – Laboratory demonstrations of fault limiting superconducting cable at Oak Ridge National Laboratory, TN



TUNNEL DETECT

FY08 3Q – Field experiments for improved airborne wide area surveillance system to increase the accuracy of detection



FAST M2

FY08 1Q – Non-invasive sensor demonstration, validation and metrics at MIT Draper Laboratory



CRITICAL INFRASTRUCTURE CHANGE DETECTION

FY08 1Q – Examine technical characteristics of a new ultra high resolution optical sensor in lower Manhattan in coordination with the New York Police Department



CHLOE

FY08 1Q – Live-Fire Counter-Manpads Detection demonstration at White Sands Missile Range



Science & Technology

Innovation Portfolio

HSARPA

SAFECON – Safe Container

Office of Innovation - Homeland Innovative Prototypical Solutions

Quickly Detect and Identify Dangerous Cargo

Integrated Sensor Suite: explosives, chemical agents, biological agents human cargo, contraband

Scan for WMD, contraband, and human cargo during normal crane transport operations

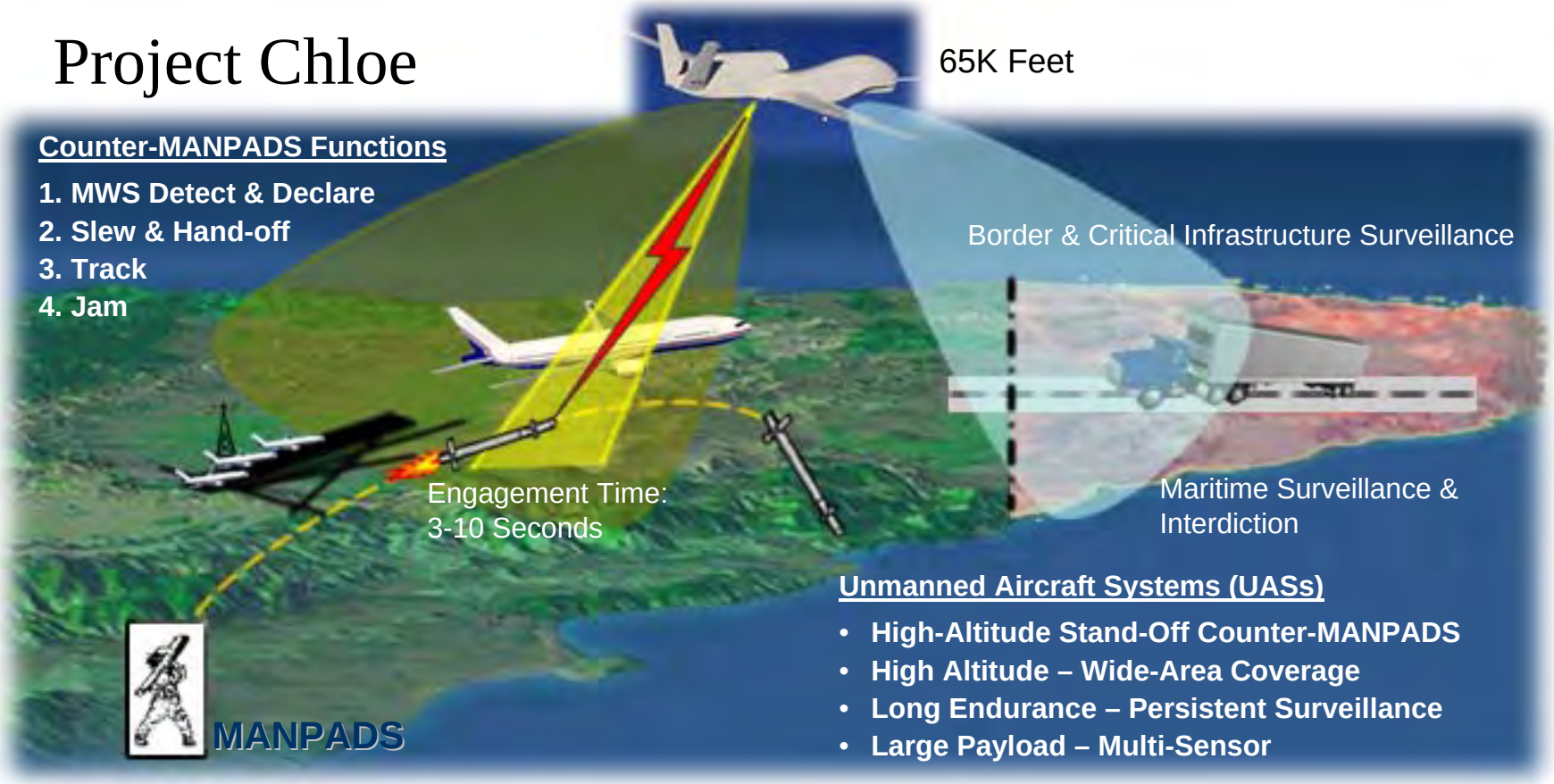


- Improved Non-Intrusive Inspection (NII) capability
- Improved Sensors for explosives, Chem, and Bio agents

Counter-MANPADS/Persistent Surveillance

Office of Innovation - Homeland Innovative Prototypical Solutions

Project Chloe

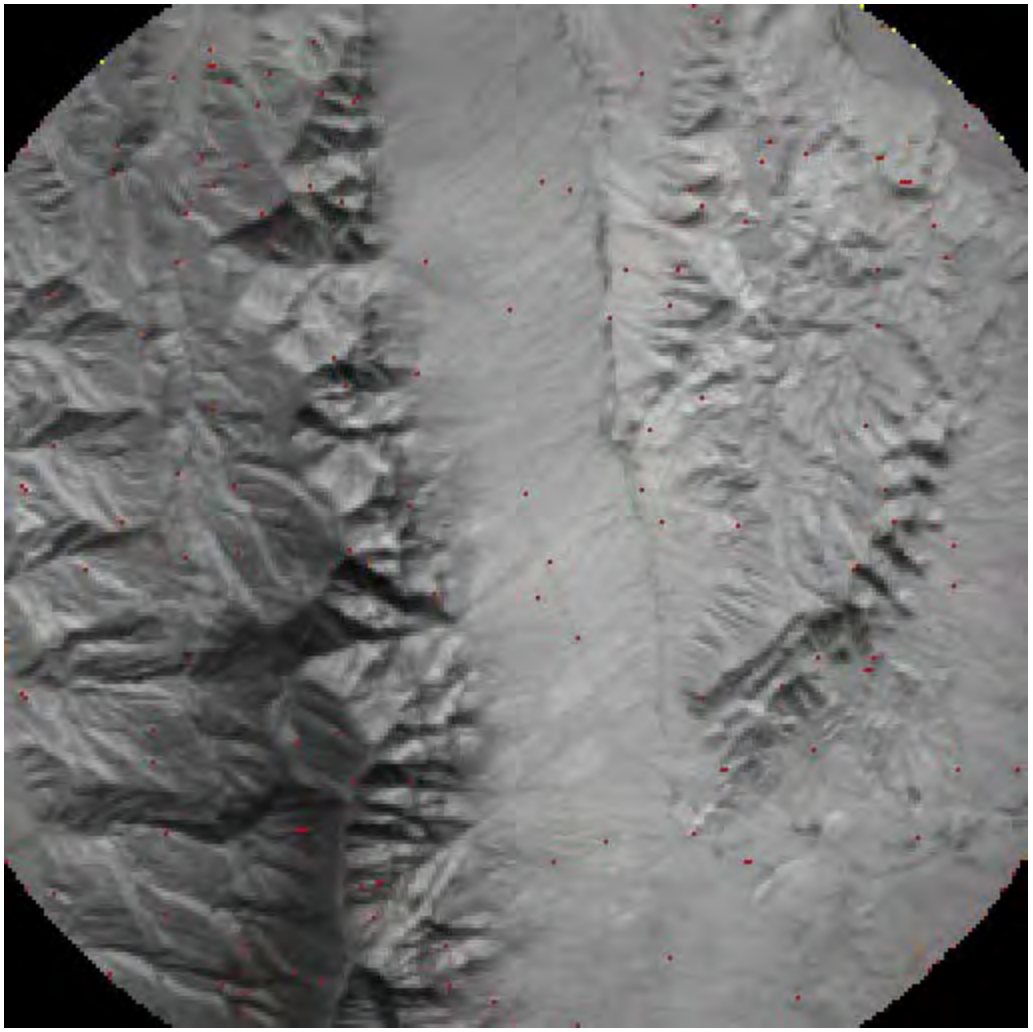


Operational Characteristics

- Real-time sensor fusion/dissemination
- Multi-user / border surveillance requirements
- Commercial Aircraft MANPADS protection
- Automatic target detection/recognition
- Persistence (24/7, all-weather coverage)

Homeland Security

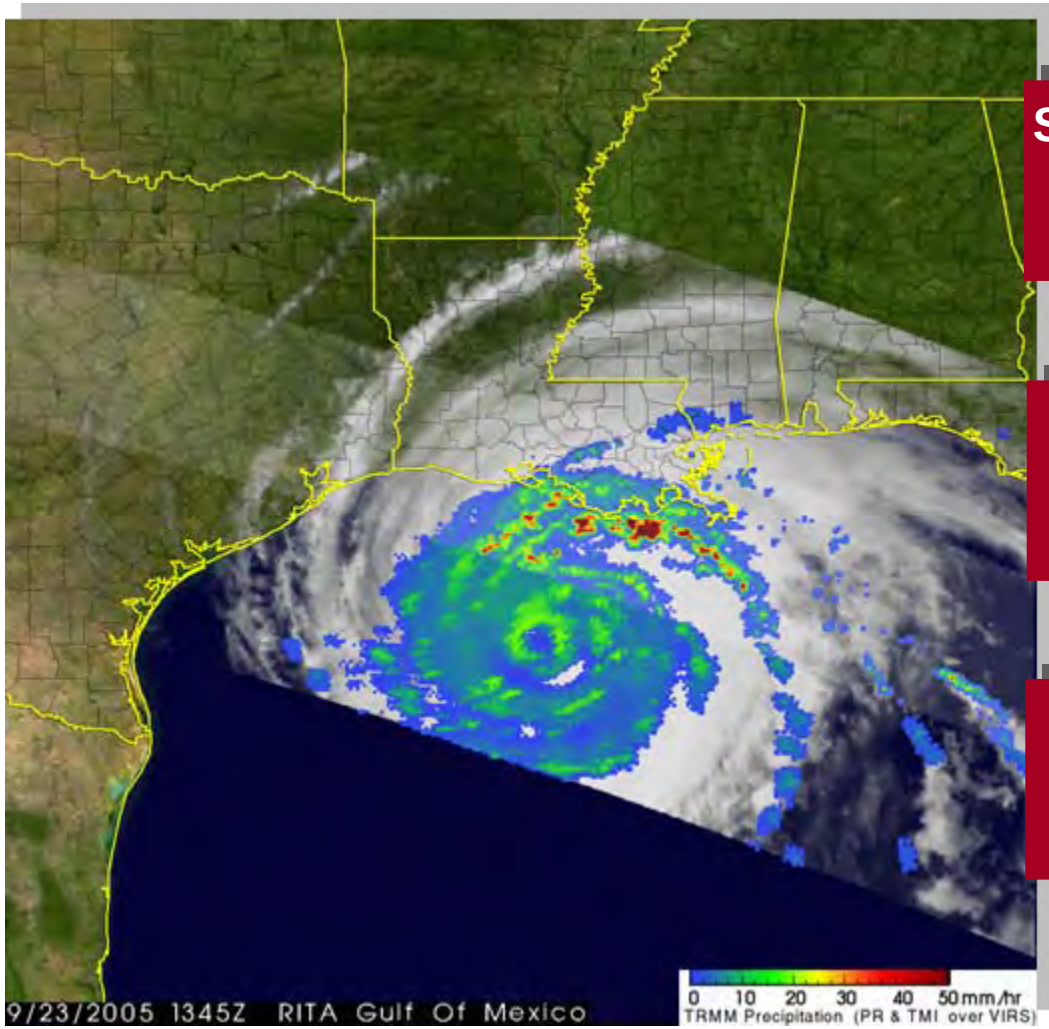
Chloe: Live Fire Missile Testing



Homeland Security

Homeland Innovative Prototypical Solutions

Storm Surge Mitigation (SSM)



Strategic use of underwater blasts to mitigate storm surge?

Use of drop-In structures to limit surge?

Rerouting of flood waters to limit damage to Critical infrastructure?

Homeland Security

Homeland Innovative Prototypical Solutions

Levee Strengthening and Rapid Repair

Pre-emptive mapping of weak levees

Pre-Flood Deployment of Protective And Rapid Repair Supplies to Problem Locations

Drop-in structures lofted by aircraft





Float-in structure guided by cables

Explosively Emplaced Support Structures

Roll-out protective coverings such as articulated concrete mats

Homeland Security



Homeland Security



Homeland Security

The Washington Post

Sept. 30-Oct. 3, 2007

LEFT OF BOOM

THE STRUGGLE TO DEFEAT ROADSIDE BOMBS

'You can't armor your way out of this problem'

LEFT OF BOOM

THE STRUGGLE TO DEFEAT ROADSIDE BOMBS

'There was a two-year learning curve . . . and a lot of people died in those two years'



Spec. Luis Casas, right, an Army medic, tends to Pfc. Gonzales (f
shrapnel from an IED that exploded next to their Humvee during

LEFT OF BOOM

THE STRUGGLE TO DEFEAT ROADSIDE BOMBS

'The single most effective weapon against our deployed forces'

LEFT OF BOOM

THE STRUGGLE TO DEFEAT ROADSIDE BOMBS

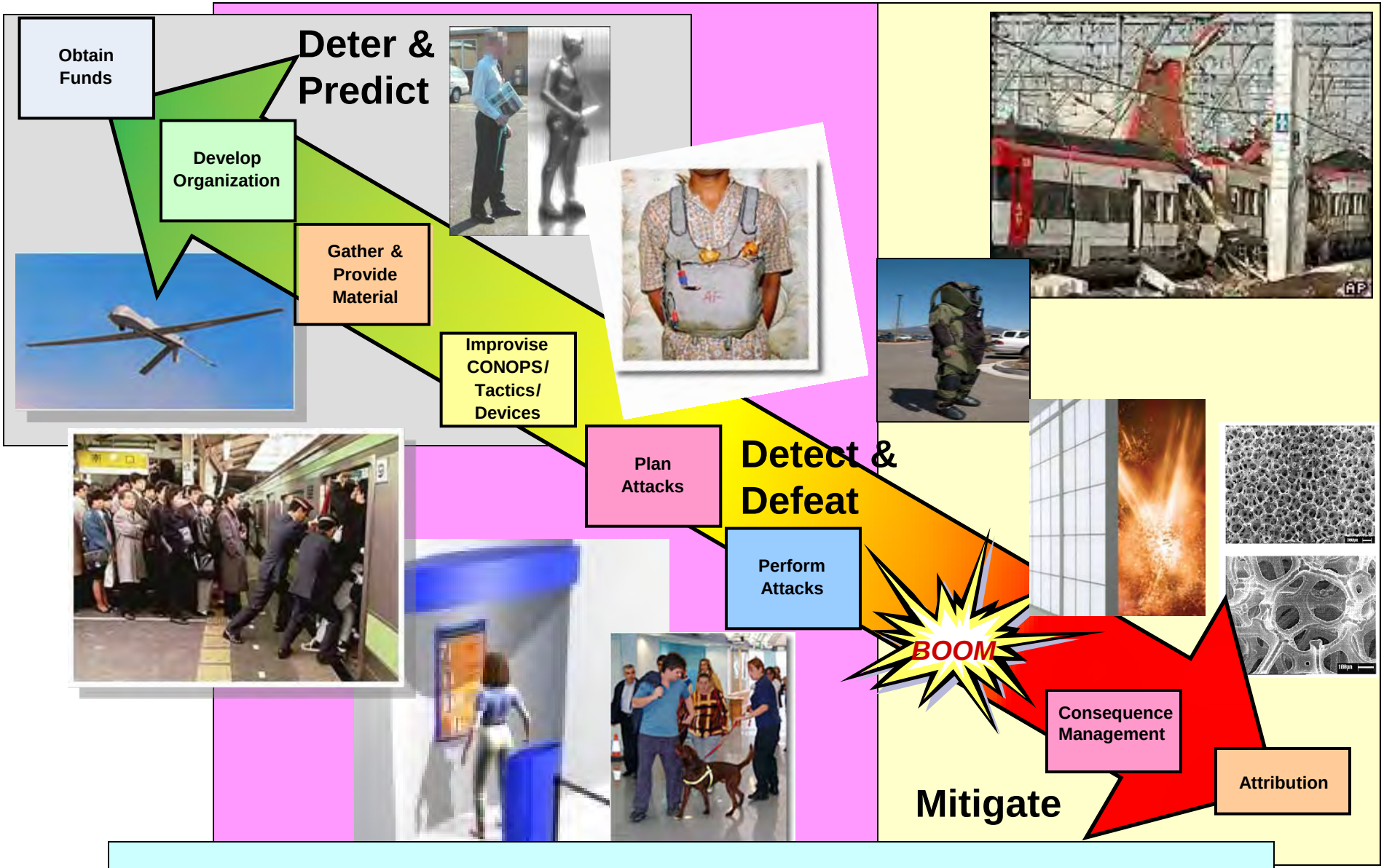
'If you don't go after the network, you're never going to stop these guys. Never.'





Homeland Security

Countering the IED Threat



Breaking the links in the IED Delivery Chain

Basic Research Portfolio

Discovery and Invention to Enable Future Capabilities



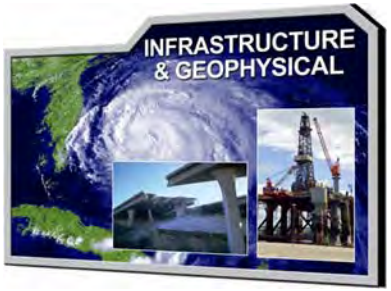




- Brings the capabilities, talent and resources of the Homeland Security Centers of Excellence, DOE National Laboratories and DHS Labs to bear to address the long-term R&D needs for DHS in sciences of enduring relevance
- This type of focused, protracted research investment has potential to lead to paradigm shifts in the nation's homeland security capabilities







COE Alignment

S&T DIVISIONS

Explosives	Chemical/Biological	Command, Control & Interoperability	Borders/Maritime	Human Factors	Infrastructure/ Geophysical
NEW *National Center for Explosives Detection & Counter-measures*	National Center for Food Protection and Defense — A Homeland Security Center of Excellence FAZD Center — National Center for Foreign Animal and Zoonotic Disease Defense CAMRA — Center for Advancing Microbial Risk Assessment *Consolidated Chem/Bio Center*	**IDS-UACs** **RVACs** *Consolidated CCI Center*	**NEW** *National Center for Border Security & Immigration* **NEW** *National Center for Maritime Domain Awareness and Island & Remote/Extreme Environment*	START	Basic Research, Applied Science, Preparedness & Response, Education — PACER **NEW** *National Center for Gulf Coast Natural Disaster & Port Security*

Operations & Analysis

Risk Sciences Branch & HSI Risk Determination

Homeland Security

CREATE Homeland Security Center

DHS / DOE Laboratory Alignment

	S&T DIVISIONS					
	Explosives	Chemical/Biological	Command, Control & Interoperability	Borders/Maritime	Human Factors	Infrastructure/ Geophysical
DOE	LANL PNNL SNL NTS INL	LLNL SNL ANL LANL PNNL LBNL SRNL	LANL LLNL PNNL ORNL NTS INL LBNL	LLNL SRNL BNL	ANL BNL ORNL SNL	ORNL ANL INL BNL LBNL
DHS		PIADC NBACC				
NASA			NASA	NASA	NASA	



Homeland Security

TSL / EML

DHS S&T Laboratories



Environmental Measurements Laboratory



National Biodefense Analysis and Countermeasures Center (NBACC)

Transportation Security Laboratory



Plum Island Animal Disease Center





… DHS S&T has four Labs and access to 10 DOE National Labs

The New York Times

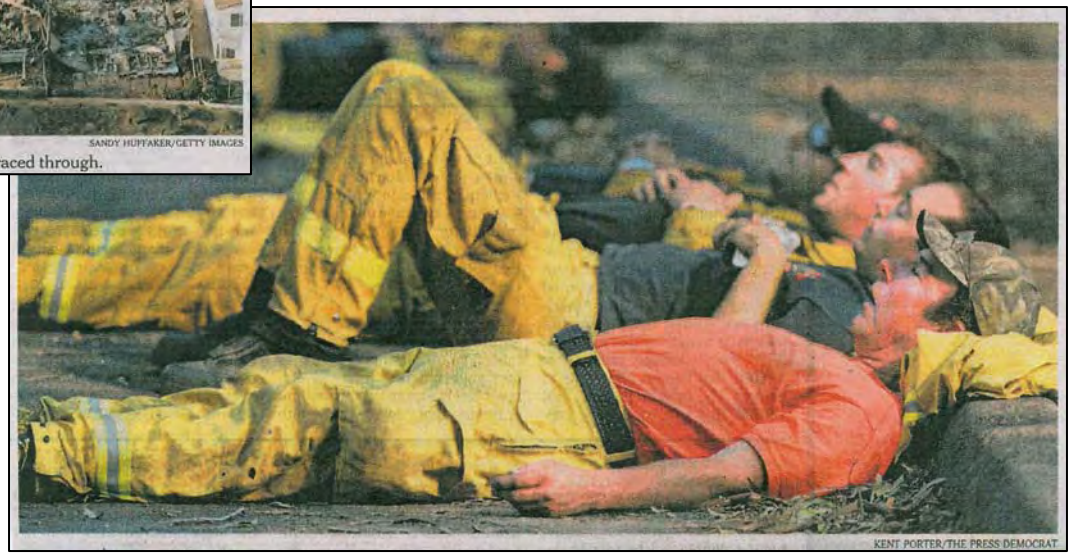
© 2007 The New York Times

THURSDAY, OCTOBER 25, 2007



SANDY HUFFAKER/GETTY IMAGES

SAN DIEGO A neighborhood in the Rancho Bernardo section was left in ruins yesterday after a fire raced through.



KENT PORTER/THE PRESS-DEMOCRAT

Homeland Security

Project SAFE:

Enabling Technology to Protect Communities from Catastrophic Fires



Doing Business with DHS S&T

Broad Agency Announcements

Current Solicitations

- Document validator
- Biometric detector
- Cyber Security R&D
- Unified Incident Command & Decision Support, Phase II
- RFI SAFE Container
- Home Made Explosives
- Emerging Counter-MANPADS Technologies Assessment

For more about BAAs, visit www.FedBizOpps.gov and www.hsarpabaa.com







Homeland Security

TECHSOLUTIONS

- Mission: rapidly address technology gaps identified by Federal, State, Local, and Tribal first responders
- Field prototypical solutions in 12 months
- Cost commensurate with proposal but less than $1M per project
- Solution should meet 80% of identified requirements
- Provide a web-based mechanism for Emergency Responders to relay their capability gaps (www.dhs.gov/techsolutions)
- Gaps addressed with existing technology, spiral development, rapid prototyping
- Emergency Responders partner with DHS from start to finish

Rapid Technology Development

Target: Solutions Fielded within 1 year, at ~<$1M

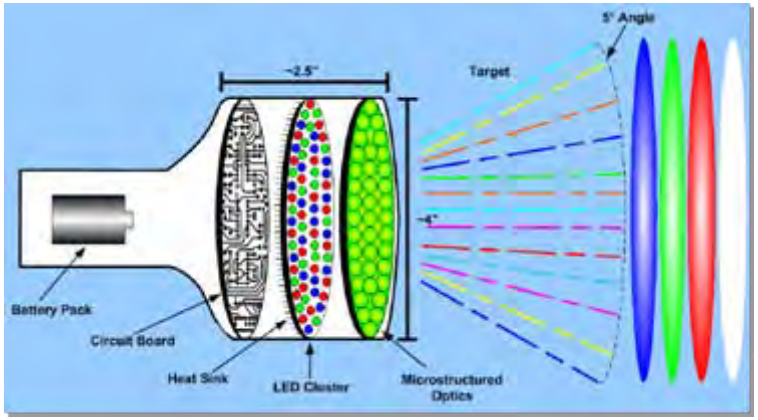
Homeland Security

From "Don't TAZE me" *to*…"DAZE me."

LED Incapacitator: "The Dazzler"

- Light-emitting diode tool provides non-lethal means of subduing people who pose a security threat at ports of entry and other locations
- Emits colorful, ultra-bright pulsing light that disorients and temporarily blinds subjects with reactions that range from vertigo to nausea
- Customers and End Users: Border Patrol, Federal Protective Services, FAMs, USCG, ICE, State and local law enforcement, etc.
- Testing underway at Penn State
- A joint project of SBIR and Border/Maritime Security Division





Homeland Security

DHS S&T Stakeholders Conferences

- International Security and National Resilience (ISNR) conference, London, December 3-5, 2007. Visit www.isnrlondon.com
- S&T Stakeholders Conference West with first responder focus, Los Angeles, January 14-17, 2008
- Stakeholders Conference, Washington, DC, May 2008







Homeland Security

DHS S&T Innovation in the News…

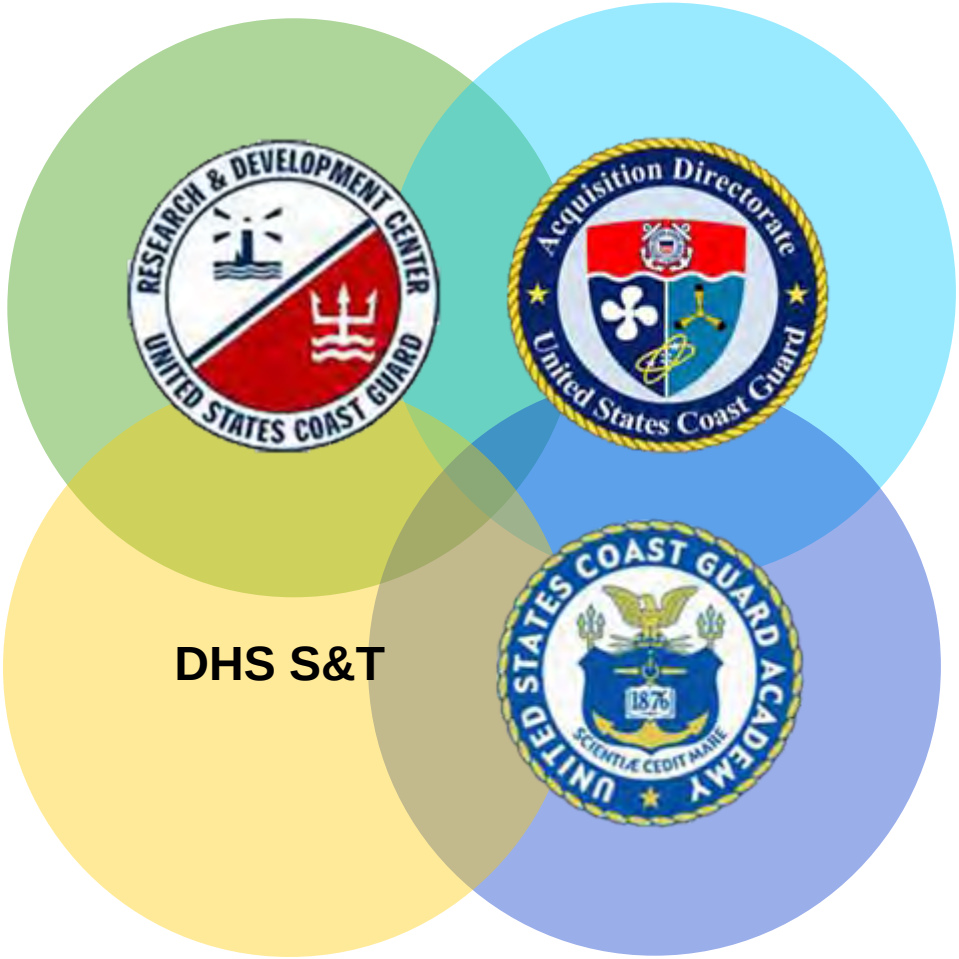


New brown-water Navy?



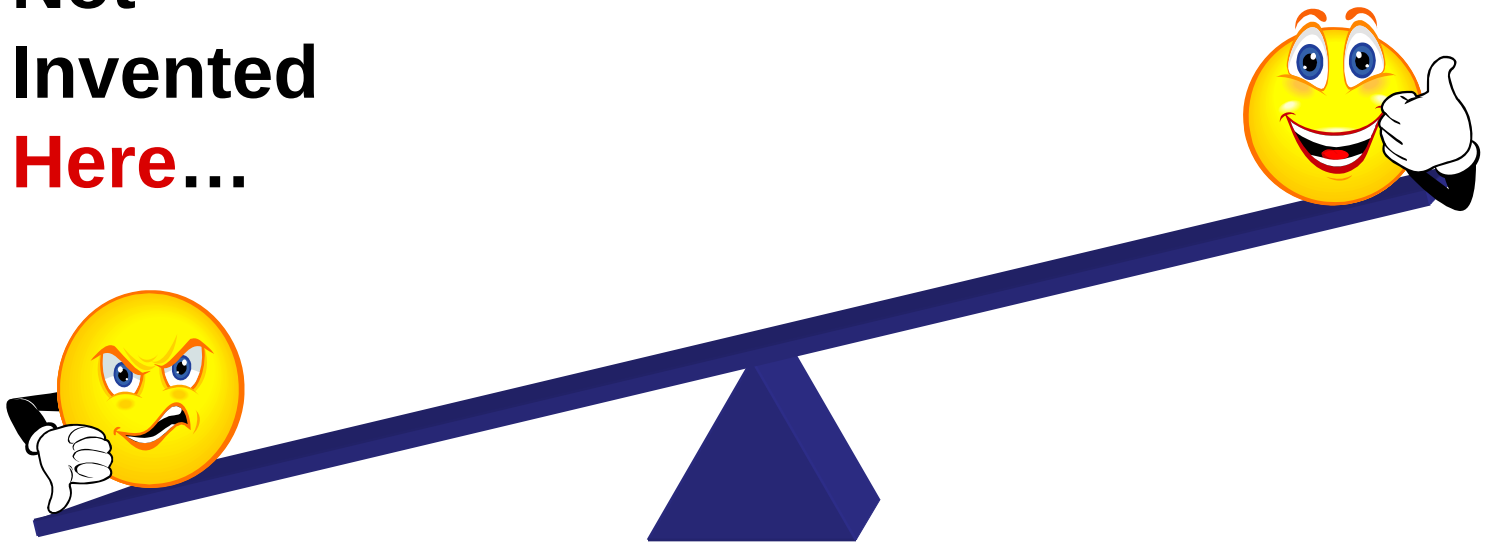
MC1 GEORGE LABIDOU/NAVY

"The competition between Littoral Combat Ship designs continues."


RESEARCH & DEVELOPMENT CENTER
UNITED STATES COAST GUARD
Acquisition Directorate
United States Coast Guard
UNITED STATES COAST GUARD ACADEMY
1876
SCIENTIÆ CEDIT MARE
DHS S&T

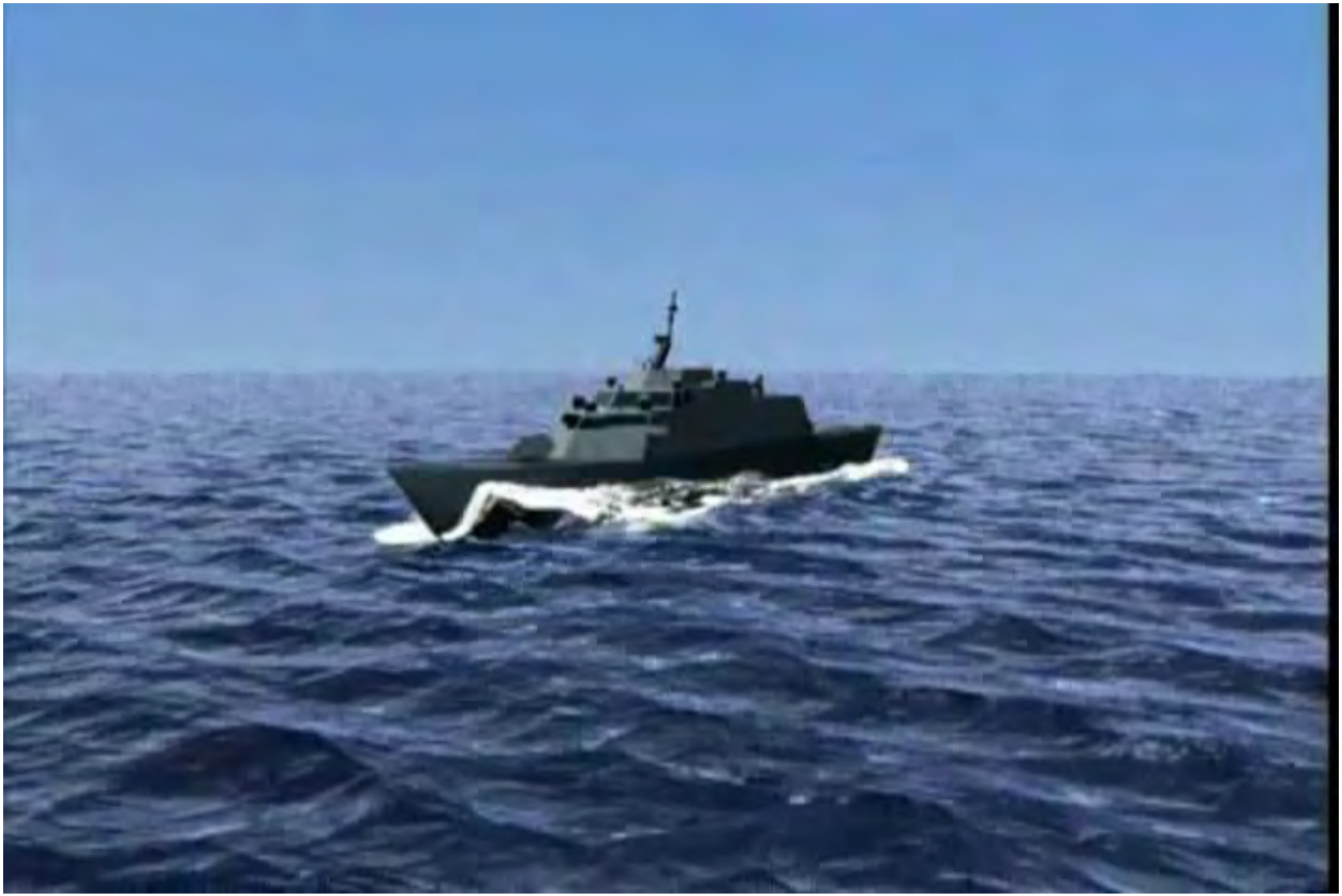
FROM
Not Invented Here…

…*TO* Not Invented YET




FSF
SEA FIGHTER

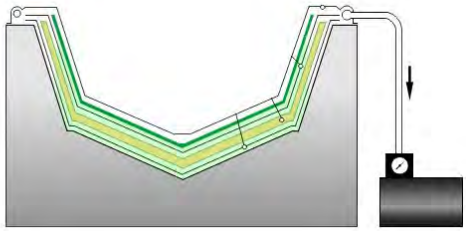

Sea Fighter
SEA FIGHTER FSF-1
Sea Fighter
REAR
ADMIRAL
COHEN



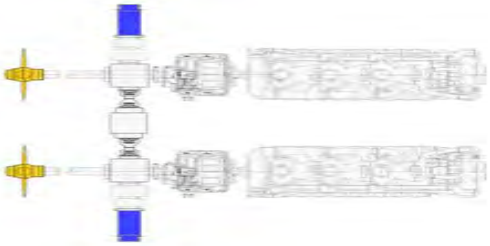
Homeland Security

Future Patrol Boat Technologies

Composite Materials



Hybrid Propulsion



Lifting Bodies



Scalable Composite Vessel Prototype



- Increased Efficiency
- Reduced Maintenance
- Extended Service Life
- Increased Effectiveness

Homeland Security

Homeland Security

FROM SCIENCE...SECURITY

Explosives



Chemical/Biological



Command, Control, & Interoperability



Borders/Maritime



Human Factors



Infrastructure/Geophysical



FROM TECHNOLOGY...TRUST

Back-Up Slides

DEEPWATER



Product Transition Portfolio

Enabling Capabilities, Supporting Mission Critical Needs of DHS





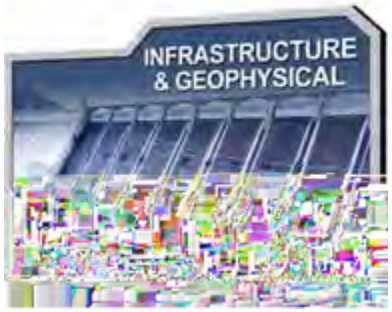


Integrated Product Teams (IPTs)

- 11 Capstone IPTs form the centerpiece of the S&T's customer-driven approach to product transition
- Engage DHS customers, acquisition partners, S&T technical division heads, and end users in product research, development, transition and acquisition activities
- Identify our customers' needs and enable and transition near-term capabilities for addressing them







Innovation Portfolio

High Risk, High Gain, Game Changers for Leap-Ahead Results







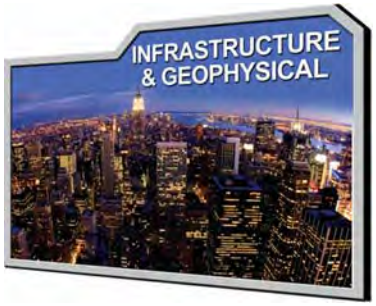
- Promotes revolutionary changes in technology
- Focus on prototyping and deploying critical technologies

Includes:

- HSARPA – Homeland Security Advanced Research Projects Agency
- "Homeworks" – 1% of budget highest risk, highest pay-off
- Small Business Innovation Research program
- *Visit www.FedBizOpps.gov, www.hsarpabaa.com and www.sbir.dhs.gov*







Are You Suffering from Not Invented Yet Syndrome?



Hurricane and Storm Surge Mitigation





Research Program Objectives:

- Produce methods that minimize the damage potential and threat to human safety associated with storm surge and wave events
- Provide guidance on and demonstrate surge and wave attenuation techniques on both the regional and local scale
- Develop improved tools and application approaches that enable better disaster preparedness, planning, and risk management.

Homeland Security

Hurricane and Storm Surge Mitigation





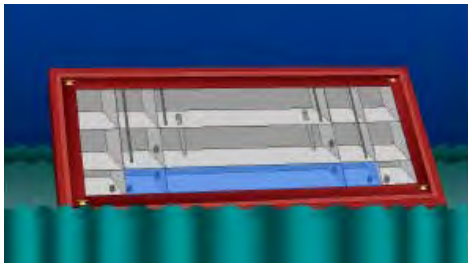
Surge and wave reduction at the regional scale using natural landscape features to reduce and redistribute surge. Develop guidance on:

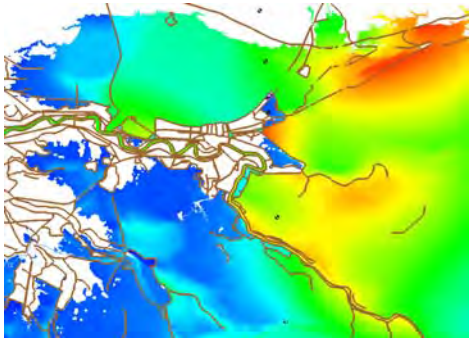
- Landscape planning and utilizing engineered structures in combination with wetlands, barrier islands, lakes and other natural features for maximum surge and wave reduction benefit.
- Vegetation cover with greatest surge reduction potential and assess survivability of various types to determine possible range of application

Homeland Security

Hurricane and Storm Surge Mitigation







Surge and wave interdiction at the local scale using innovative engineered structures placed in a strategic location (i.e. navigation channel, river, or other natural constriction) to reduce storm surge from entering vulnerable areas.

- Inflatable of water filled schemes for rapid deployment

Reduce risk through improved tools and applications that enable better disaster preparedness, planning, and risk management

- Advance numerical modeling capabilities to predict surge, waves, flooding
- Surge interdiction decision support system

Homeland Security

Plumbing the ocean depths for approaches to mitigating the impacts of hurricanes…

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Last Updated: Wednesday, 26 September 2007, 17:01 GMT 18:01 UK

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Lovelock urges ocean climate fix

By Richard Black
Environment correspondent, BBC News website

Two of Britain's leading environmental thinkers say it is time to develop a quick technical fix for climate change.

Writing in the journal Nature, Science Museum h… Rapley and Gaia th… James Lovelock su… looking at boosting… take-up of CO2.

Their idea, already… huge flotillas of ve…

The two scientists… curbing carbon em…

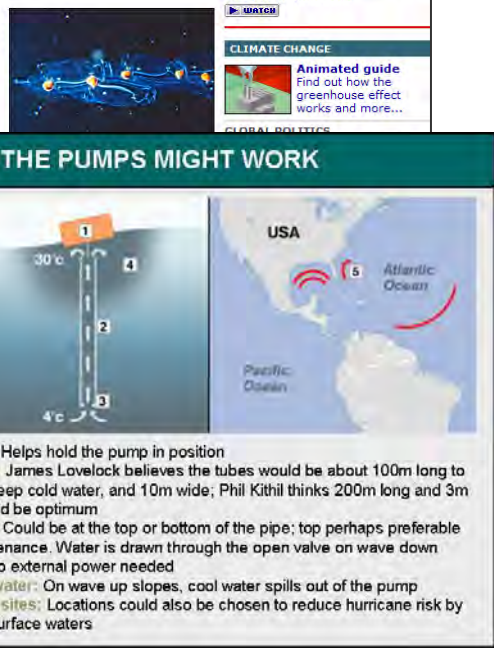
"We are taking the… line that we are n… save the planet by… approaches like th… Protocol or renewa… Professor Lovelock… News.

"What we have to… Gaian sense, and s…

VIDEO AND AUDIO NEWS
Animation of ideas aiming to cut global pollution
watch

CLIMATE CHANGE
Animated guide
Find out how the greenhouse effect works and more...

GLOBAL POLITICS



Telegraph.co.uk

James Lovelock's plan to pump ocean water to stop climate change

By Roger Highfield, Science Editor
Last Updated: 6:01pm BST 26/09/2007

Have your say | Read comments

A plan to save our world from extreme climate change by pumping cold water fr… depths of the oceans is outlined today by James Lovelock, the scientis… greens.

James Lovelock is best known for his id… that portray Earth as a living … organism - named G… Earth goddess - in w… and water interact in… the environment rema…

Today Lovelock, of Gre… University, outlines an e… stimulate the Earth to c… Rapley, former head of th… Survey who is now the d… Science Museum, London.

They believe the answer lie… which transport much more … atmosphere and, covering m… cent of the Earth's surface.

They propose that vertical pip… metres across be placed in the … that wave motion would pump … from 100-200 metres depth to t… moving nutrient-rich waters in th… mix with the relatively barren wa… the ocean surface.

This would fertilise algae in the surf… waters and encourage them to bloo… absorbing carbon dioxide greenhouse… sulphide that is know to seed sunligh…

N.J. scientists eye method for reducing hurricane power



By Mike Derer, AP

Enlarge

Professor Alan F. Blumberg of Stevens Institute of Technology, stands in the under-renovation research wave pool on the campus in Hoboken, N.J., Tuesday. Blumberg, along with Princeton University Professor George L. Mellor, are investigating whether hurricanes can be modified by using millions of portable water pumps to bring cooler water to the surface of the ocean, thereby reducing the severity of the hurricane.

Homeland Security

Future Attribute Screening Technology Mobile Module (FAST M2)

Office of Innovation - Homeland Innovative Prototypical Solutions



Systems
- Queue management
- Behavioral profiling
- Rapid risk assessment
- Screening methodologies

Operational Characteristics
- Discover screening methods for intent
- Privacy protection for all participants
- Simple to operate and use

Functions
- Identity verification
- Attribute measurement
- Risk determination
- Behavior focused screening

Homeland Security

Scalable Composite Vessel Prototype (SCVP)

Project Description:

~150' Scalable Composite Vessel Prototype

30+kts	Stern Launched 7m RHIB
25mm Gun	5+ day endurance

Advanced Composite Construction

Goals:

- Mitigate production risk of monolithic adv. composite hull
- Develop and certify production procedures / cost data
- Demonstrate emerging stability/propulsion technologies
- Optimization of stern launch and recovery design
- Potential for immediate transition into FRC production line



Technical Information and Challenges:

Advanced composite production process overcomes many of the past drawbacks of composite ship construction (inconsistent material properties, high material waste, long production time, environmental hazards) but, advanced process has yet to be developed/demonstrated on this scale.

Provider:

Competitive BAA

Payoff:

- Strength/Weight/Durability: Extremely high strength to weight ratio. Advanced process provides consistent material properties and high durability.
- Reduced Life-cycle Costs: No corrosion. Reduced cost/manpower for dry-docking and preservation.
- Reduced Production Cost: Re-usable mold accelerates series production and could yield reduced unit cost.

Intended Customer for transition:

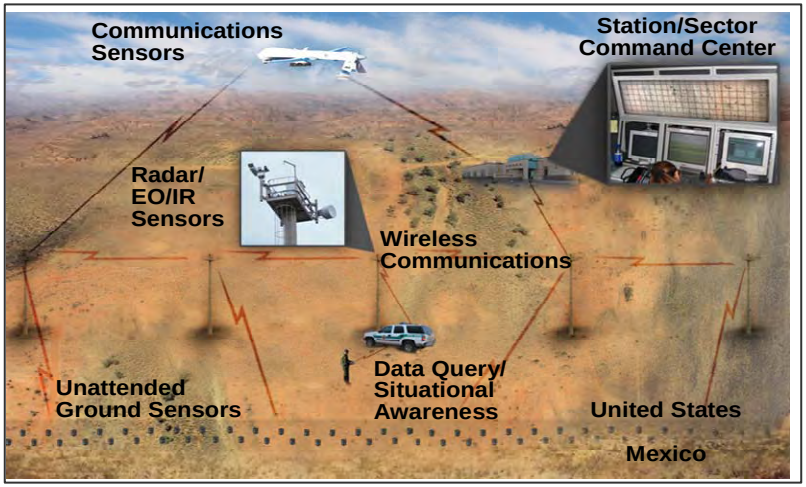
US Coast Guard

		FY08	FY09	FY10
Funding ($M)	DHS (S&T)	$8	$8	$0
	USCG	$8	$8	$0
Deliverables/Demos -				

Homeland Security


20-36 Planes – 1st Del- 2008
Maritime Patrol Aircraft (MPA)
CASA 235-300M
High Altitude
Endurance Unmanned
Air Vehicle (UAV)
4 UAVs- 1st Del 2016
Long-Range Surveillance
Aircraft (HC-130)
22 Planes – 1st Del- 2008
Multi-Mission Cutter Helicopter (MCH)
95 Helos – 1st Del- 2008
HH-60 "Jayhawk" Medium Range
Recovery Helicopter
42 Helos – 1st Del- 2009
MH-68A HITRON
Armed Interdiction Helicopter
8 Helos – 1st Lease- 2003
6-8 Cutters 1st Del- 2007
National Security Cutter (NSC)
25 Cutters
1st
Del- 2010
U.S. COAST GUARD
HV-911 Eagle Eye Tiltrotor VUAV
45-69 VUAVs – 1st Del 2007
Offshore Patrol Cutter (OPC)
Fast Response Cutter (FRC)
43-58 Cutters
1st Del- 2007
Long-Range
Interceptor (LRI)
31-33 Boats 1st Del-2007
123' Patrol Boat (WPB)
Modernization
Short Range
Prosecutor (SRP)
74-91 Boats 1st Del- 2004
8 Boats
1st Del- 2004
INTEGRATED COAST GUARD SYSTEMS
DEEPWATER

BorderWatch



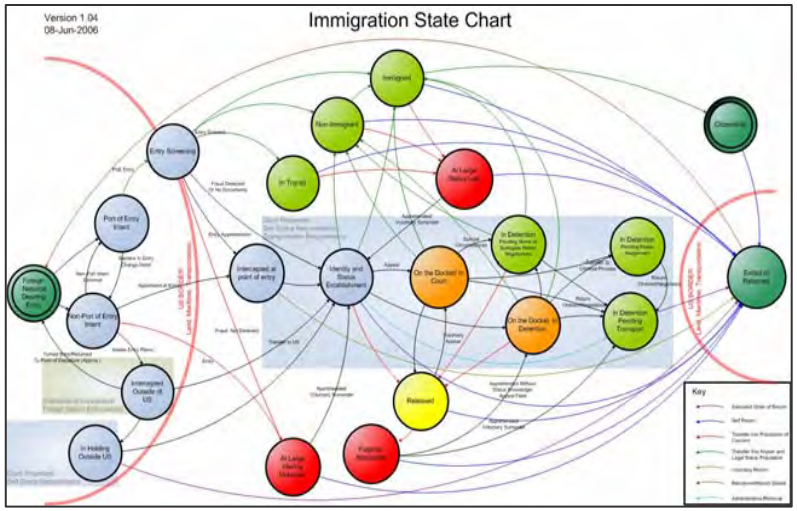
Border Net



Sensor/Data Fusion and Decision Aids



Border Detection Grid



Secure Border Initiative (SBI) Systems Engineering and Modeling & Simulation

Homeland Security

USCG Innovation Expo

Innovations in Government Panel

DHS Science and Technology Innovation Portfolio Overview

Rolf Dietrich
Deputy Director of Innovation/HSARPA
Director of Homeworks
Science and Technology Directorate

Homeland Security

DHS S&T Investment Portfolio

Balance of Risk, Cost, Impact, and Time to Delivery

Product Transition (0-3 yrs) ▪ Focused on delivering near-term products/enhancements to acquisition ▪ Customer IPT controlled ▪ Cost, schedule, capability metrics	**Innovative Capabilities (1-5 yrs)** ▪ High-risk/High payoff ▪ "Game changer/Leap ahead" ▪ Prototype, Test and Deploy ▪ HSARPA
Basic Research (>8 yrs) ▪ Enables future paradigm changes ▪ University fundamental research ▪ Gov't lab discovery and invention	**Other (0-8+ yrs)** ▪ Test & Evaluation and Standards ▪ Laboratory Operations & Construction ▪ Required by Administration (HSPDs) ▪ Congressional direction/law

Customer Focused, Output Oriented

Homeland Security

Homeland Security Act of 2002

HSARPA shall….

“Support basic and applied homeland Security research to promote *revolutionary* changes in technologies; advance the development, testing and evaluation, and deployment of critical homeland security technologies; and accelerate the prototyping and deployment of technologies that would address homeland security vulnerabilities”



Homeland Security

HIPS and HITS

Homeland Innovative Prototypical Solutions (HIPS), which are designed to deliver prototype-level demonstrations of game-changing technologies in two to five years. These projects are moderate to high risk, with high payoff

High Impact Technology Solutions (HITS), which are designed to provide proof-of-concept answers within one to three years that could result in high-payoff technology breakthroughs. These projects have considerable risk of failure, however they also offer the potential for significant gains in capability

Homeland Security

Homeland Innovative Prototypical Solutions (HIPS)

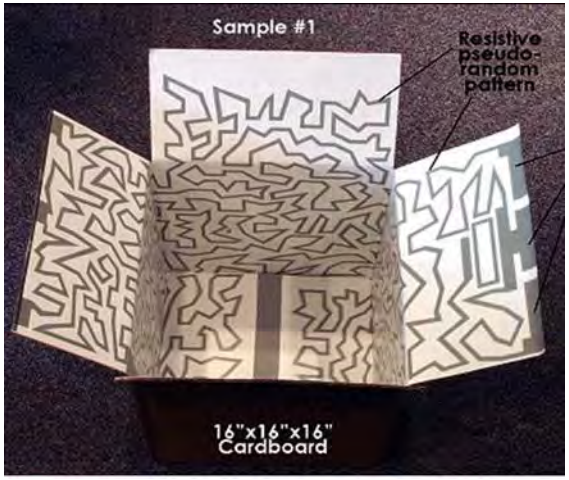
Explosives	Chem/Bio	Command, Control & Interoperability	Borders/ Maritime	Human Factors	Infrastructure/ Geophysical
Project Chloe- High altitude aerial platform existing above civil aviation Counter-MANPADS **SENSIT** – System to identify numerous liquids in baggage **IED Defeat / APE VBIED Defeat** – Detection/prevention and mitigation technologies to counter IEDs		**SCOPE** (Scalable Common Operational Picture Experiment) – Leverages Global Observer JCTD	**Scalable Composite Vessel Prototype (SCVP)** – Lightweight, composite material with high speed hull **SAFECON –** 90 second container screening device	**FAST M2** (Future Attribute Screening Technology Mobile Module) – Relocatable Lab capable of testing for behavioral/ physiological cues of "hostile intent" Double or triple wide trailer tested at various sites around the country	**Resilient Electric Grid** – System that will prevent cascading effects of power surge on electrical grids **Levee Strengthening and Rapid Repair -** rapidly stop a breach in a levee **Storm Surge and Hurricane Mitigation**

High Impact Technology Solutions (HITS)

	Real Time Bio Detection and Identify **Cell-All -** Ubiquitous Chem/Bio/agent detector	**First Net** - First Responder Reliable Relay Link **Phone Home –** Inter-operative and inexpensive hand-held radios	**Tunnel Detect** – Ability to detect, identify, and confirm illegal and clandestine underground border structures and activities	**Document Validator** –High proficiency scanner that can identity fraudulent docs Leverage USSS system **Biometric Detector** – High proficiency small biometric scanner	**Wide Area Surveillance/ Change Detection for Critical Infrastructure** **Resilient Tunnel**– Tunnel Protection/Blast Mitigation

DHS SBIR Program

- Increases participation of innovative and creative small businesses in Federal research and development programs
- Challenges small businesses to bring innovative homeland security solutions to reality
- Focuses on near-term commercialization and delivery of operational prototypes
- Over 324 contracts awarded
- Funded by S&T Directorate and DNDO
- Implemented Cost Match to motivate commercialization



Homeland Security



www.hsarpabaa.com

For S&T Broad Agency Announcements and more

www.sbir.dhs.gov

For SBIR solicitation information

FedBizOpps.gov

Federal Business Opportunities

S&T-Innovation@dhs.gov

To contact S&T innovation

Homeland
Security



Homeland Security

Sharing AIS Data

Maritime Administration Efforts

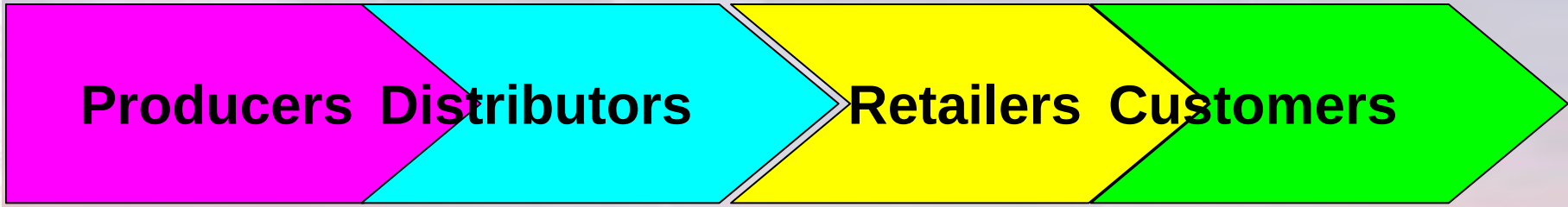
Owen Doherty

Director, Office of Security

Reasons to Share AIS

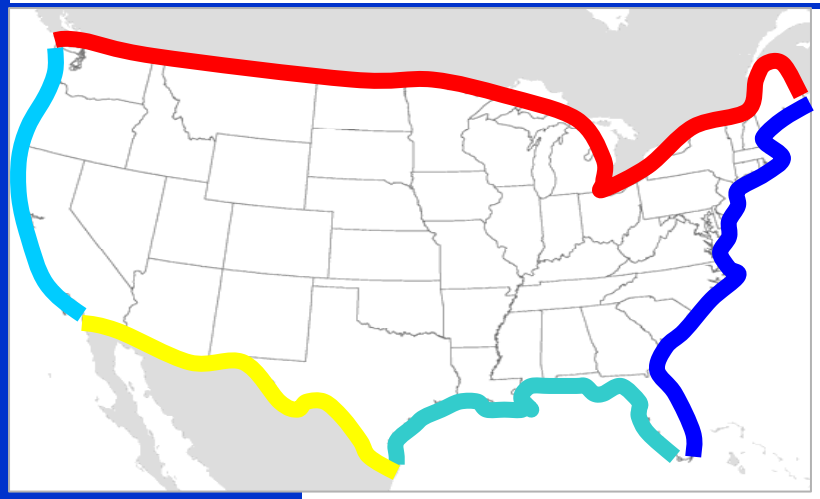
- Safety
- Security
- Environment
- Commercial Mobility
- National Security

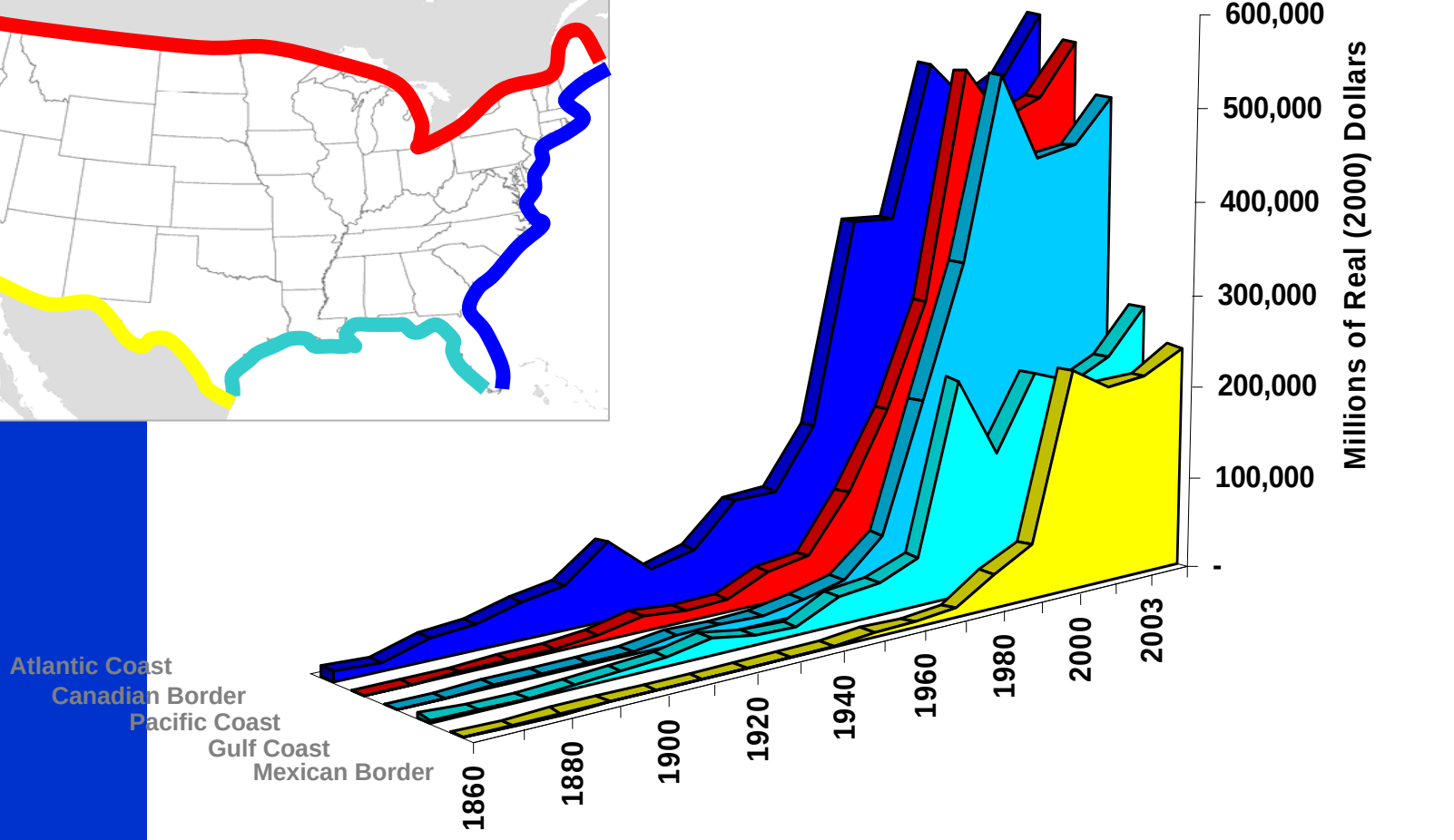
Global Supply Chain Components





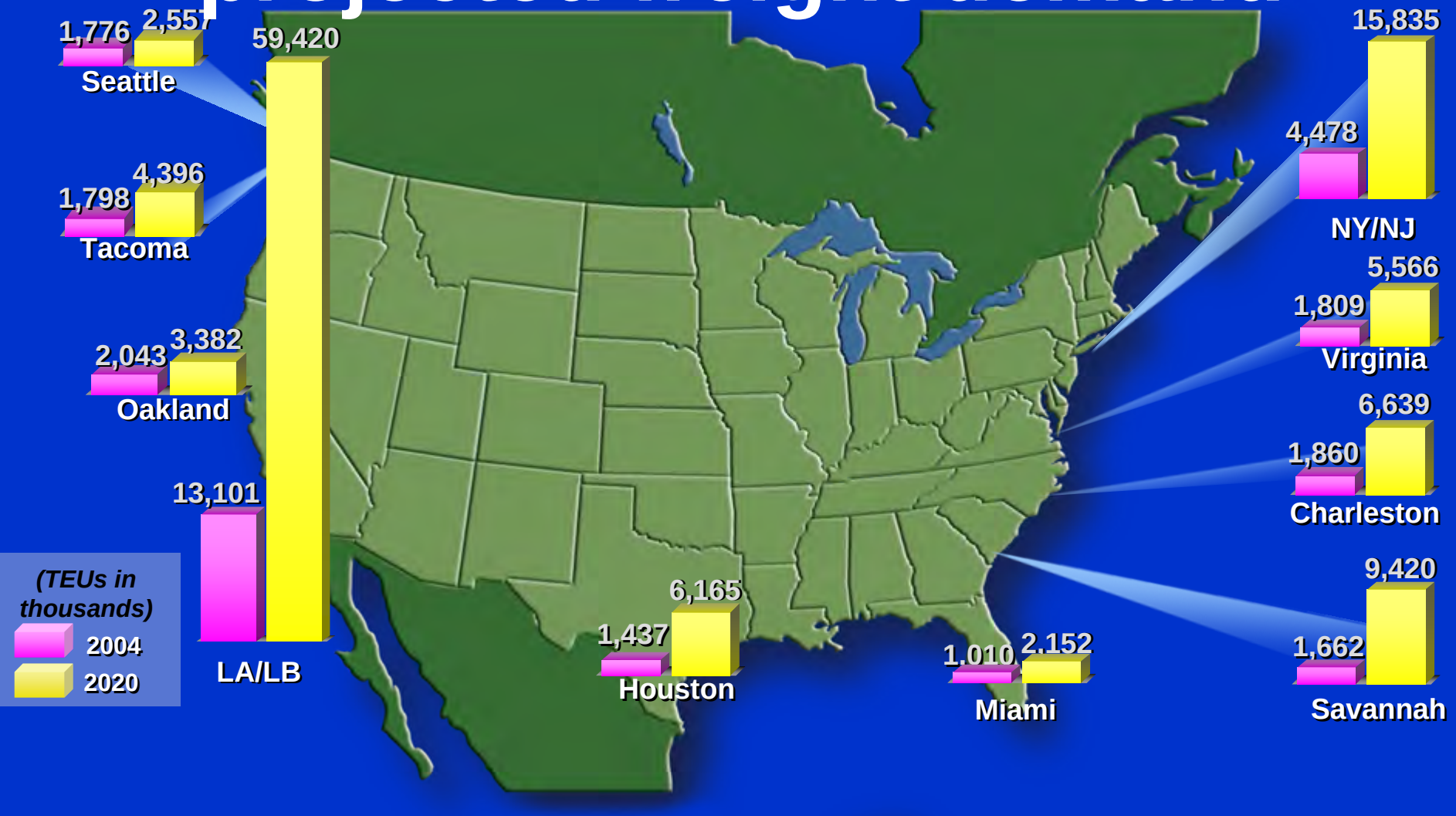
Trade Growth, 1860 to 2005





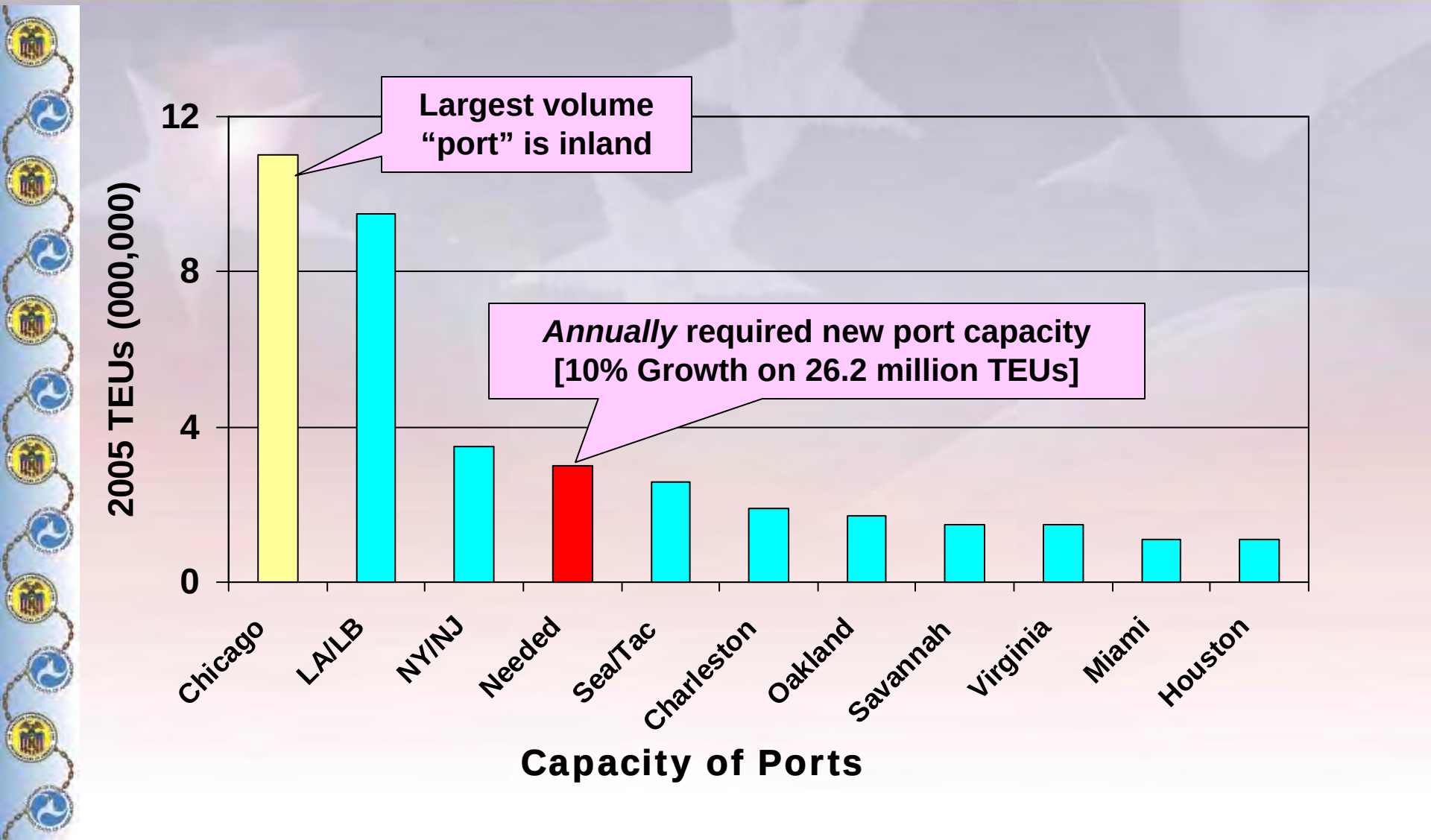
The value of U.S. trade—measured in constant dollars by coast and land border—has grown rapidly over the last 30 years

Dramatic increases in projected freight demand



* Forecast figures are based on an unconstrained 10-year linear regression, and do not reflect the expected capacity of each port in 2020.

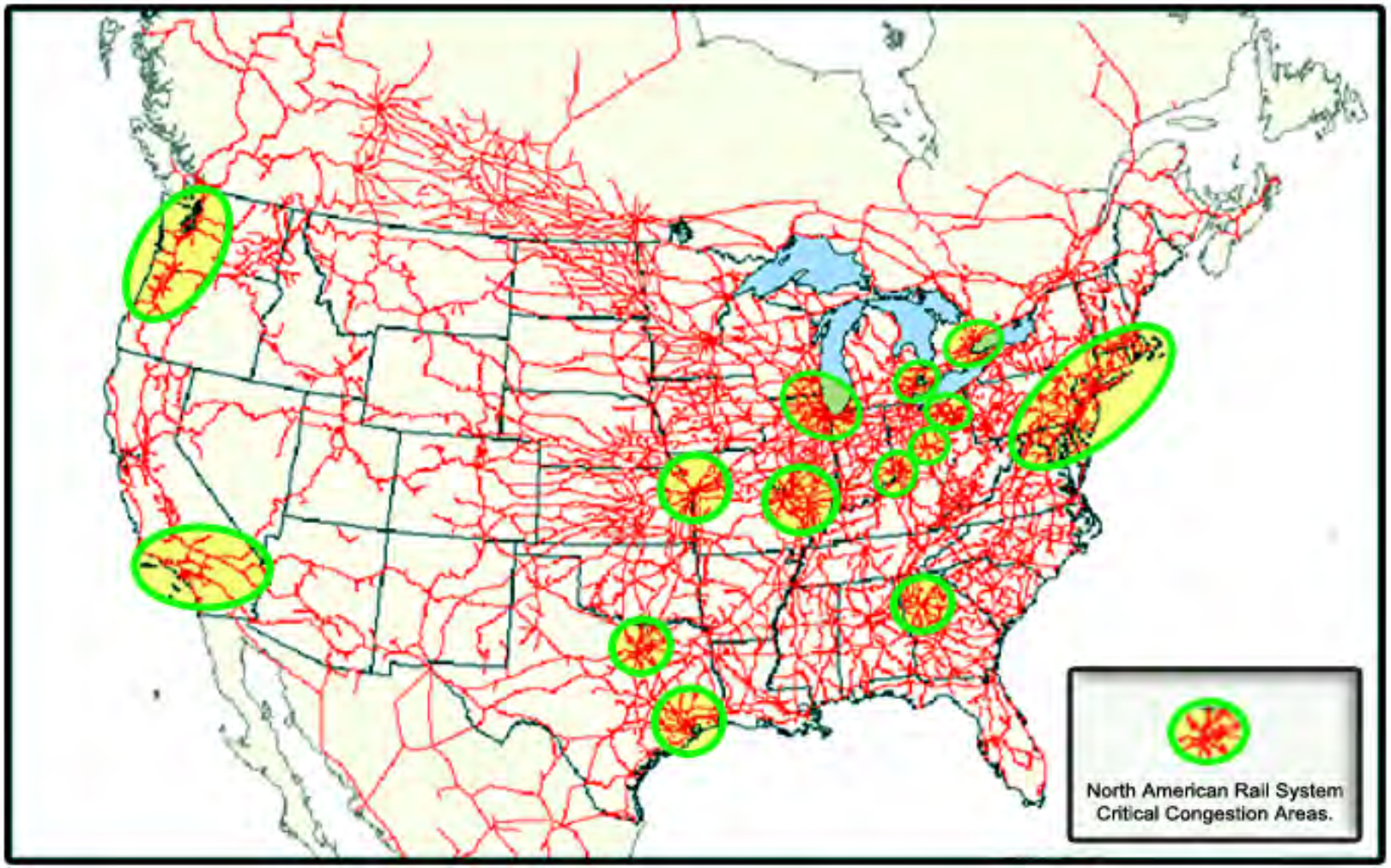
Impact of Global Trade on Major Ports of the United States



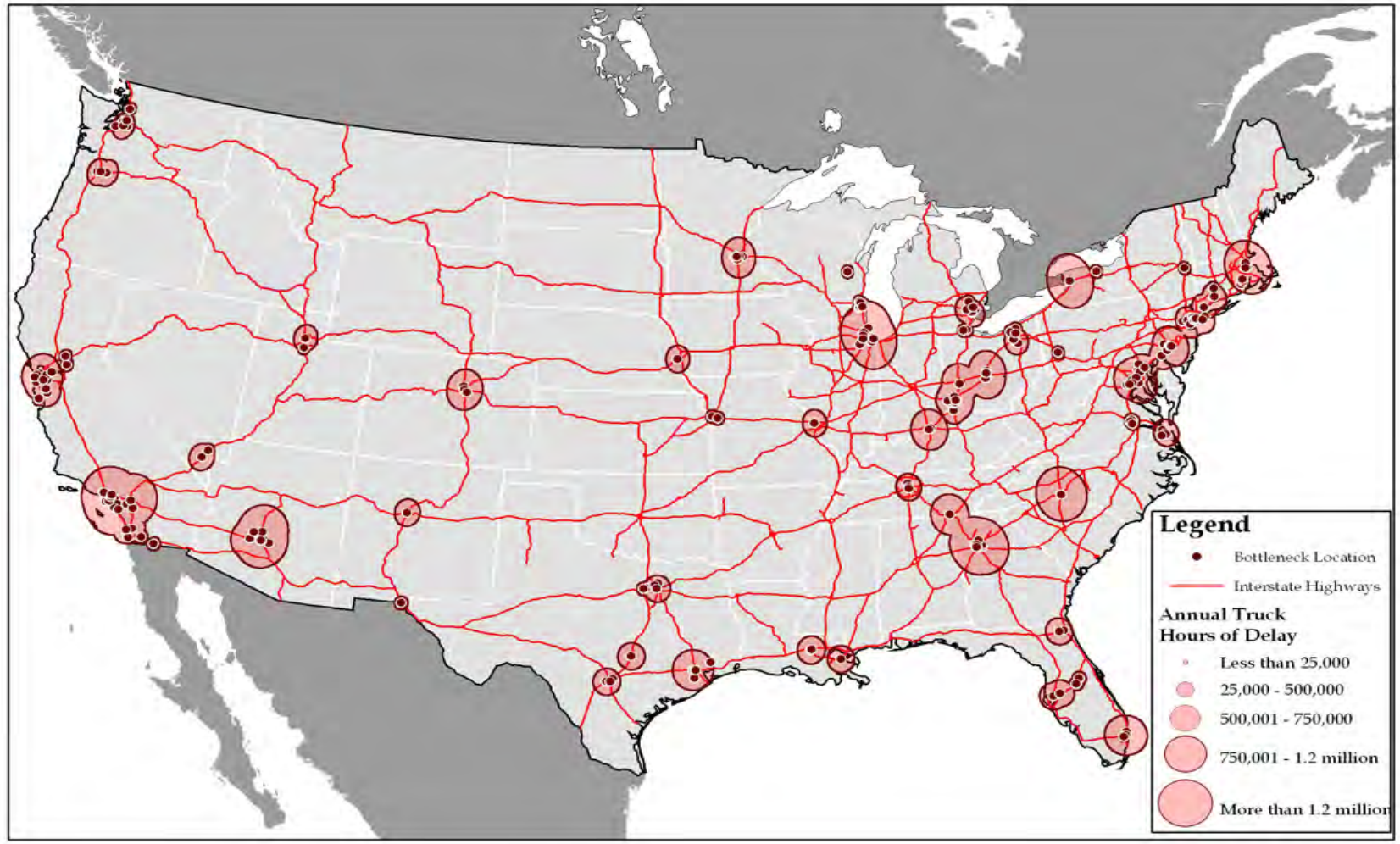
Supply Chain Security and Productivity

- **Integrated System**
- **Transparency**
- **Accountability**

North American Rail Network

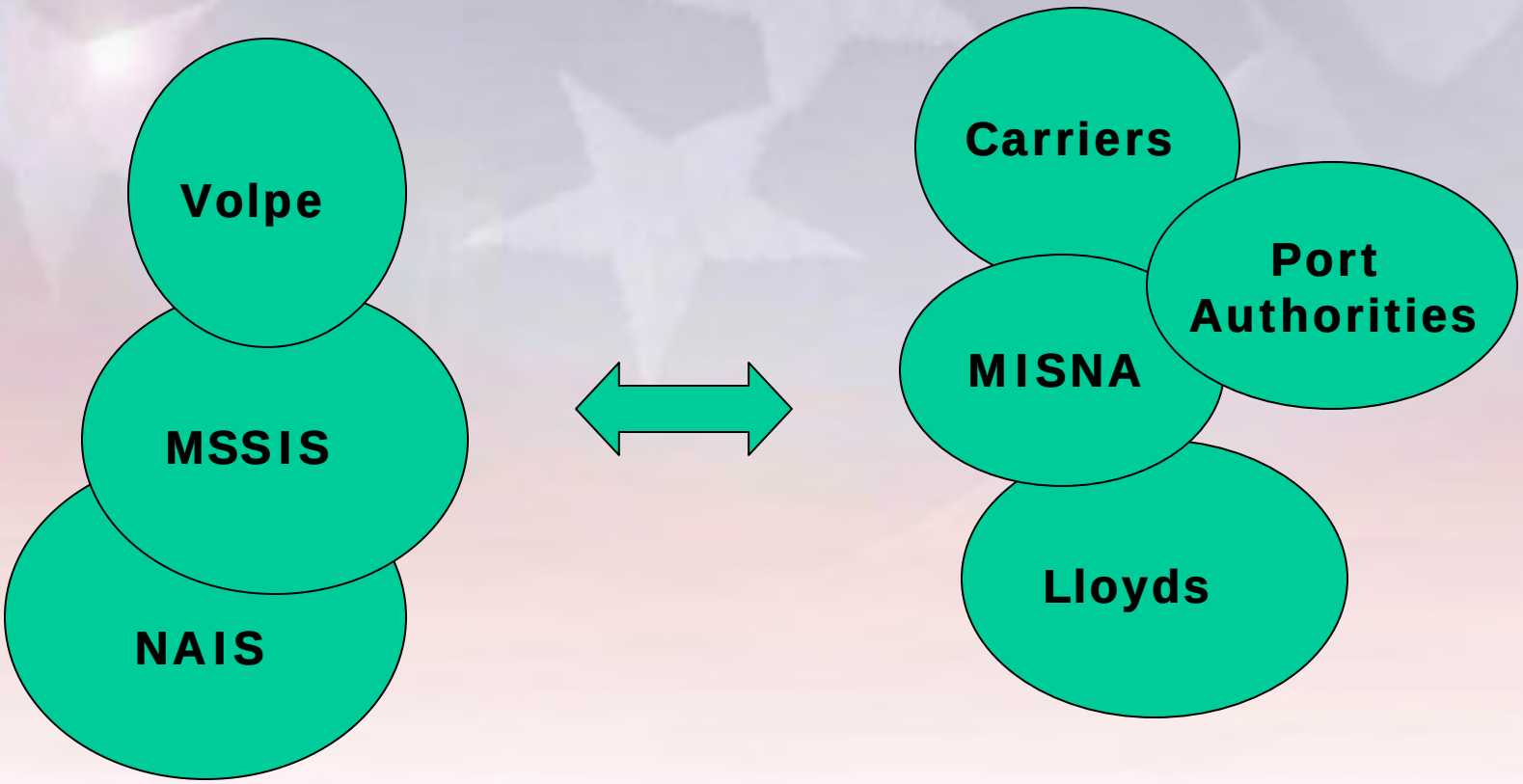


Major Freight Truck Bottlenecks



Government-Industry Partnership

Vessel Tracking Services



Ready Reserve Force
Hurricane KATRINA relief



Auxiliary Crane Ship
SS Equality State
Act as mobile port crane ship 30-120 ton cranes.
20’ containers: 655



ROLL-ON / ROLL-OFF
Cape Kennedy & Cape Knox
Command Post/Rolling stock/
Power generating capable



School ship
TS State of Maine
Relief worker Cap: 236



School Ship
TS Empire State
Relief worker Cap: 625



Auxiliary Crane Ship
SS Diamond State
Act as mobile port crane ship 30-120 ton cranes.
20’ containers: 655



School Ship
TS Sirius
Relief worker Cap: 151
Helo Capable



Aviation Support Ship
SS Wright
Relief worker Cap. 315
Helo Capable; Large water production capable; 300-20’ containers

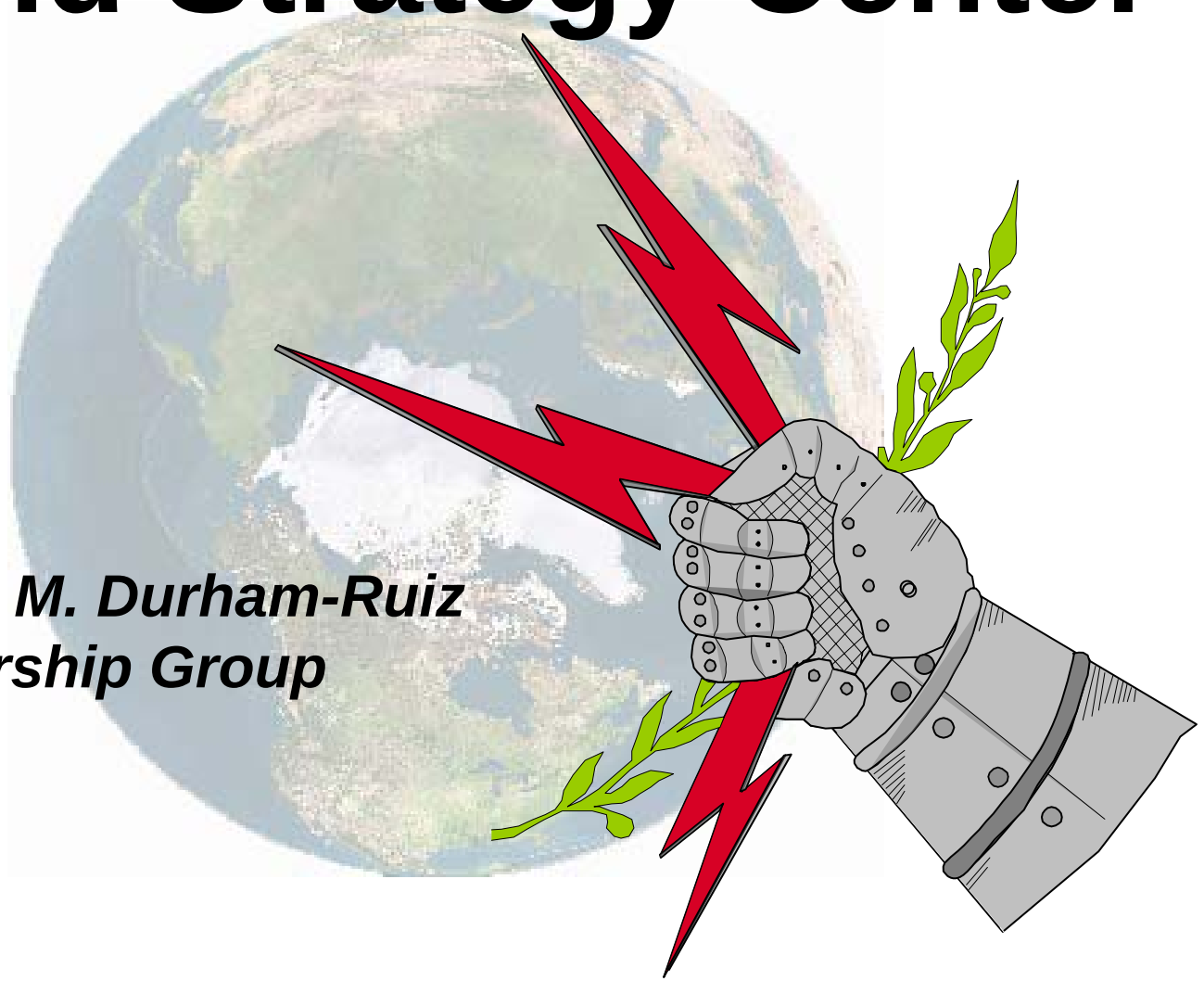
Questions

Owen Doherty

Maritime Administration

owen.doherty@dot.gov

Global Innovation and Strategy Center



Ms. Elizabeth M. Durham-Ruiz
Chief, Partnership Group

USSTRATCOM GISC

Mission

Provide unique global strategies, timely courses of action and new operational tools and analyses in support of the United States Strategic Command mission set

Vision

To be the recognized leader throughout USSTRATCOM and the DoD at bringing innovative solution to bear against tough, 21st century challenges

GISC Focus Areas

- ***Space***
- ***Cyber***
- ***Deterrence***
- ***Data Fusion***
- ***Persistent ISR***









Why a GISC?

- Our adversaries do not distinguish between America's military, commercial and civilian interests

- America's strength lay in its ability to **leverage the Nation's diverse experiences and intellect**

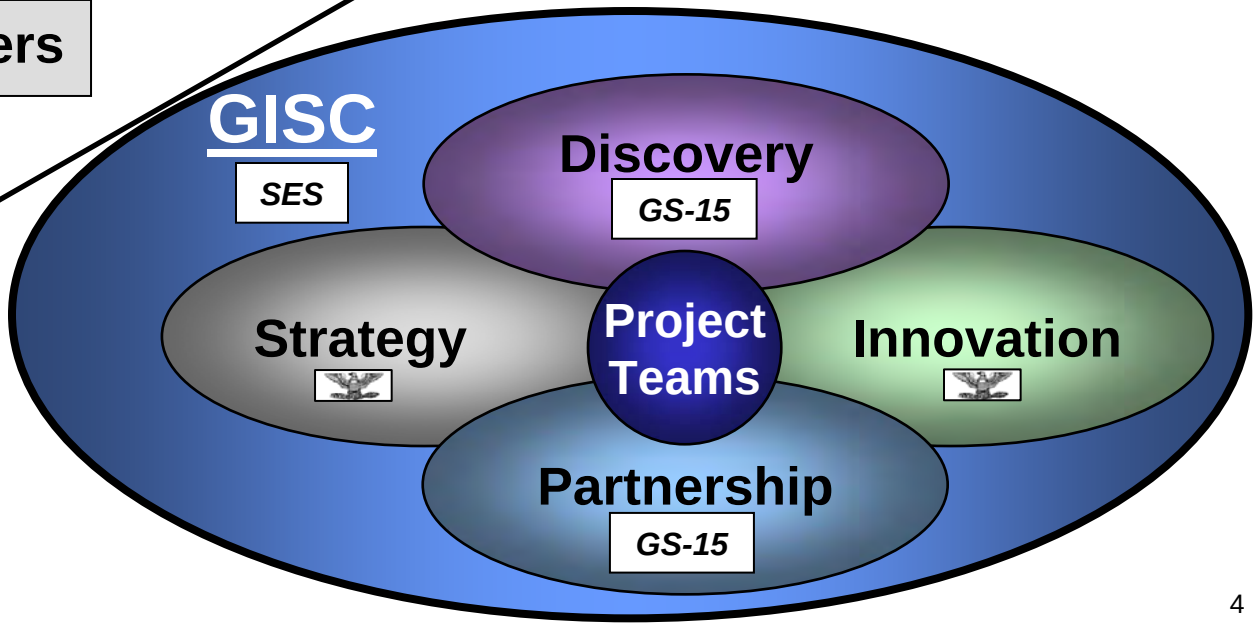
- "We can both learn from and help others through a **proactive outreach program to nontraditional partners**. Academia, industry, think tanks, and a host of other organizations possess a wide-range of expertise and insights invaluable to finding solutions to our most pressing problems." ~ General Pace

Leverage the Nation's intellect to solve our most pressing problems

Organizational Relationships

USSTRATCOM

- **Commander** ★★★★
  - **Deputy Commander** ★★★
  - **Chief of Staff** ★★
  - **J3 Dir Global Ops** ★★ / **J3A Dir Combat & Info Ops** ★
  - **J5 Director Plans and Policy** ★★
  - **J8 Dir of Capabilities & Resources Integration** *SES*
  - **Global Innovation & Strategy Center** *SES*
  - **JFCCs/Centers**



GISC Process



Technologies

Advocacy Positions

Data Fusion Tools

Requests

Discovery

Innovation

Partnership

Strategy

Transition

Warfighter

Recommended Solutions

Connections



Pan Sahel Communications

Jan-Apr 2007 Intern Project

The Challenge: Identify communications channels in Africa focusing on Mauritania, Mali, Niger, and Chad

Focus:

- Evaluated recorded audio, radio, participatory communication, billboards, film, mobile phones, internet, digital media
- Rated methods based on access, feasibility, entertainment value, credibility, vulnerability to censorship

Status:

- Provided 11 actionable recommendations
- 100-page final report widely disseminated to DoD, DoS, and the Private Sector

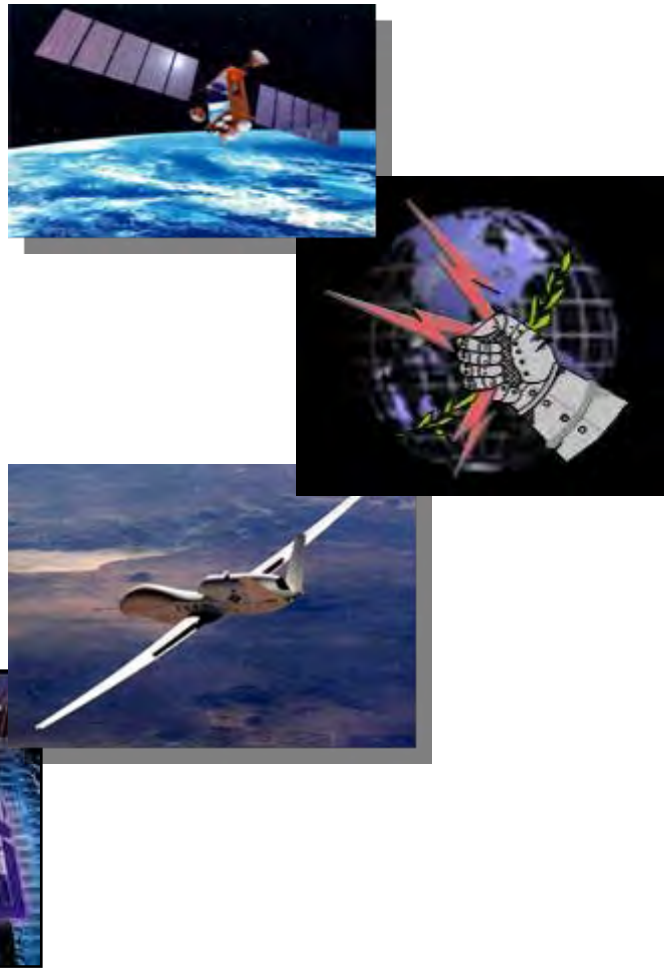
Current Projects:

- Space Debris Mitigation
- Tunnel Detection Technology



Takeaways

- **Focused on the warfighter's challenges**
- **Leverage the power of partnership**
- **Lean, agile, responsive and results-oriented**



Identify – Swarm – Solve


U. S. Strategic Command
Global Innovation and Strategy Center
Mr. Kevin Williams, SES, DAF
Director
Global Innovation and Strategy Center
6805 Pine St.
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(402) 232-2811 / williamsk@stratcom.mil
Ms. Liz Durham-Ruiz, GG-15 (YA-3)
Chief, Partnership Group
Global Innovation and Strategy Center
6805 Pine St.
Omaha, NE 68106-2849
(402) 398-8022 / durhame@stratcom.mil
Questions/Comments?

Program Executive Office
Command, Control, Communications,
Computers and Intelligence (PEO C4I)

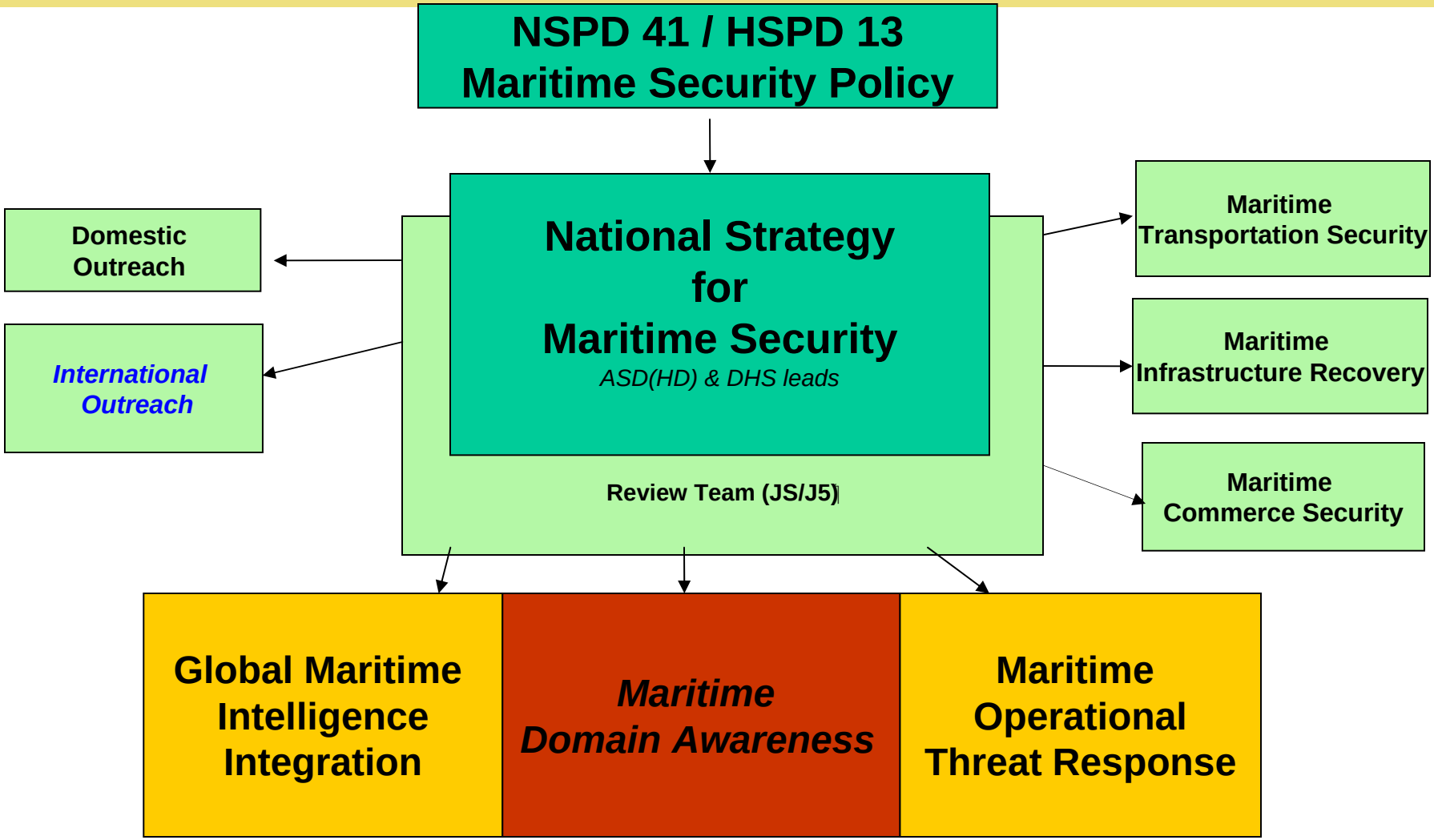
Maritime Domain Awareness (MDA)

Oct, 2007
Andy Farrar
U.S. Navy PEO C4I
Andy.Farrar@navy.mil

Distribution Statement A: Approved for public release; distribution is unlimited (Sep 2007)



Maritime Domain Awareness Strategic Concept



NSPD/HSPD: National Security/Homeland Security Presidential Directive

MDA Defined

- *Maritime Domain Awareness is the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy, or environment of the United States.*

  --National Strategy for Maritime Security

- *"No one nation has the resources required to provide safety and security throughout the entire maritime domain. Increasingly, governments, non-governmental organizations, international organizations, and the private sector will form partnerships of common interest to counter these emerging threats"*

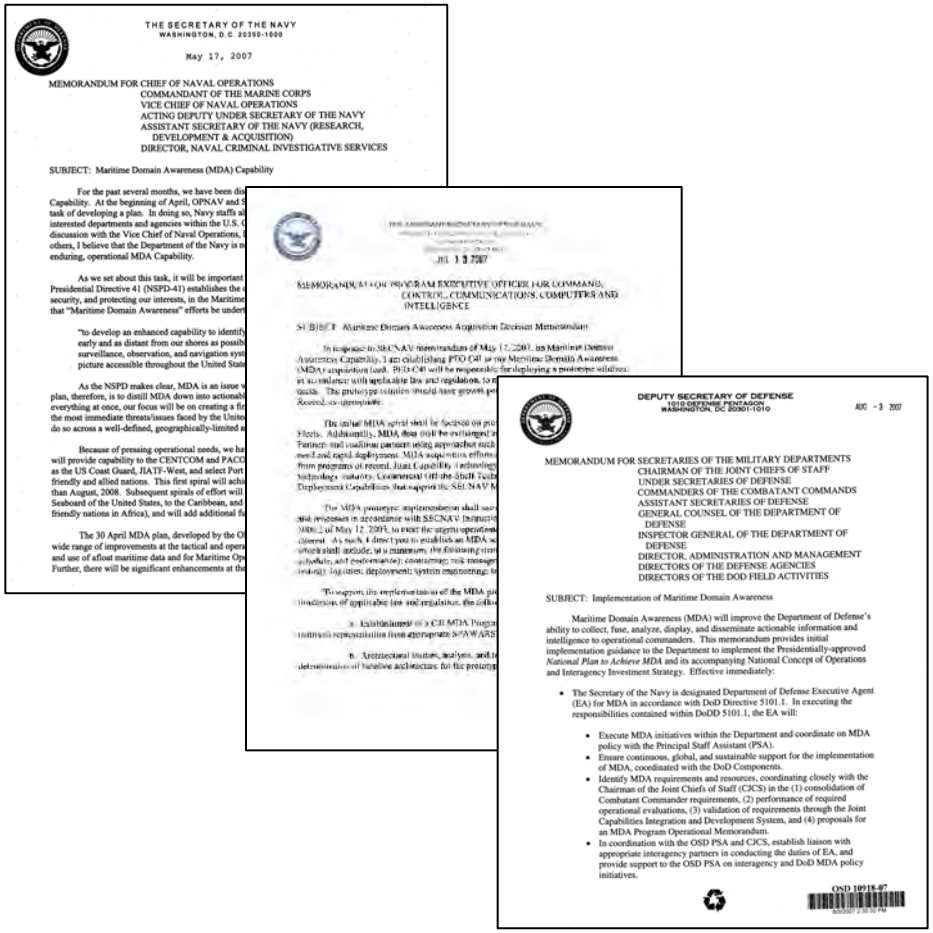
  -- A Cooperative Strategy for 21st Century Seapower

MDA Requirements

- Persistently Monitor in the global maritime domain:
  - Vessels and Craft
  - Cargo
  - Vessel crews and passengers
  - All identified areas of interest
- Access and maintain data on vessels, facilities and infrastructure
- Collect, fuse, analyze and disseminate information to decision makers to facilitate effective understanding
- Access, develop and maintain data on MDA-related mission performance

Source: National Plan to Achieve Maritime Domain Awareness

DON/DOD MDA Acquisition



THE SECRETARY OF THE NAVY
WASHINGTON, D.C. 20350-1000

May 17, 2007

MEMORANDUM FOR CHIEF OF NAVAL OPERATIONS
COMMANDANT OF THE MARINE CORPS
VICE CHIEF OF NAVAL OPERATIONS
ACTING DEPUTY UNDER SECRETARY OF THE NAVY
ASSISTANT SECRETARY OF THE NAVY (RESEARCH, DEVELOPMENT & ACQUISITION)
DIRECTOR, NAVAL CRIMINAL INVESTIGATIVE SERVICES

SUBJECT: Maritime Domain Awareness (MDA) Capability

DEPUTY SECRETARY OF DEFENSE
1010 DEFENSE PENTAGON
WASHINGTON, DC 20301-1010

AUG - 3 2007

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
COMMANDERS OF THE COMBATANT COMMANDS
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: Implementation of Maritime Domain Awareness

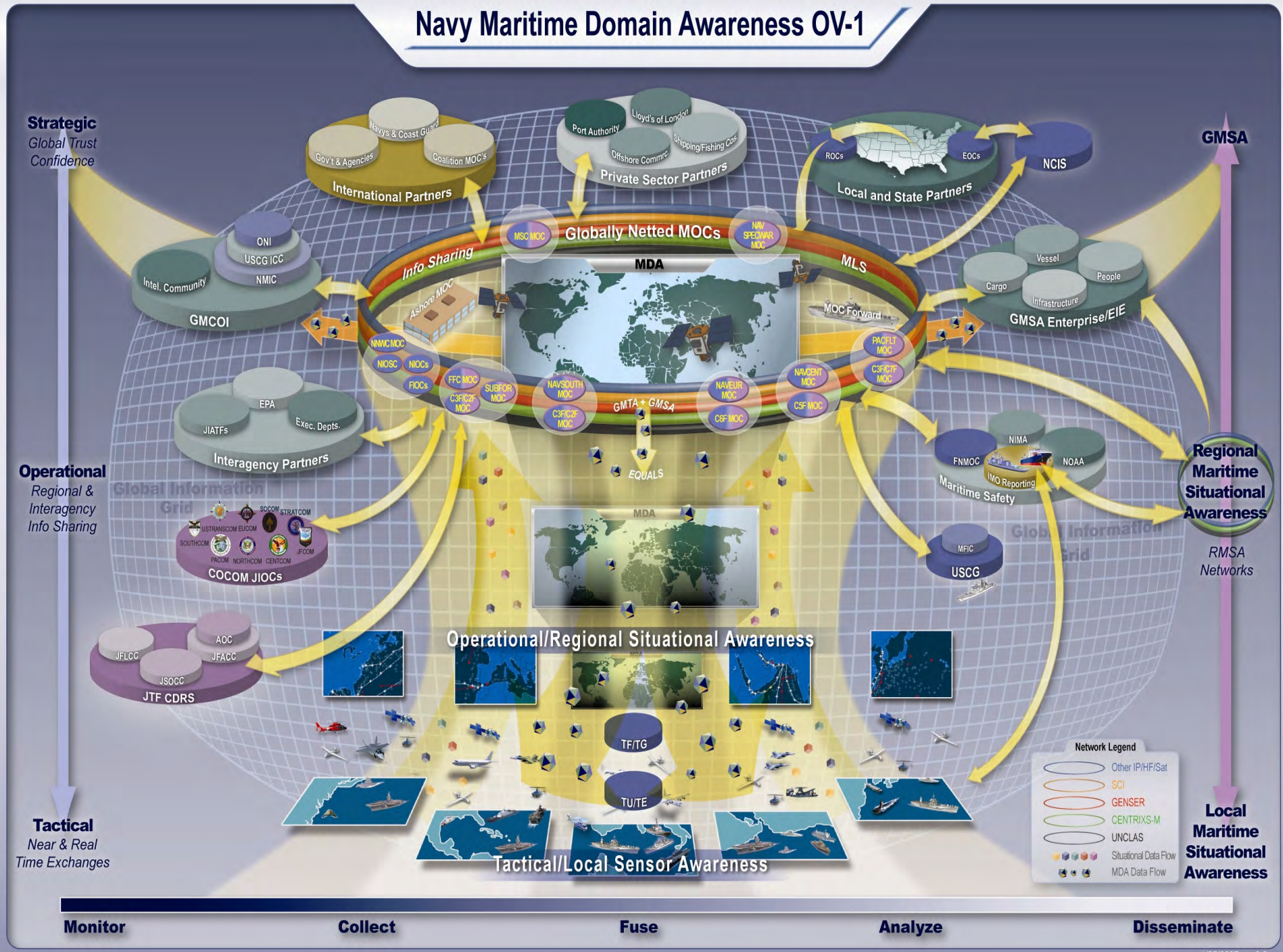
Maritime Domain Awareness (MDA) will improve the Department of Defense's ability to collect, fuse, analyze, display, and disseminate actionable information and intelligence to operational commanders. This memorandum provides initial implementation guidance to the Department to implement the Presidentially-approved *National Plan to Achieve MDA* and its accompanying National Concept of Operations and Interagency Investment Strategy. Effective immediately:

- The Secretary of the Navy is designated Department of Defense Executive Agent (EA) for MDA in accordance with DoD Directive 5101.1. In executing the responsibilities contained within DoD 5101.1, the EA will:
  - Execute MDA initiatives within the Department and coordinate on MDA policy with the Principal Staff Assistant (PSA).
  - Ensure continuous, global, and sustainable support for the implementation of MDA, coordinated with the DoD Components.
  - Identify MDA requirements and resources, coordinating closely with the Chairman of the Joint Chiefs of Staff (CJCS) in the (1) consolidation of Combatant Commander requirements, (2) performance of required operational evaluations, (3) validation of requirements through the Joint Capabilities Integration and Development System, and (4) proposals for an MDA Program Operational Memorandum.
  - In coordination with the OSD PSA and CJCS, establish liaison with appropriate interagency partners in conducting the duties of EA, and provide support to the OSD PSA on interagency and DoD MDA policy initiatives.

OSD 10918-07

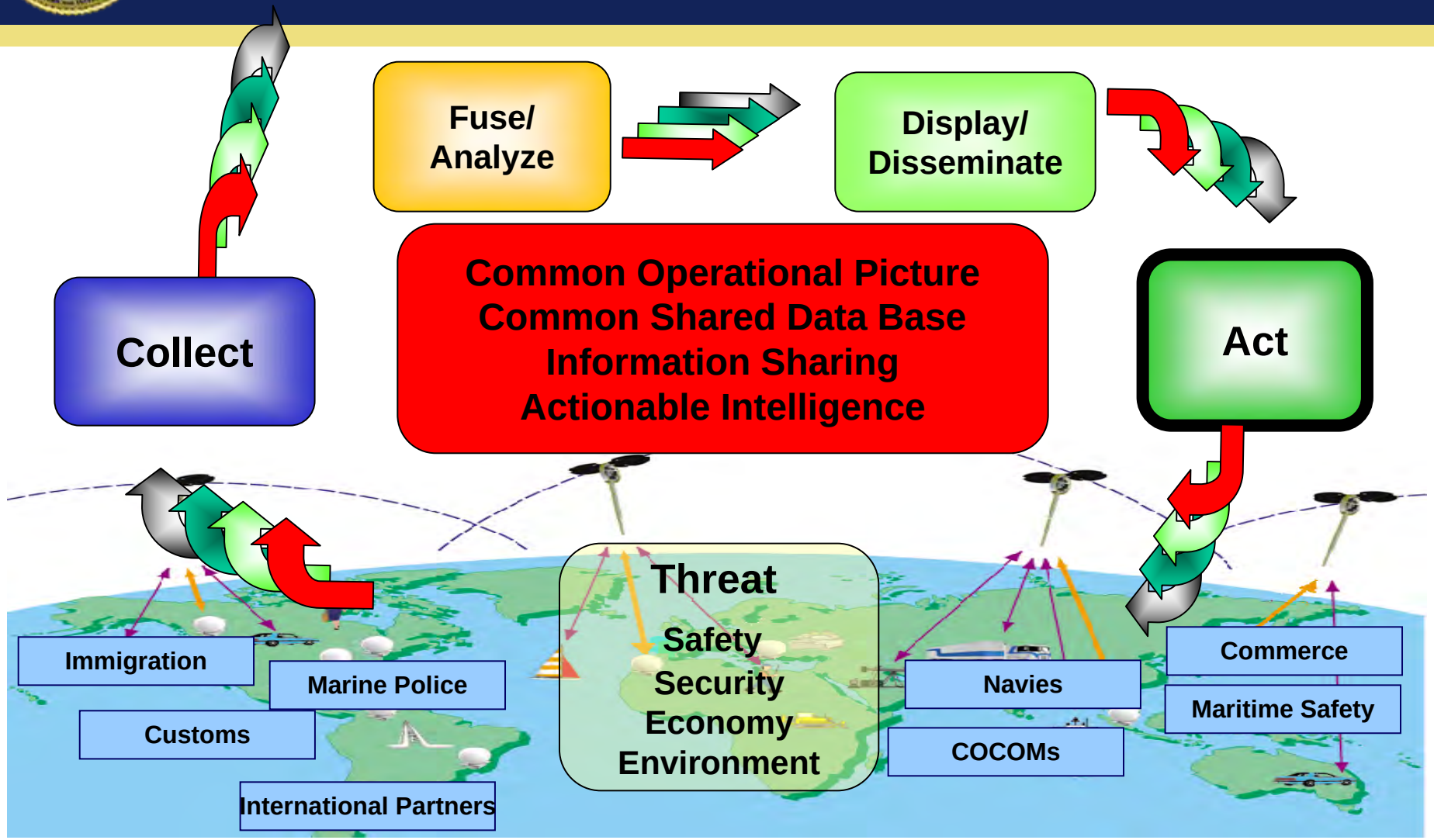
- 17 May 07 SECNAV memo laid out objectives for expeditiously fielding a prototype MDA capability
- 13 July 07 ASN RDA ADM established PEO C4I as MDA Acquisition Lead
- 03 August 07 SECNAV identified as MDA EA for DOD

Navy Maritime Domain Awareness OV-1



4/27/2007 ver 0.5

The MDA Concept



Source: NORTHCOM

MDA Capabilities

- Collect, Fuse, and Monitor/Visualize
  - Vessels, Cargo, People, and Infrastructure
- Analyze
  - Detect anomalies, trends, and patterns
  - Predict behaviors
- Identify threats to the U.S.,U.S. forces overseas, or U.S. partners and Allies
- Identify illegal activities
- Collaborate across departments, agencies, coalition and non-traditional partners
  - Collect & Disseminate data from & to the tactical edge
  - Across and at multiple security domains

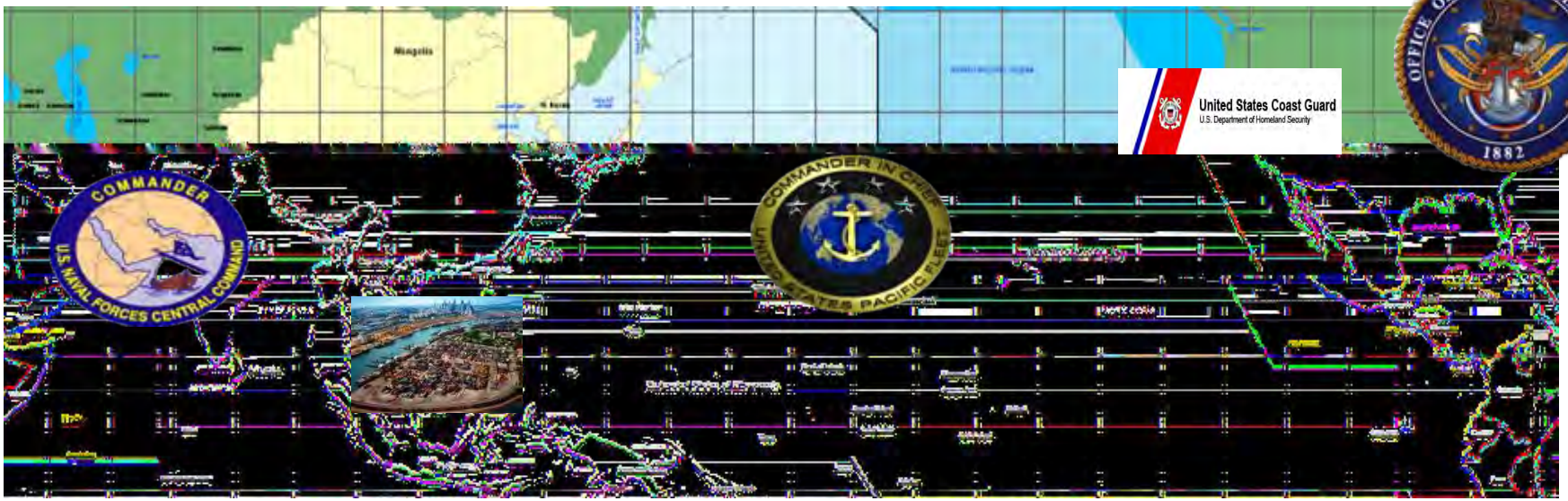
Spiral 1 Prototype Goals

- Establish foundation for lasting MDA capability
- Leverage ongoing JCTDs, RTTs, and RDCs
  - Technology maturity is critical
- Use technologies ready for Fleet introduction
- Deploy a select set of MDA capabilities to a limited number of locations
  - CENTCOM & PACOM AORs
  - Interagency Partners
  - Domestic and international port data
- Share data with international strategic partners
- Share data with additional interagency partners
  - USCG, NORTHCOM(*CMA feed), JIATF-W
- Achieve IOC by August 2008

Spiral 1 Capabilities

- Enhanced Vessel Tracking
- Initial situational monitoring and threat detection
  - Automated monitoring, anomaly detection, and alerting
- Enhanced Extended Maritime Intercept Operations (E-MIO)
- Enhanced sharing of port and coastal data
- Broad collaboration and data sharing capabilities between analyst and agencies, as well as with coalition and non-government organizations
  - CENTRIXS
  - Geospatial visualization tools
  - Collaborative tools – Google, NCES, etc

Spiral 1 Capabilities/Nodes



NAVCENT, MIFC-PAC and PACFLT (C3F/C7F*)

- Limited Anomaly Detection
- Vessel Tracking
- Initial Threat Assessment
- Regional Maritime Data Archives
- Non-Navy Maritime Data Access
- Maritime Data Archives
- Collaborative Toolset

U.S. Port Data - San Diego

- Integrated port transit & sensor data
- Collaborative toolset

NCIS Field Sites

- MTAC data fusion-analysis
- Expanded Regional SMEs
- Collaborative toolset



NMIC/ONI

- Global Maritime Data Archives
- Limited Anomaly Detection
- Vessel Tracking and Threat Assessment
- Non-Navy Maritime Data Access
- Collaborative Toolset
- Integrated EMIO data capture and distribution

Initial AOR Deployers

- Automated Afloat Maritime Data Collection (E-MIO)
- Improved wireless transmission of Biometric data
- Collaborative toolset
- AIS, GCCS-M, HF-IP, SNR



International Partners

- Collaborative tool set
- Port transit data
- Coastal AIS data*

JIATF-W

- Regional Maritime and Law Enforcement Data Archives
- Expanded Regional SMEs
- Collaborative Toolset



*** some locations will use remote access**

Questions

Backup

Acronyms

AIS – Automatic Identification System
BTR – Below Threshold Request
CAS – Collaboration At Sea
CENTRIX-M - Combined Enterprise Regional Information Exchange System for the Maritime Environment (CENTRIXS-M)
CFT – Cross Functional Team
CMA – Comprehensive Maritime Awareness
COP – Common Operational Picture
DT – Developmental Testing
E2E – End-to-End
E-MIO – Expanded - Maritime Interdiction Operations
FASTC2 AP – Fast Connectivity for Coalition Agents Program
FDCE – Federated Development & Certification Environment
GCCS-M – Global Command and Control System, Maritime
GCCS-I3 – GCCS Integrated Imagery & Intelligence
GMSA – Global Maritime Situational Awareness
IOC – Initial Operating Capability
JCTD – Joint Capability Technology Demonstration
JIATF – Joint Inter-Agency Task Force
JTAA – Joint Test Asset Activity
MAGNET – Maritime Awareness Global Network
MASS – MDA AIS Sensor Server
MDA – Maritime Domain Awareness
MHQ/MOCs – Maritime Headquarters/Maritime Operations Centers
MIO – Maritime Interdiction Operations
ONI – Office of Naval Intelligence
POR – Program of Record
QRA – Quick Reaction Assessment
RTT – Rapid Technology Transition
RDC – Rapid Development Capability
SCC-J – Sector Command Center-Joint
SIMEX – Simulation Exercise
SMS – Sensor Management System
SSAA – System Security Authorization Agreement
TAANDEM – Track Assessment and Anomaly Detection Maritime
TTP – Tactics, Techniques, and Procedures
TW 08 – Trident Warrior 08

Maritime Domain Awareness

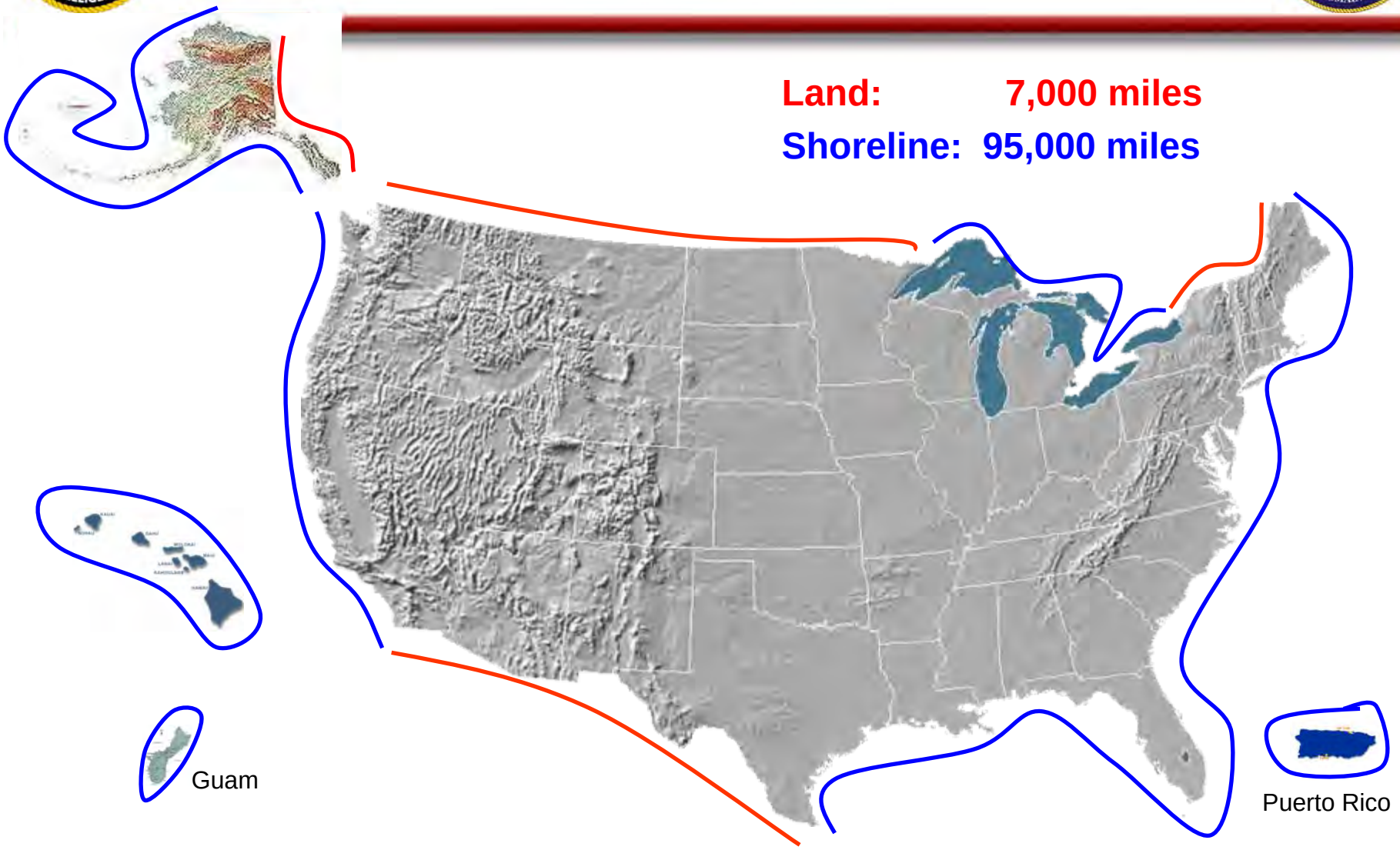
National ConOps

D. A. Goward
Director, Maritime Domain Awareness
Program Integration, United States Coast Guard

A Maritime Nation

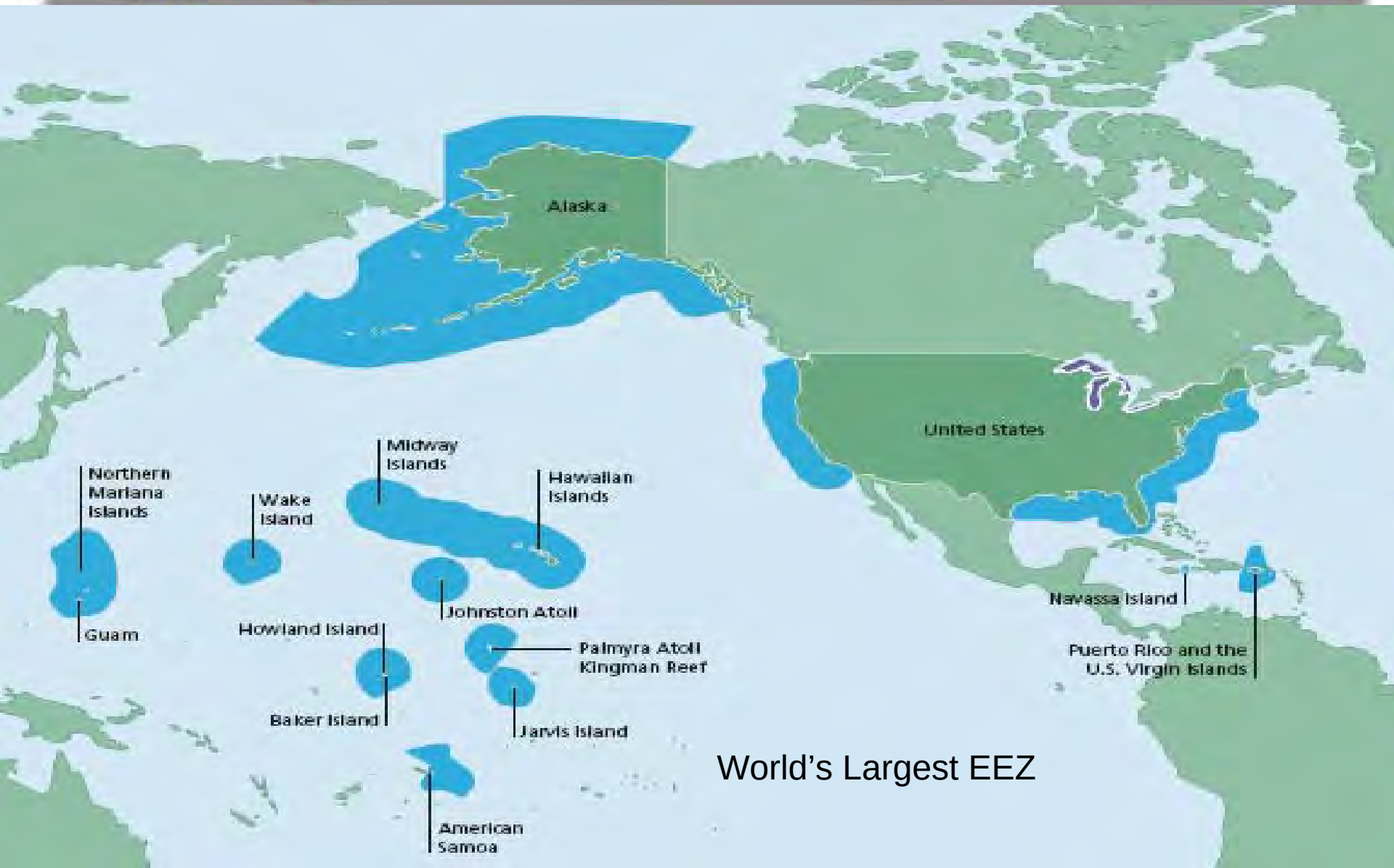
Land: **7,000 miles**

Shoreline: **95,000 miles**



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A Maritime Nation



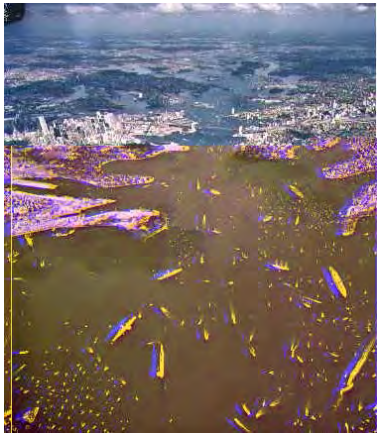
World's Largest EEZ

A Maritime Nation

- **95% of U.S. foreign trade**
- **8,000 foreign vsls, 50,000 port calls/yr**
- **$800 Billion in freight per year**
- **361 commercial ports**
- **186 Million passengers per year**







- **17 Million recreational vsls**
- **70% of population is coastal**
- **Key Infrastructure & Services**



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A Maritime Nation





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Why MDA is Essential

Value of transparency

- **Deter, Detect, Prevent, Respond**

All Threats/ All Hazards/ All Missions

- **Asymmetric Threats**
- **Safety, Security, Stewardship**
- **Many Partners**

Coalition Warfare/ Unity of Effort

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Essentiality of Awareness

Appendix D – CMT Strategic Planning Analysis Results

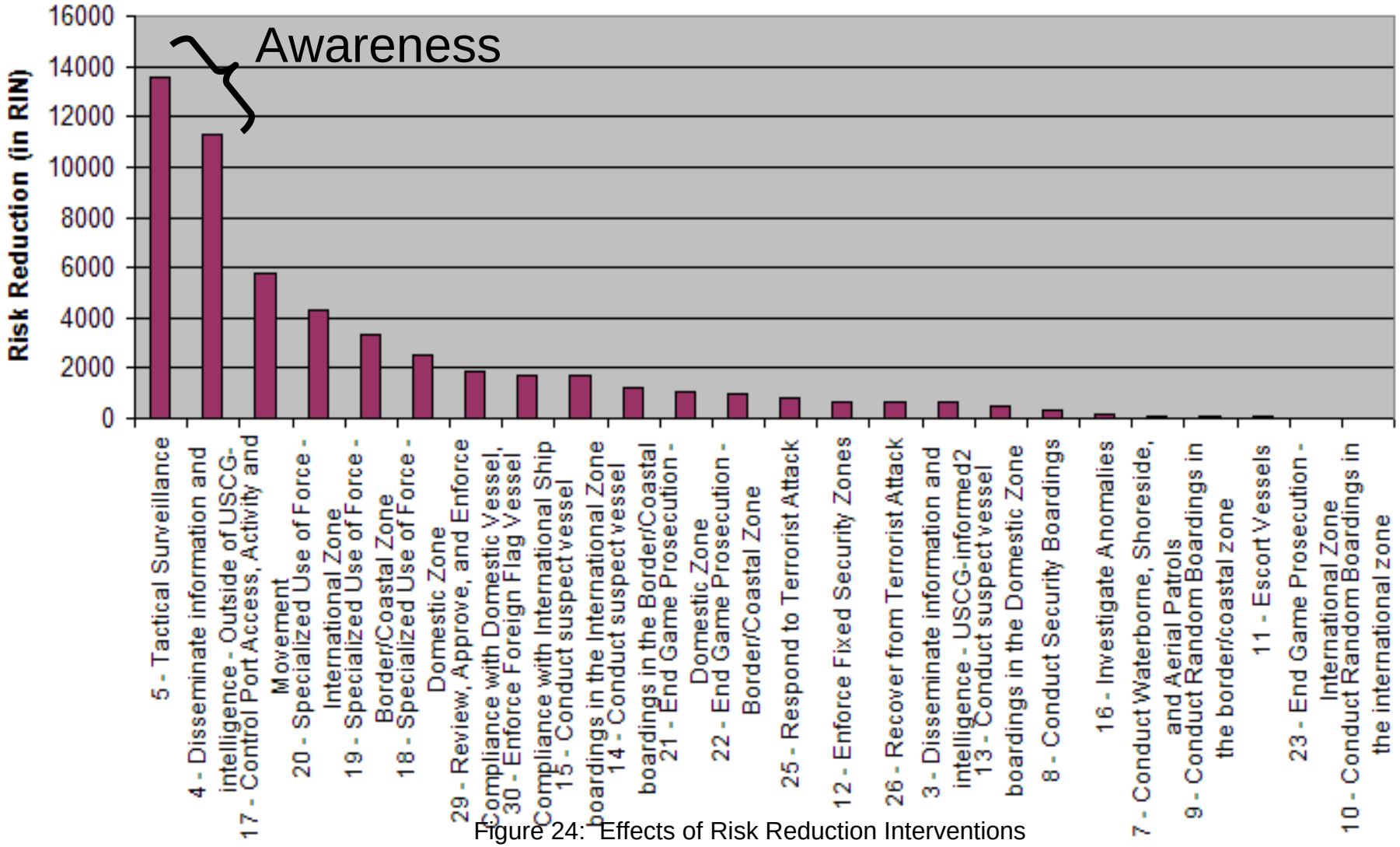
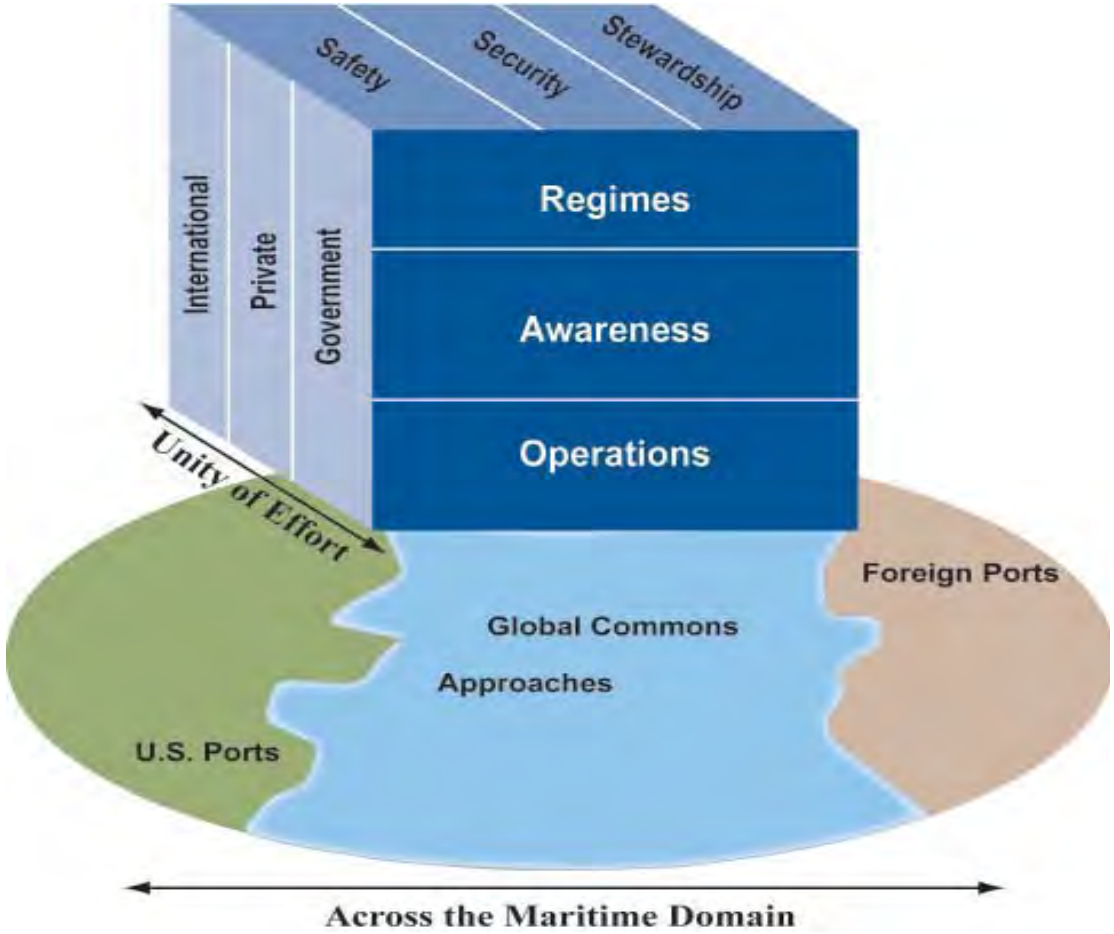


Figure 24: Effects of Risk Reduction Interventions

Maritime Governance Strategic Triad



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MDA Pre-9/11

- 1998 - Coast Guard 2020 -- Strategic Plan
- 2000 - Special Interest Vessel Program
- 2001 - NSC involvement and Interagency MDA TF
- 2001 - Maritime Security Strategy and MDA White Papers
- 2001 (Aug) - ADM Loy article on MDA

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MDA Post-9/11

- 2002 - USCG MDA Project Officer
- 2003 - Competing USCG Projects
- 2003 - USCG MDA PIO & Steering Committee
- 2004 - National MDA Summit & Senior Steering Group
- 2005 - NSMS & National Plan to Achieve MDA
- 2006 - GMII Director, 2007 - GMSA Director
- 2007 - DoD Executive Agent for MDA (SecNav)

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Important Terms & Concepts

- **Maritime Domain Awareness**
- **Global Maritime Intelligence**
- **Global Maritime Situational Awareness**
- **Common Operational Picture**
- **User Defined Operational Picture**
- **Services Oriented Architecture**
- **Federal Governance Structure**
- **Enterprise Hubs**

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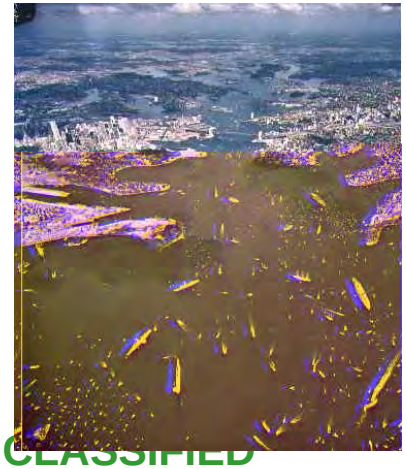
Maritime Domain Awareness (MDA)







"…the effective understanding of anything associated with the global Maritime Domain that could impact the security, safety, economy, or environment…"







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Maritime Domain Awareness (MDA)

MDA = GMI + GMSA

GMI: *Global Maritime Intelligence*

- Predictive threat warning and cueing
- Response to decision maker requests



Cued Intel, IC Products…

GMSA: *Global Maritime Situational Awareness*

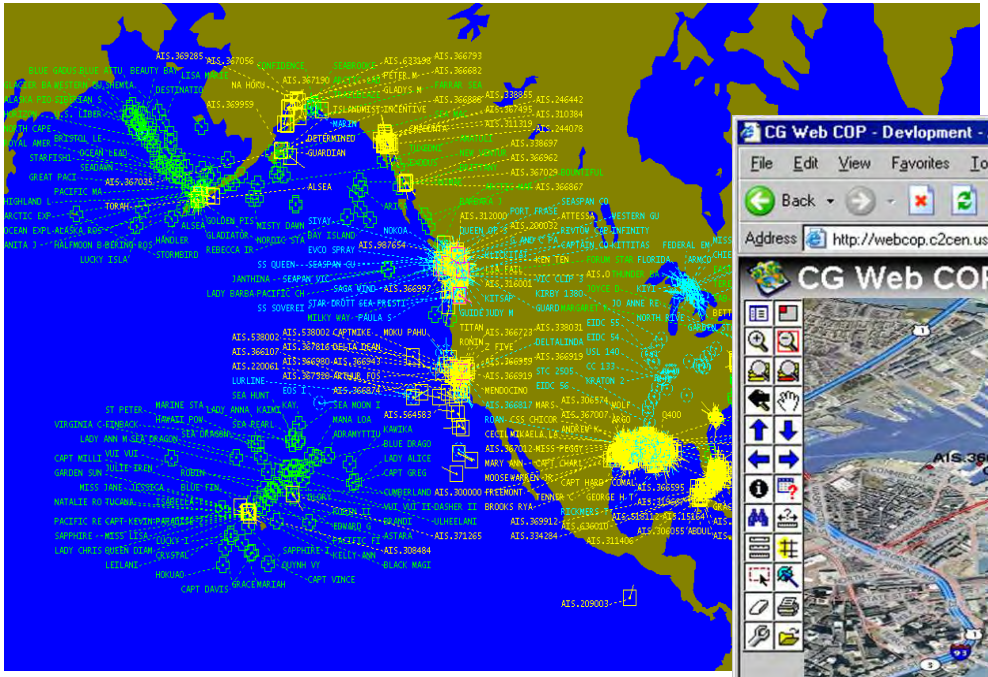
- Unclassified
- Identify/understand trends
- Anomaly detection
- “Maritime Normal”

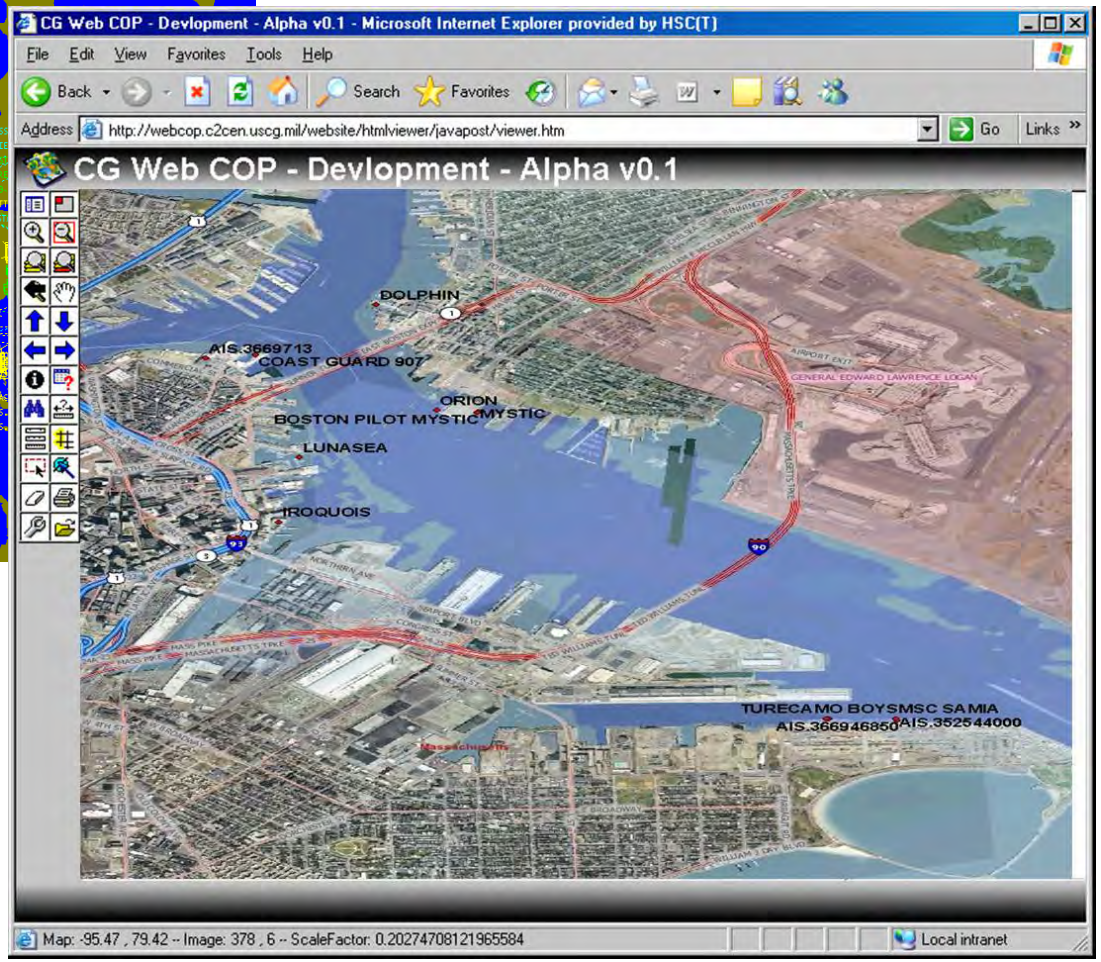


Persistent monitoring, Anomaly Detection…

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COP & UDOP





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COP vs UDOP

Common Operating Picture

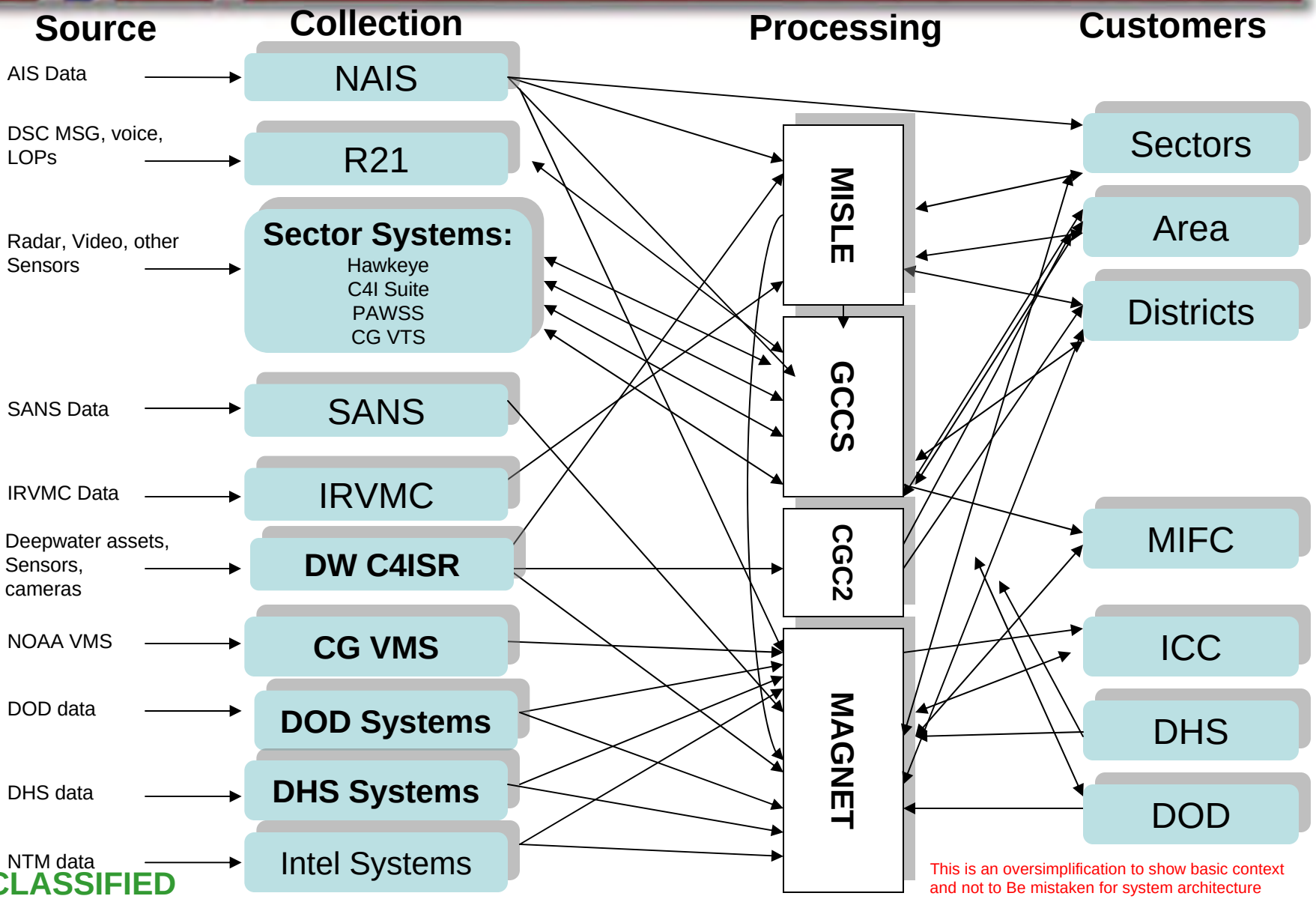
- One picture/view
- Central analysis
- High bandwith
- Point to point sharing
- Difficult to modify

User-Defined Operating Picture

- Standard data, infinite pictures/views
- Access to raw data/Everyone an analyst
- Only needed info transmitted
- Community data sharing
- Easy to add users, applications

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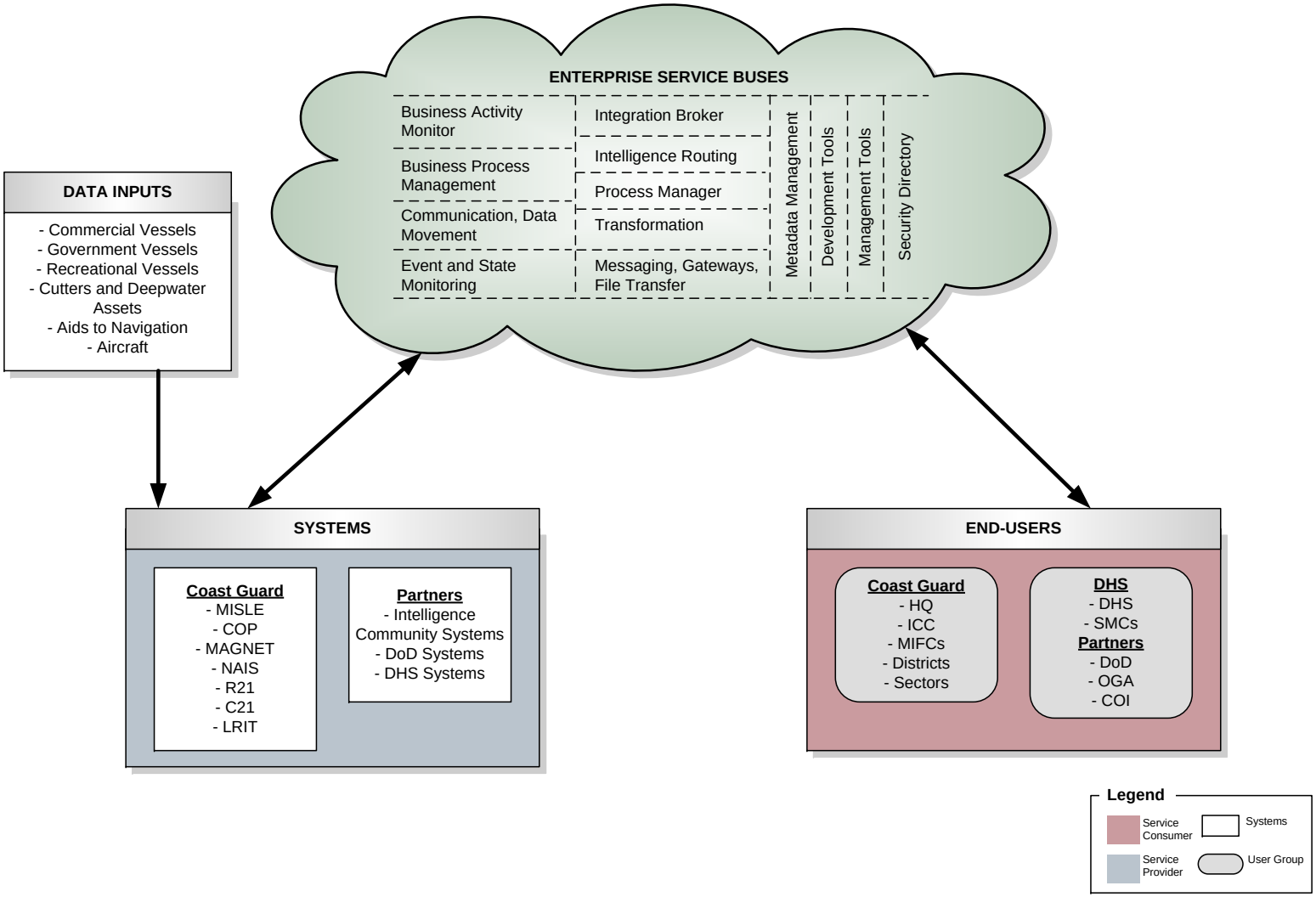
Current Point-to-Point Data Sharing



This is an oversimplification to show basic context and not to Be mistaken for system architecture

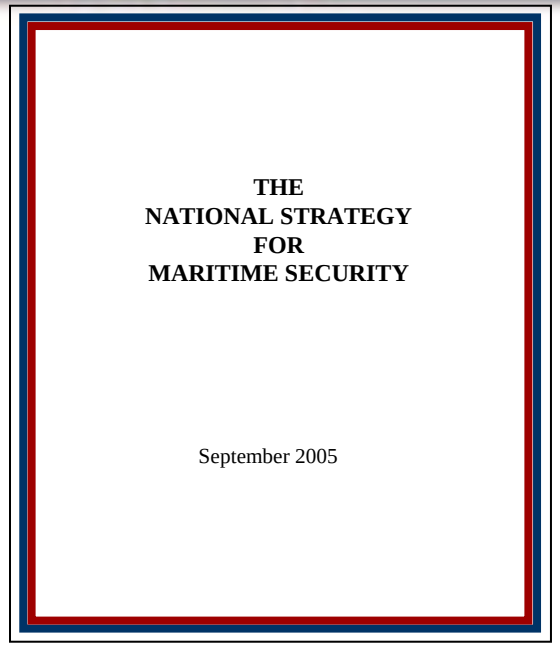
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Services Oriented Architecture



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Federal MDA Governance

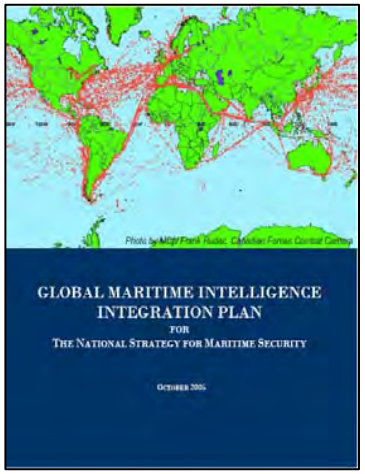


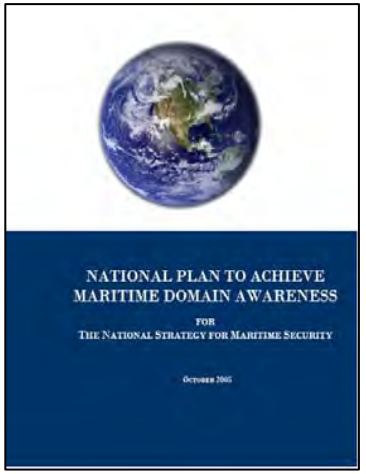


"Maritime Domain Awareness…

a key national security requirement…

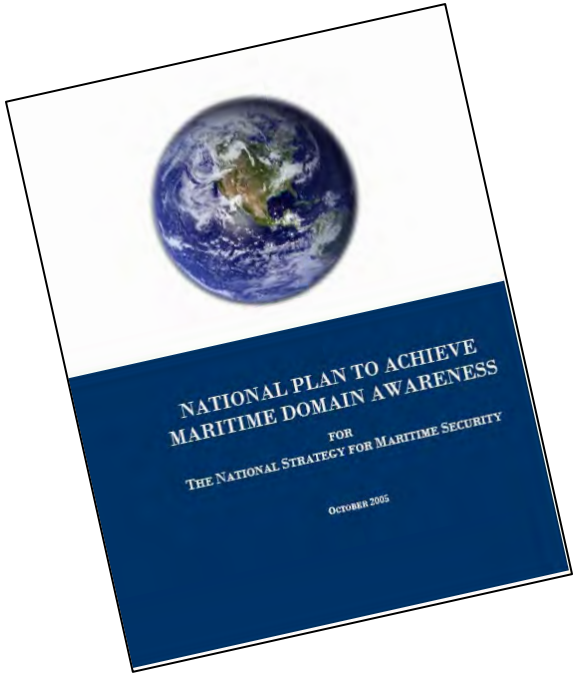
requires integrating all-source intelligence, law enforcement information, and open-source data from the public and private sectors…





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National Plan to Achieve MDA



Goals

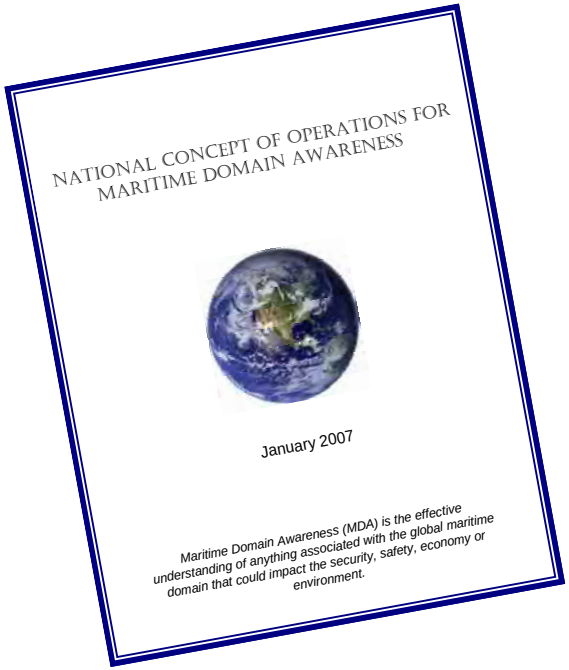
- Enhance transparency
- Enable accurate, dynamic and confident decisions and responses
- Freedom of navigation and flow of commerce

Objectives

- Persistently monitor the global maritime domain
- Access and maintain data on vessels, cargo, facilities, people and infrastructure
- Collect, fuse, analyze, and disseminate information
- Access, develop and maintain MDA-related mission performance data

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Concept of Operations for MDA



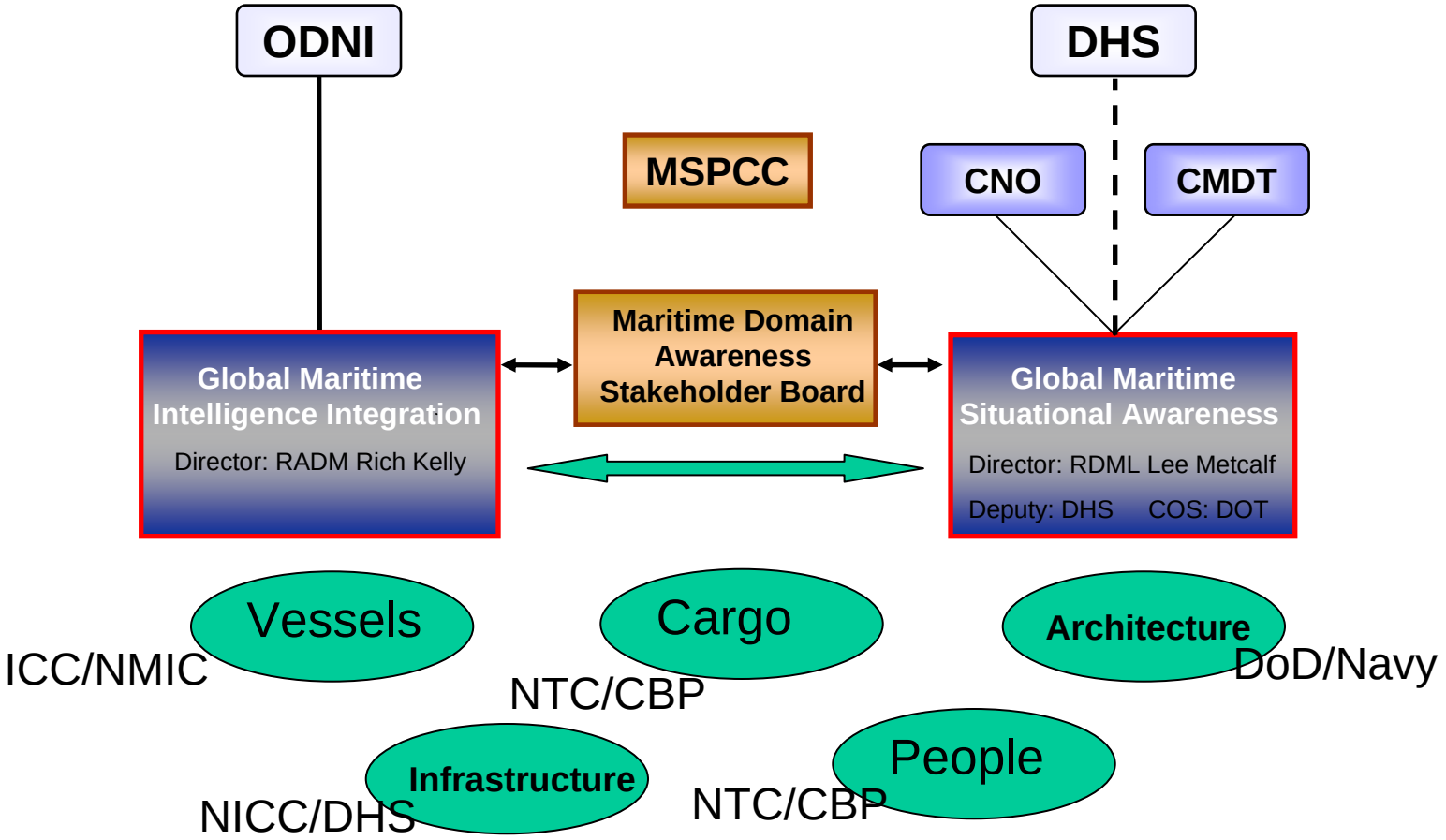
At a minimum the CONOPS will detail:

- Interagency Coordination
- Shared Situational Awareness
- Support MOTR
- Integration with GMII

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National MDA Structure

A federal, interdepartmental and interagency leadership structure



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Enterprise Hubs



Inventory & Catalog

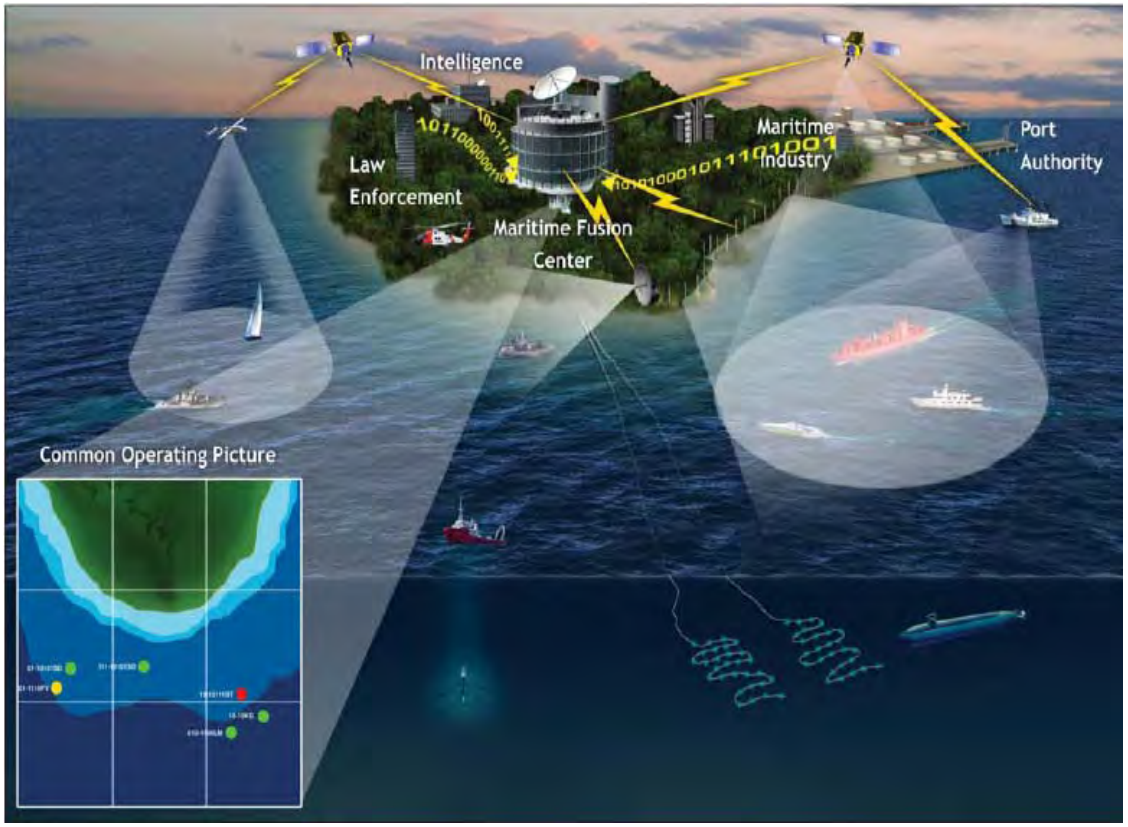
Coordinate Information Flow

Facilitate Sharing

Identify Gaps

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The Goal – Level 3



National Maritime Picture

Understand:

1. **What happened**
2. **What is happening**
3. **What will happen next**



Questions?

TACSAT-2
Target Indicator Experiment (TIE)
AIS Payload Overview

2007 Maritime Domain Awareness Forum

29 October 2007

Christopher Huffine
Technical Staff, Code 8120
Naval Research Laboratory
202-404-4272
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Purpose

- **Brief overview of the Naval Research Laboratory (NRL) Target Indicator Experiment (TIE) Automated Identification System (AIS) payload**
  - **TACSAT-2, the host spacecraft**
  - **Top level architecture**
  - **AIS receiver attributes**
  - **Phased array antenna attributes**
- **Top Level Data Flow**
- **Brief mention of regulatory and authorities which provided non-technical challenges**
- **Some snapshots of TIE data collections**
- **Way forward**

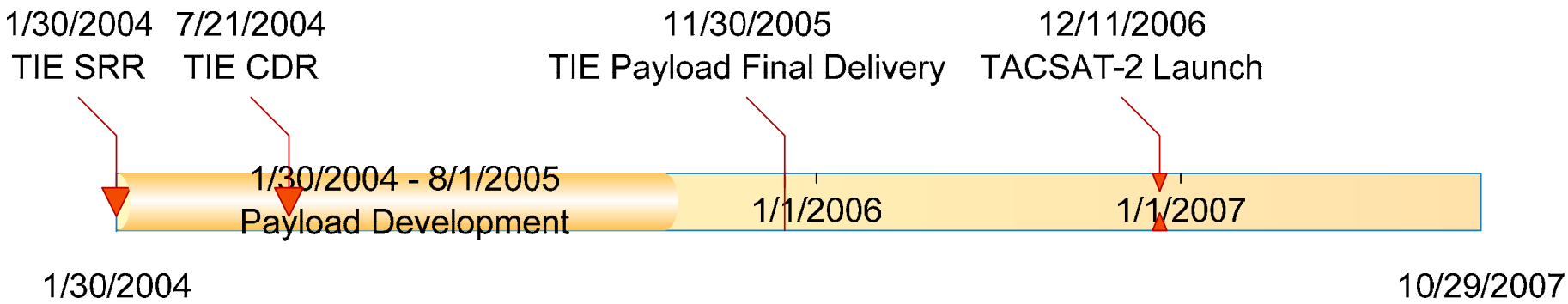
Genesis of AIS on TACSAT for Experimentation

Objectives

From Original Space Test Program (STP) objectives

2) Experiment w/ Space Collection of AIS From Ships for Port Safety & Homeland Defense

- **At the time the TIE development opportunity presented itself, the TIE team had just concluded TACSAT-1 development**
- **Team was looking to take the next logical step in reducing size, weight and power while adding new functionality**
- **Adding AIS capability to original payload foundation met internal goals for working with software defined radios and demonstrated a measure of effectiveness to emerging requirements (i.e. receiving AIS messages**



AIS Receiver Development

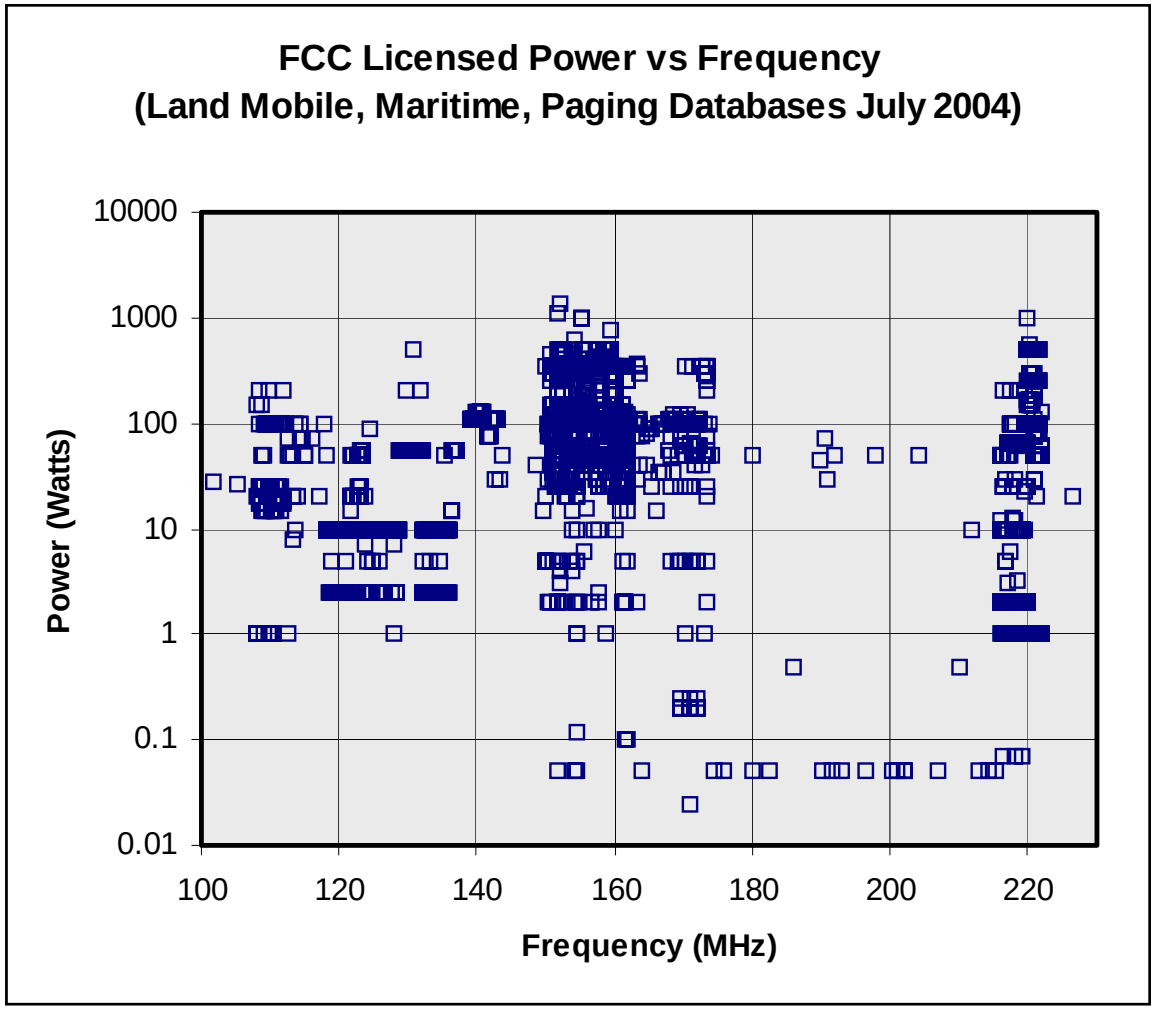
- **Receiver itself funded through Office of Naval Research (ONR) and the Copperfield-2 foundation primary through Navy N6 TENCAP funds**

- **Government, Industry, FFRDC Joint Effort**
  - **Aeronix, Inc developed the processor card which was “reprogrammed” to demodulate the AIS waveform**
  - **Aerospace Corp (Dr. Jeff Stocker, Dr. James Hicks) team developed AIS receiver FPGA and processor algorithms and code**
  - **NRL team developed AIS receiver antennas, beam former, and RF Front End Unit, and provided final integration of components together**
  - **Environmental testing performed by NRL team for the space platform, as well as for airborne and ground testing**

- **Extensive (hundreds of flight hours) aircraft testing on various platforms in dense maritime environments**
  - **Southern CA**
  - **Mid-Atlantic East Coast (NY, NJ, Philadelphia)**

- **Receiver designed from the ground up to be built with government-owned intellectual property and without any classified algorithms or proprietary software**

AIS Receiver Design and Dynamic Range



- **A challenge of the TIE AIS receiver design was to allow it to be useful in a very high dynamic range environments – identical hardware to be used onboard *both* aircraft and spacecraft**
- **Maximum signal level**
  - **-147 dBm range for a 400 km spacecraft**
  - **-50 dBm or higher for a terrestrial AIS receiver at very close range to the transmitter**
- **100+ dB dynamic range is challenging to meet!**

Design Trades

- **Budgetary limitations but more importantly schedule drove severe design trades which limit performance but enabled meeting other programmatic requirements**

- **TIE implemented a simple RF Front End with a wide-bandwidth pre-selection filter**
  - **Custom designed filter would have provided better selectivity but was not obtainable in the schedule**
- **Adaptation of TACSAT-1 Copperfield-2 board set limited some receiver performance with some impact on sensitivity and digital filter performance**
- **A simple demodulator single-bit differential GMSK modulator was designed and utilized**

- **While a phased-array antenna approach was utilized and implemented, it was a basic design vice a fully-steerable electronic array**

TIE AIS Receiver General Attributes

- Designed to provide a platform for AIS signal collection, demodulation, and experimentation
- Software defined radio architecture
  - Digital filtering and cross-correlation functions happen within a field programmable gate array (FPGA) device
  - Demodulation of Gaussian minimum-shift keying (GMSK) waveform occurs within a general purpose processor
  - Output of the AIS receiver is “industry standard” NMEA-0183 message format within a container message format
- Store and forward architecture allows for autonomous data collection and archiving
- Ground processing architecture allows for receipt and processing of the spacecraft data to expose the original NMEA-0183 message format

Areas of AIS Receiver Experimentation

- **The payload was specifically designed to be a platform for *experimenting* with the AIS signal**

- **Co-channel and/or adjacent channel interference investigations**
  - **Software-defined nature of the demodulator allows uploading new algorithms**
  - **Extensive on-board telemetry monitors every step in the demodulation process**
  - **Phased array antenna provides directivity**

- **Optimal antenna design experimentation**
  - **Omni-directional (coverage versus directivity)**
  - **Phased array for nulling high power emitters**
  - **Array orientation (wider coverage versus repeat)**

- **On-board processing and databasing**
  - **Reducing data rate requirements by filtering-onboard**

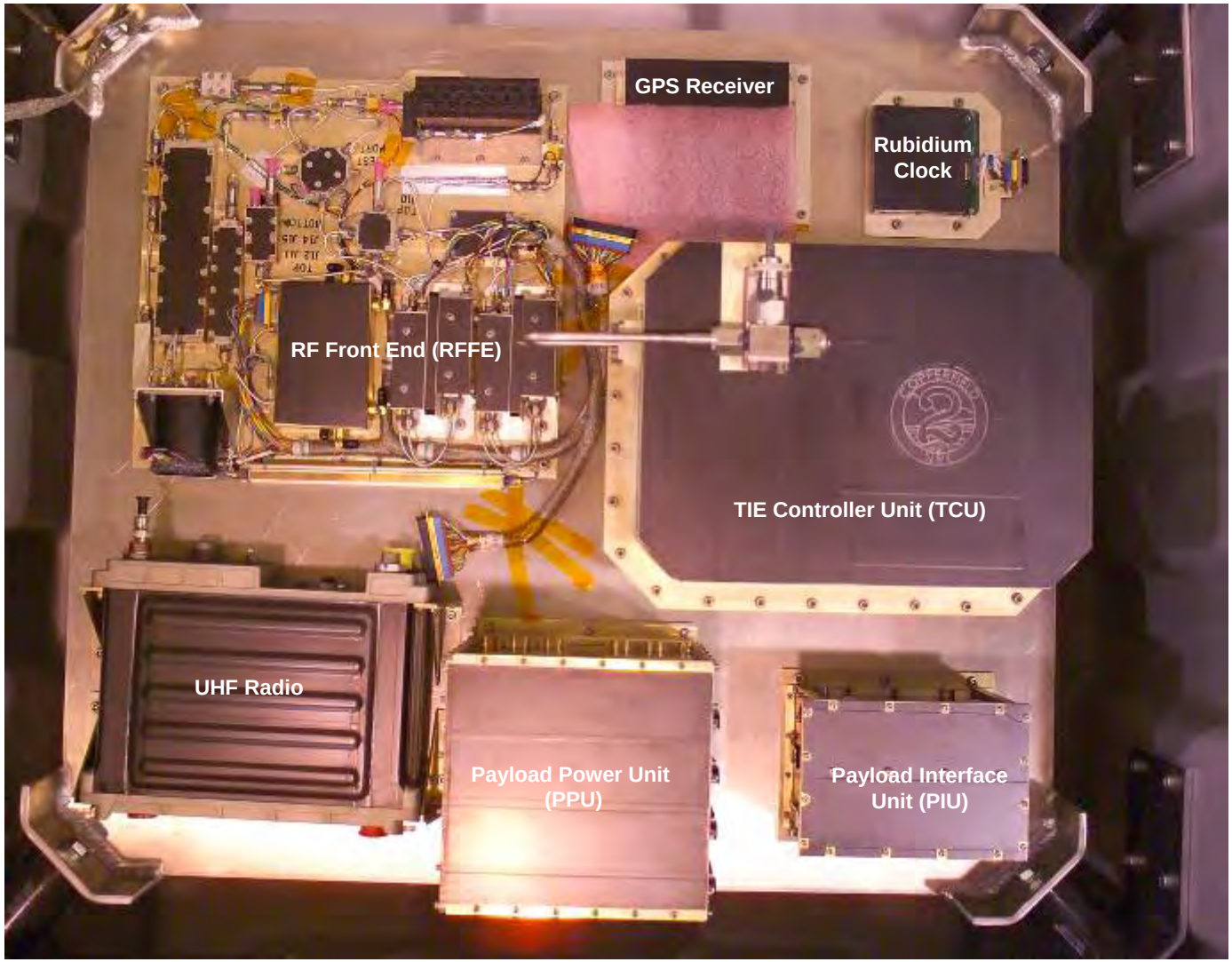
Phased Array Investigations

- During the initial design, we considered likely problems with co-channel interference from terrestrial sources and maritime sources
  - Self Organizing Time Domain Multiple Access (SOTDMA) networks see limited numbers of nodes around them versus a space node which sees far more
  - Terrestrial sources such as NOAA weather radio and other in-channel sources which are legally licensed but high-powered
- Limited front end filtering
  - Acquisition cost and schedule for a custom-designed filter were a driver
  - Practical challenges when a 4 kHz Doppler-induced error can be expected on the signal as it is received while maintaining narrow-band performance
- Given the “wing”-span of the solar arrays on the host spacecraft, a VHF phased array seemed like a workable area to experiment
  - 10 dB of gain and directivity
  - Reduce the effective instantaneous field of view
  - Spacecraft motion would compensate for limited instaneous view by providing robust coverage

TIE AIS Receiver Software Message Filter Capabilities

- Two-Channel Receiver
- Live Data Streaming
  - AIS1 and AIS2 Channel Messages Streamed Live in Default Mode
  - All AIS Messages Archived Into Internal Database (Reset at Each Power Cycling)
  - Parametric Data Augments Each Message
    - Time-of-Intercept
    - Additional message characterization
  - Distance from Receiver Platform to Vessel-reported Position can be Calculated
- Live and Archived Data Filtering
  - AIS Messages can be Filtered by one or more of:
    - Message Type (Type 1, 2, or 3 Position Reports; Type 5 Ship Static and Voyage-related Data)
    - MMSI or IMO (regular expression)
    - Navigation Status (regular expression)
    - Cargo Type (regular expression)
    - Latitude and Longitude (Min/Max)
    - Speed-Over-Ground (Min/Max)
    - Time-of-Intercept (Min/Max)

TIE Equipment Suite: Pre-Ship

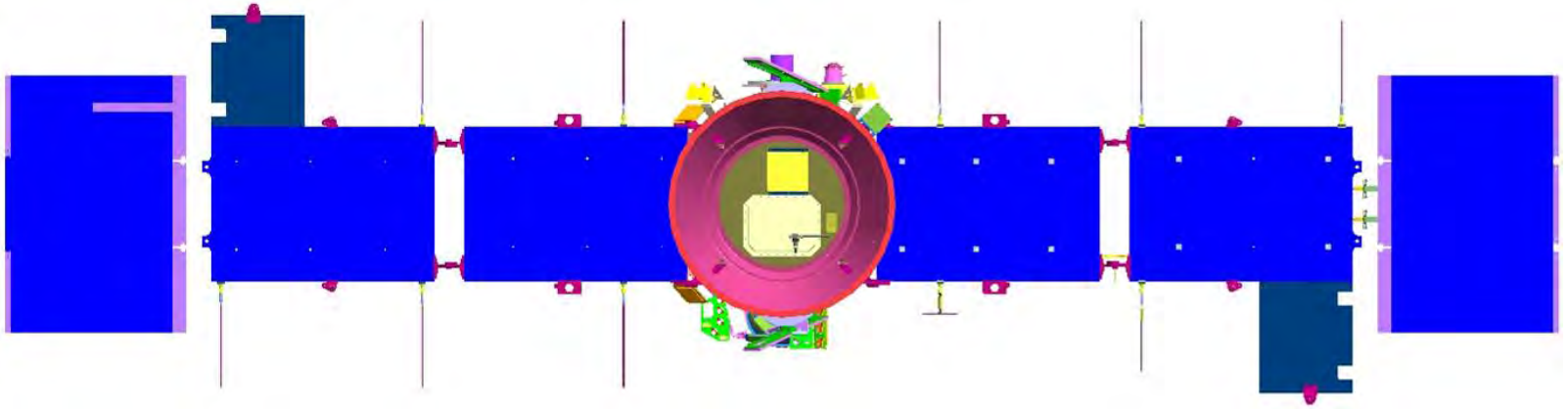


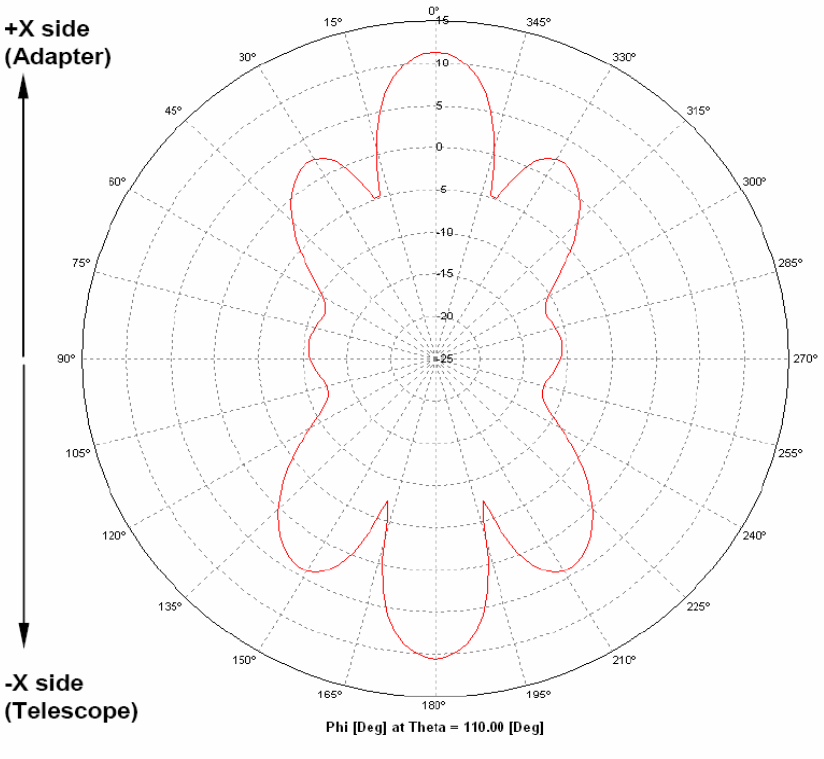
TACSAT-2 General Attributes

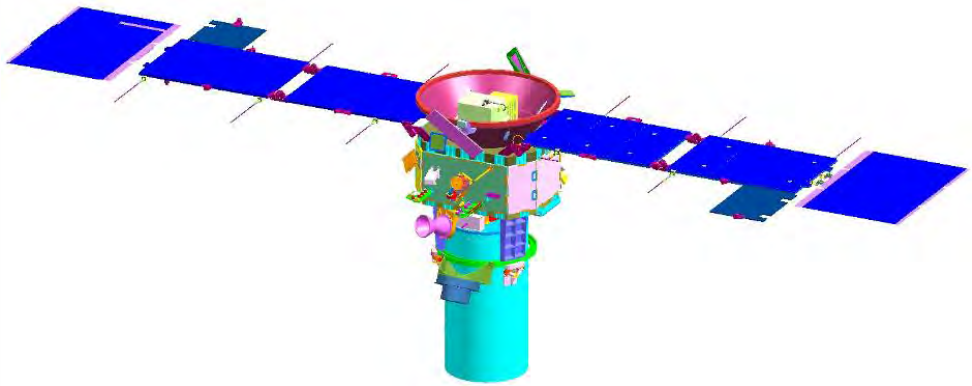


- Launched December 16th, 2006 on a Minotaur-I launch vehicle from Wallops Space Flight Facility, VA
- 420 kilometer Low Earth Orbit (LEO) satellite at about 40 degrees inclination
- About ten other experiments onboard the spacecraft with competing demands for power, pointing and downlink bandwidth

TACSAT-2 Spacecraft



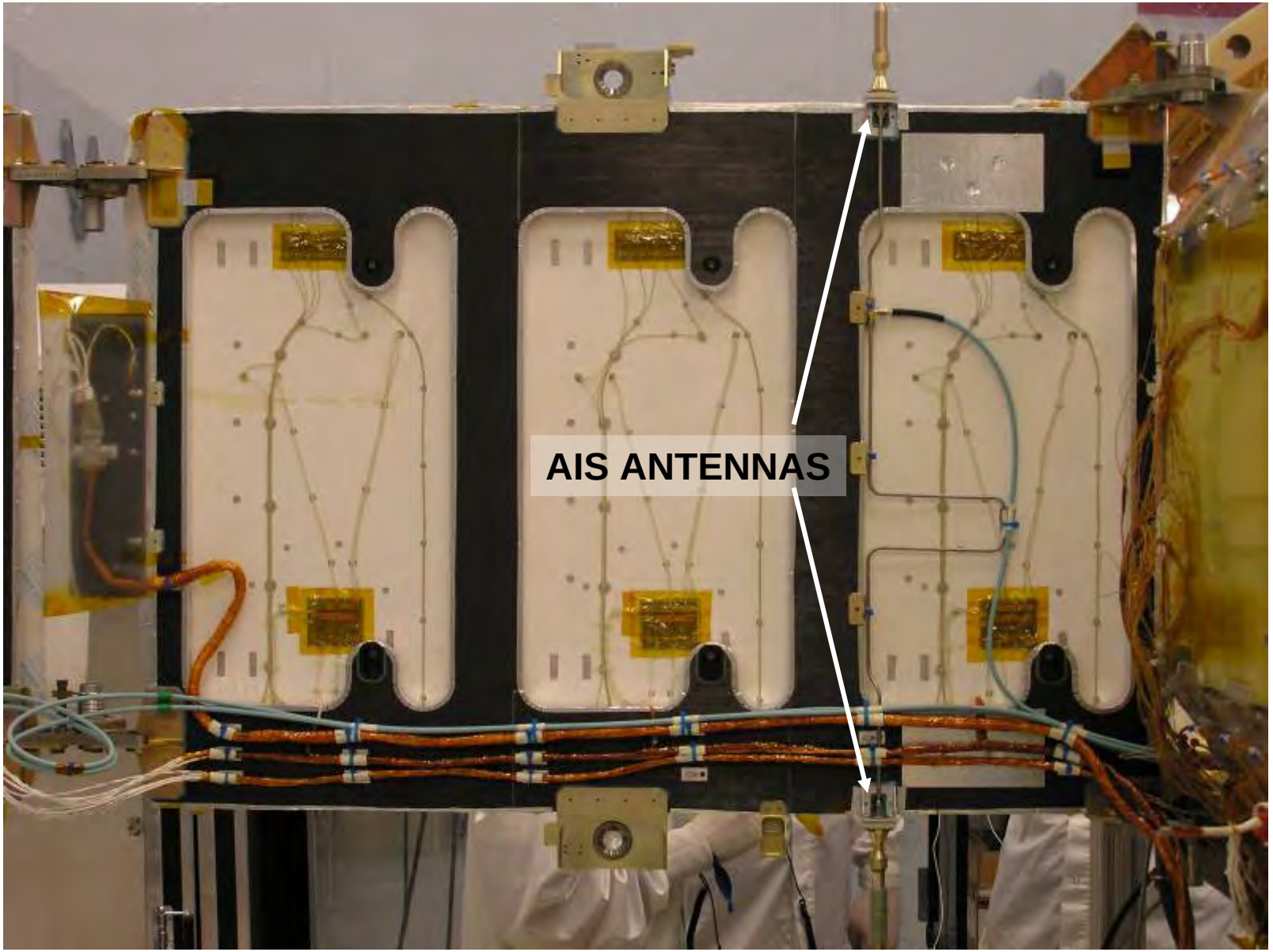




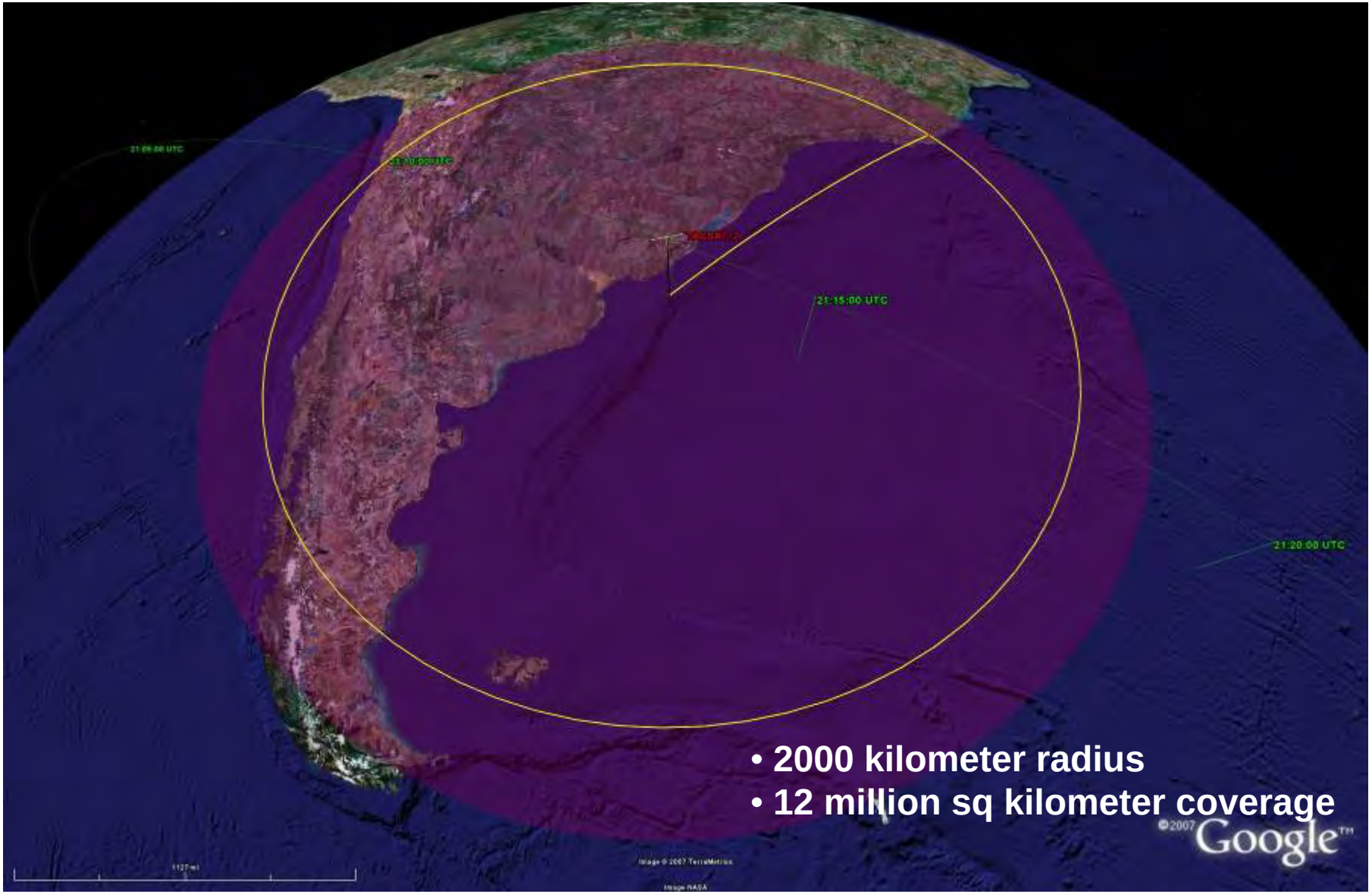
Antenna Installation on TS-2 Spacecraft



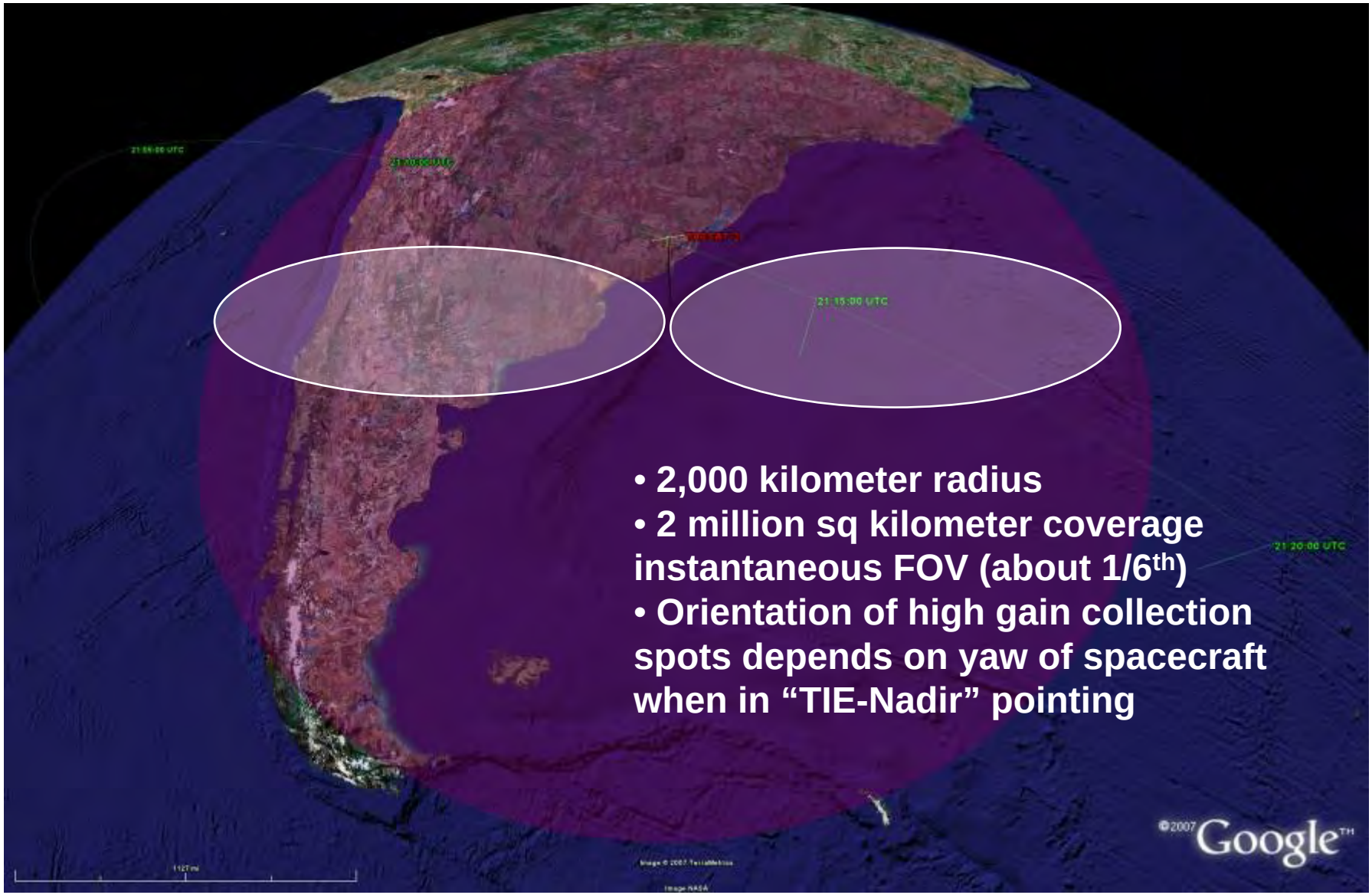
Close-Up of TIE AIS Antennas Installed on Solar Array Panels



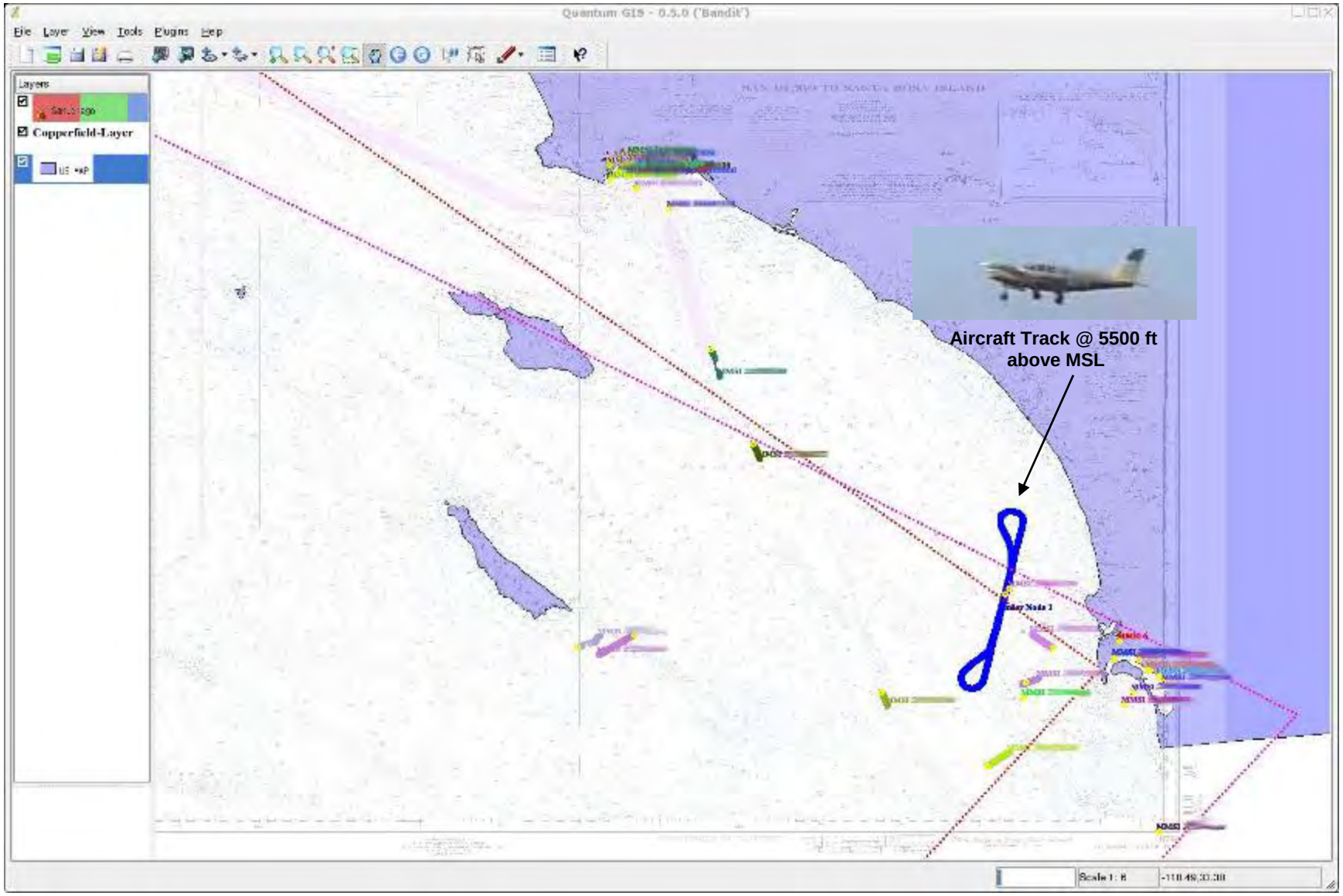
Earth Coverage of TACSAT-2



Earth Coverage of TACSAT-2 with Phased Array Antenna Pattern



Airborne AIS Testing

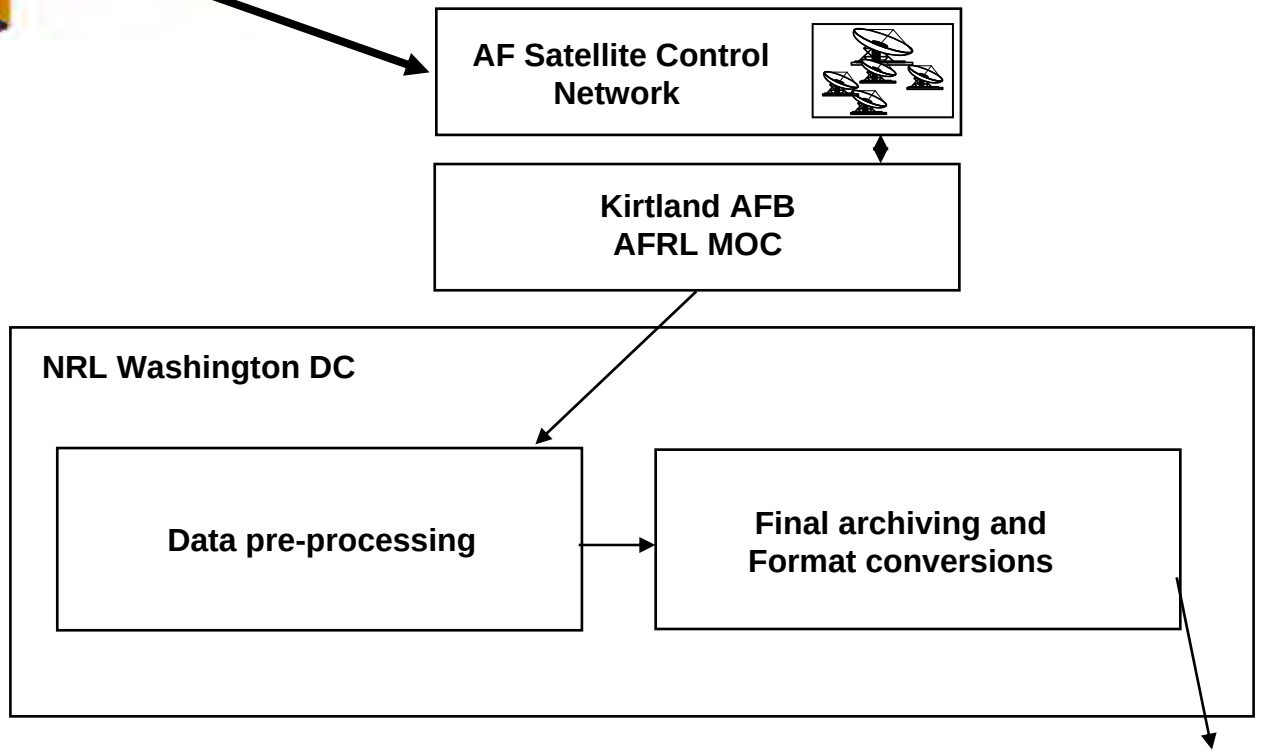


TIE Authorities and Legal Issues

- While launched in mid-December, 2006, the spacecraft had challenges that prevented its use to experimenters until mid-January 2007
- Legal concerns were raised by the intelligence community (IC) in late January 2007 that had to be addressed before major experimentation could begin
- April 2007, permission was given to start operating TIE in a limited fashion restricting the use of its data for test and checkout purposes
- Finally, in September 2007, agreements and authorities allow TIE data to be used by limited US Government (USG) entities starting with the US Navy and US Coast Guard for the purposes of Homeland Defense and Maritime Domain Awareness applications
- October 2007 -- Data-sharing plans are under review and will allow use of TIE data first with DoD and USCG entities, possibly others later

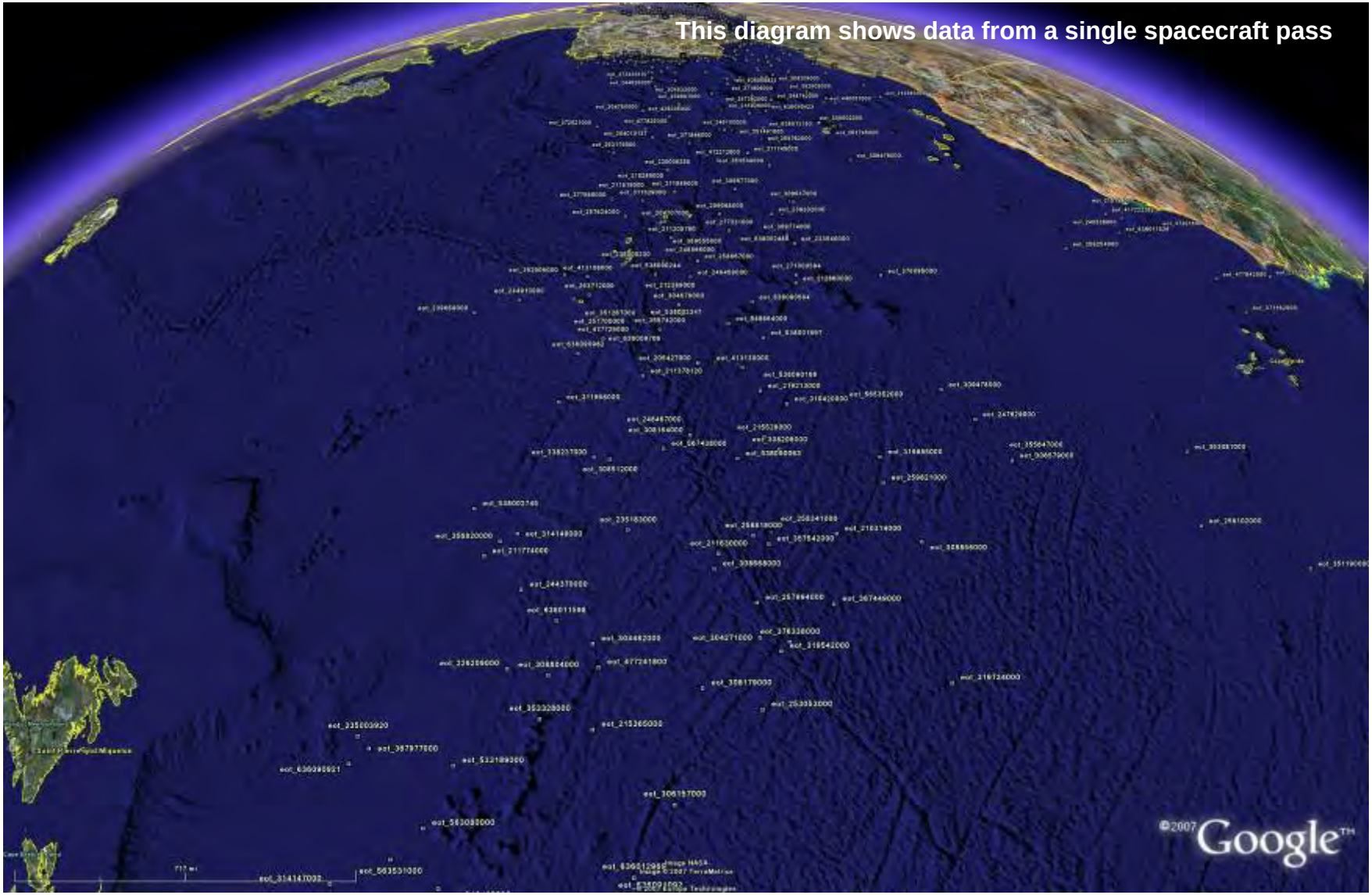
Top Level Data Flow



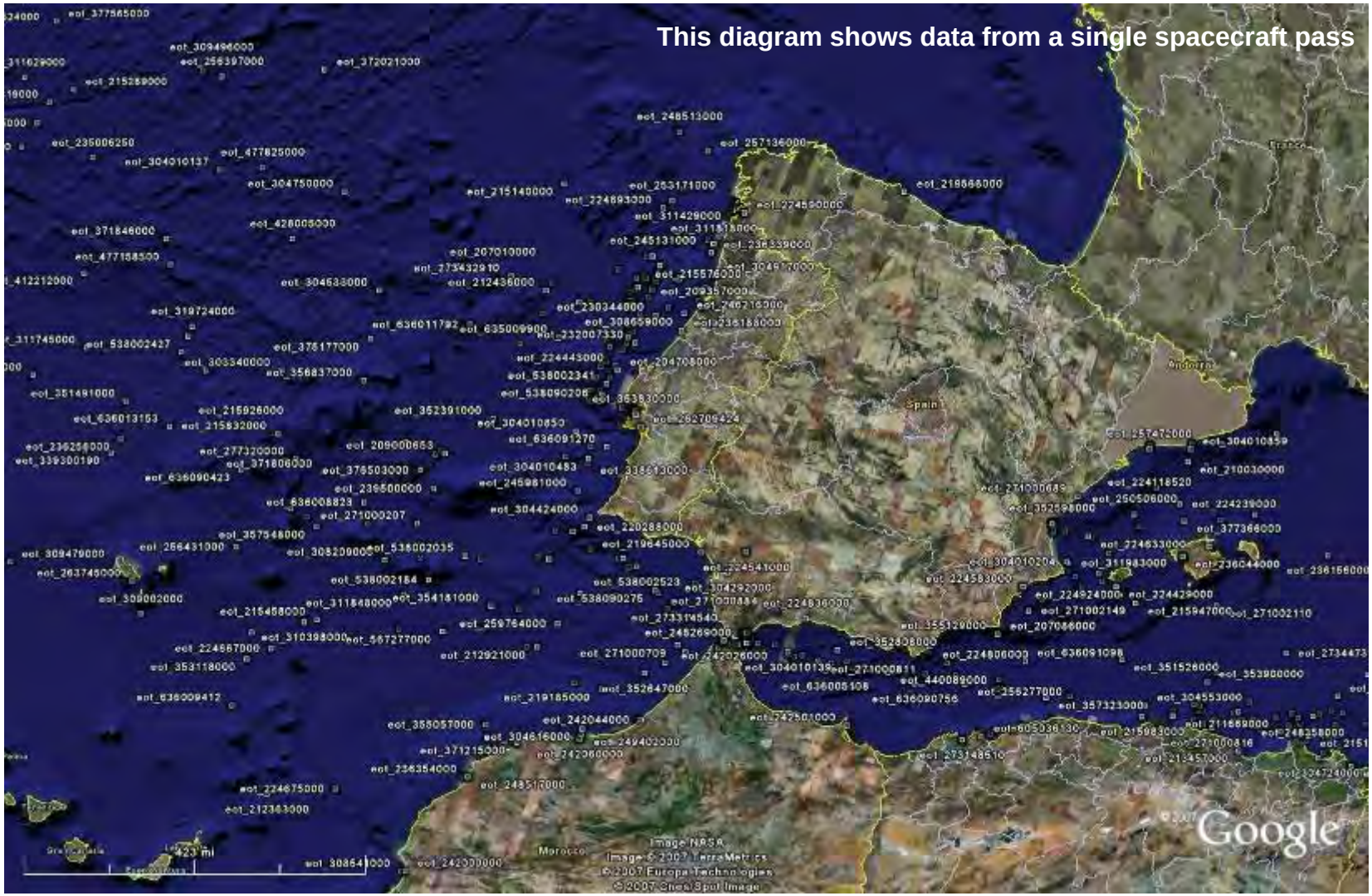



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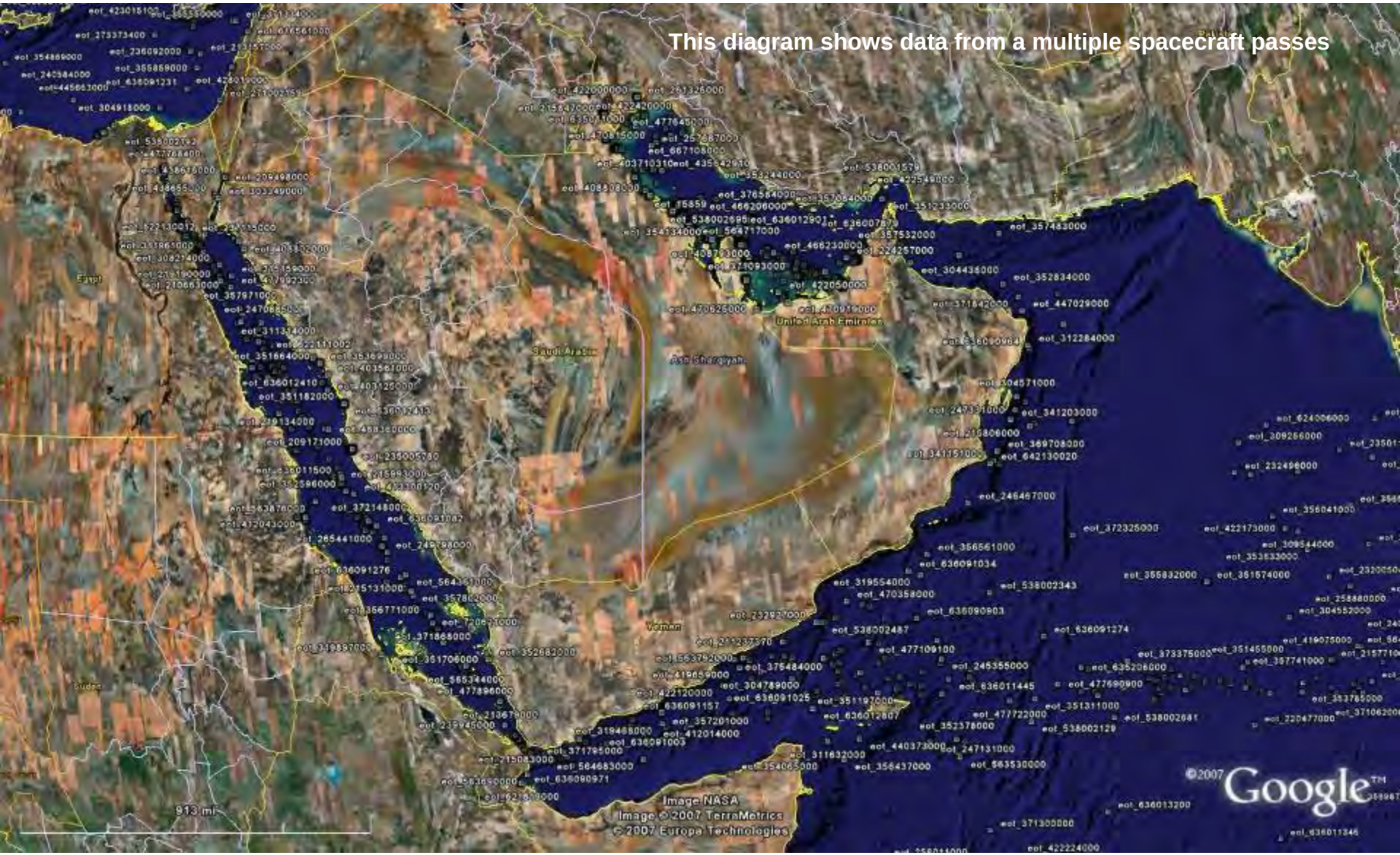
View over the Mid-Atlantic



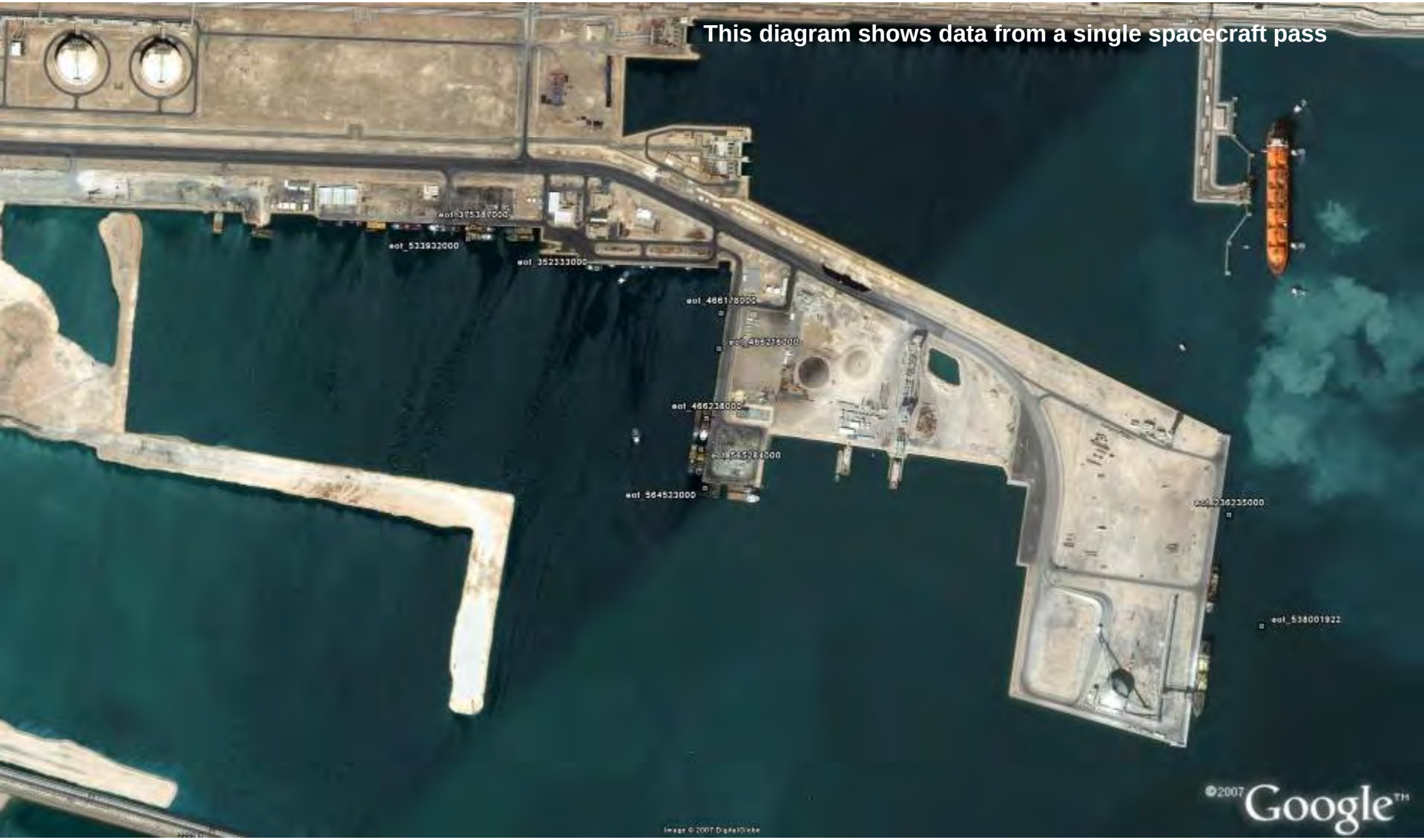
Spain, Portugal, Gibraltar



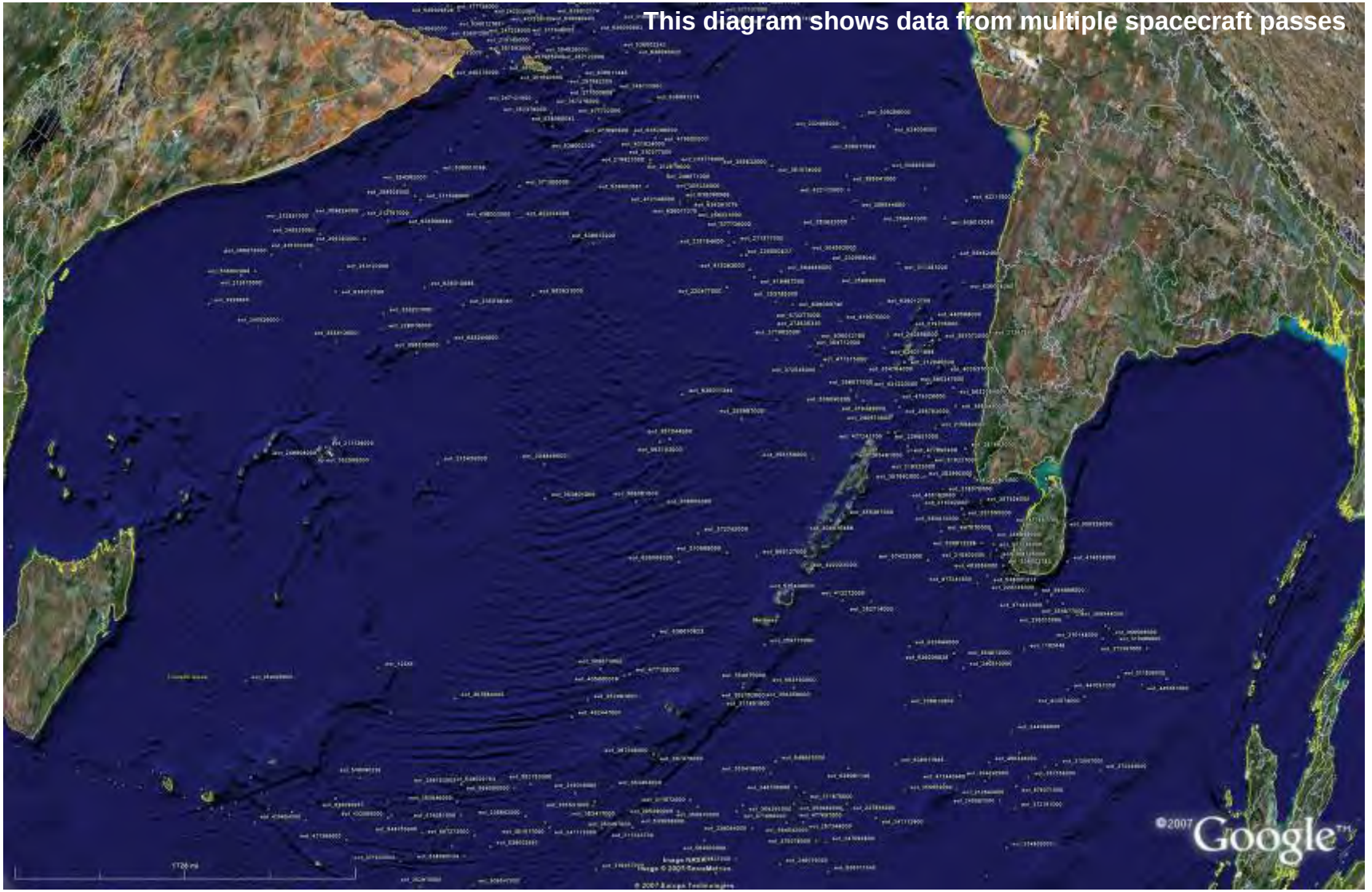
Mid-East


This diagram shows data from a multiple spacecraft passes
Egypt
Saudi Arabia
United Arab Emirates
Yemen
Sudan
913 mi
Image NASA
Image © 2007 TerraMetrics
© 2007 Europa Technologies
©2007 Google

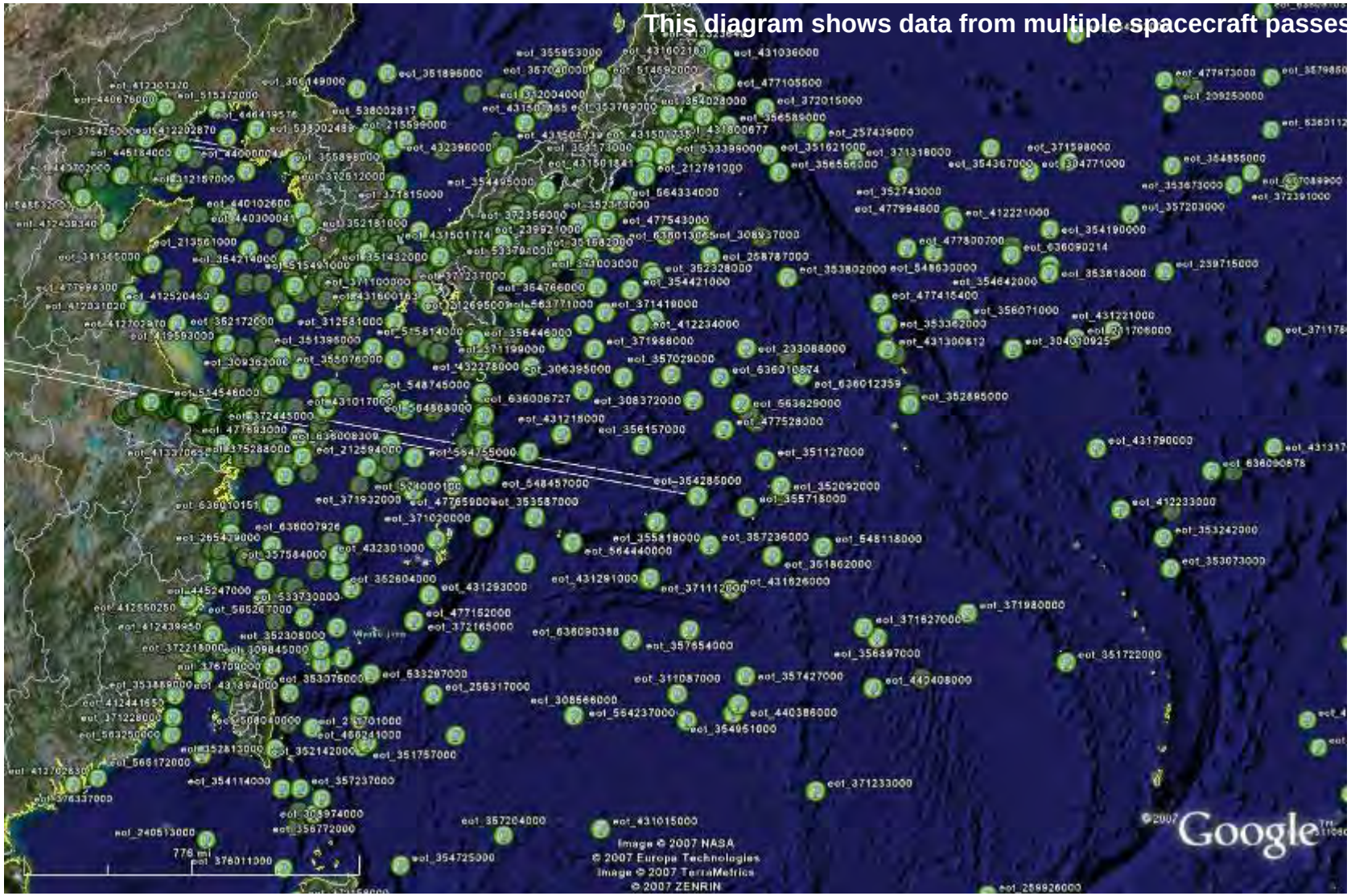
Oil Terminal



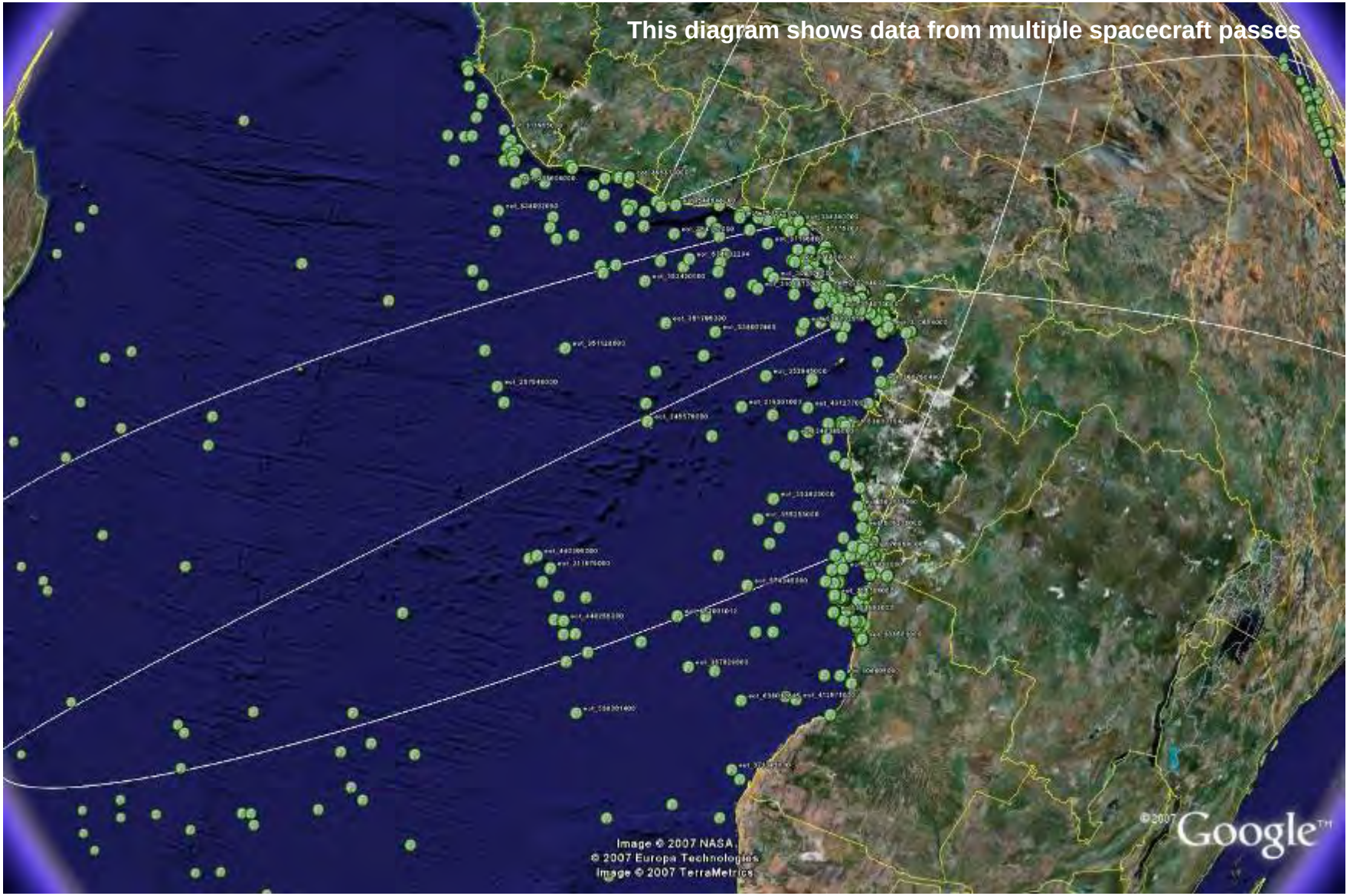
Indian Ocean



South China Sea/Sea of Japan



Africa


This diagram shows data from multiple spacecraft passes
Image © 2007 NASA
© 2007 Europa Technologies
Image © 2007 TerraMetrics
©2007 Google™

Way Ahead

- TACSAT-2 entered “extended operations” 1 October 2007 with primary goals to continue AIS testing
- Experimentation continues
  - Antenna array orientation testing
  - “6-parameter” testing
  - Calibration and received signal level testing
- Fate of TACSAT-2 after December 31, 2007 not yet known, possibility for extended operations
- Continued efforts to clear the path for data sharing at USG level first, but also considering other partners
- AIS receiver development and experimentation will continue on at NRL through TACSAT-2, and other current and on the horizon efforts

Acquisition Directorate

Nationwide Automatic Identification System Project

The USCG Nationwide AIS Project

CG-939 | CDR Keith Ingalsbe

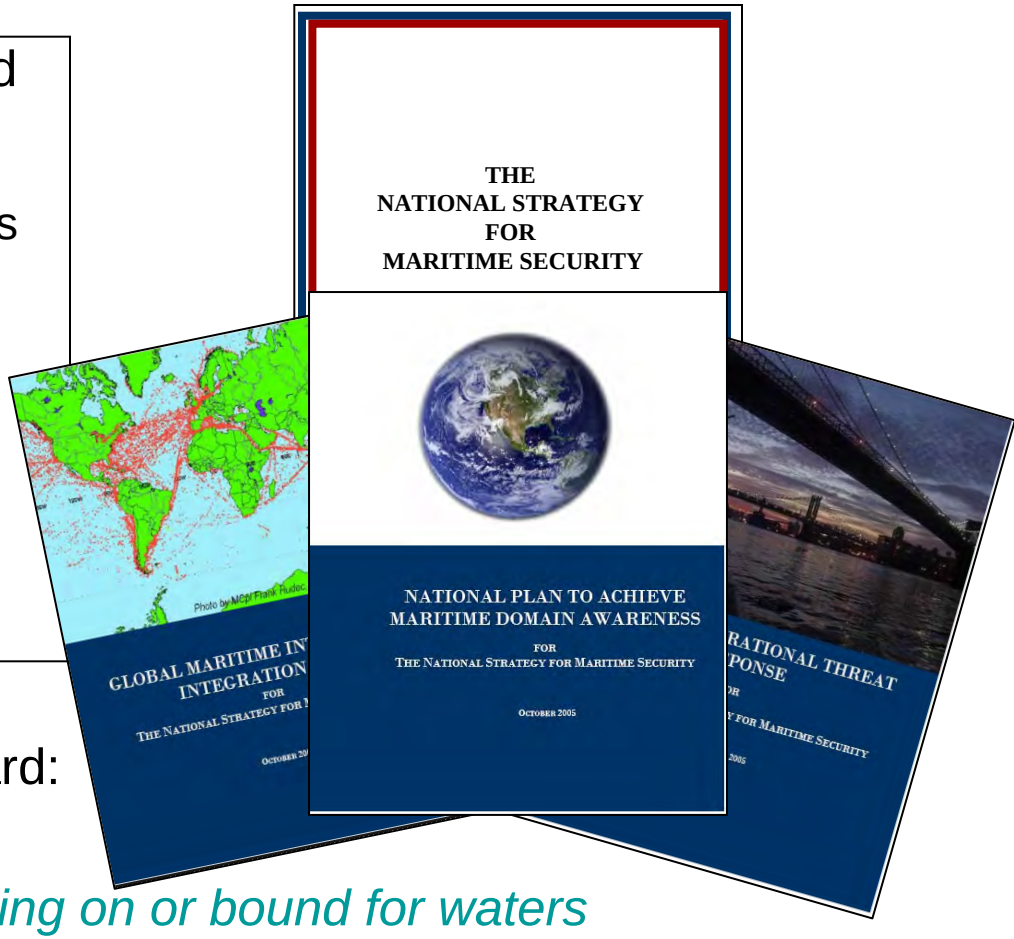
Maritime Domain Awareness Day | 29 Oct 2007

Agenda

- **Mission Need**
  - Maritime Security
  - Maritime Safety and Mobility
- **AIS - The Core of NAIS**
  - What is AIS (a Technology and a Standard)
  - How AIS Works
  - What Information AIS Provides
- **NAIS Project Description and Status**
  - Increment 1 – AIS Receive In Critical Ports and Coastal Areas
  - Increment 2 – AIS Receive and Transmit Nationwide
  - Increment 3 – Long-Range AIS Receive

Mission Need
Maritime Security - The Impetus for NAIS

- U.S. Coast Guard (USCG) is the lead federal agency for U.S. Maritime Security
  - Protecting approximately 95,000 miles of America's maritime boarders
- Maritime Transportation Security Act (MTSA) of 2002
  - Automatic Identification System (AIS) carriage
  - Direction to USCG on carrying out Maritime and Homeland Security



- The MTSA directs the U.S. Coast Guard:

" to collect, integrate, and analyze information concerning vessels operating on or bound for waters subject to the jurisdiction of the United States, including information related to crew, passengers, cargo, and intermodal shipments."

Maritime Safety and Mobility and Protection of Natural Resources

Leveraging the full functionality of AIS to enhance USCG preparedness for risks in the maritime environment and mission performance:

- Infrastructure and system for data communications between shore and vessels
- Tracking of and secure communications with government vessels
- Ability to manage AIS operations to preserve primacy of navigational safety



Ready Today...Preparing for Tomorrow

Maritime Domain Awareness

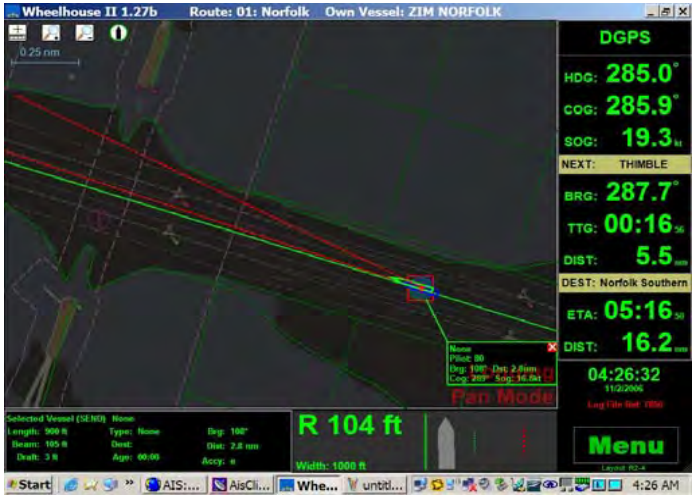
MDA Defined as:

"…the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy, or environment of the United States." – *National Plan to Achieve Maritime Domain Awareness*

Enhancements of Other USCG Missions

- Maritime/Navigation Safety & Mobility
  - Vessel Traffic Management
  - Aids to Navigation
  - Domestic Icebreaking
- Search and Rescue Operations
- Maritime Incident Investigation
  - Collisions, allisions & groundings
  - Environmental incidents
- Vessel Inspection Program





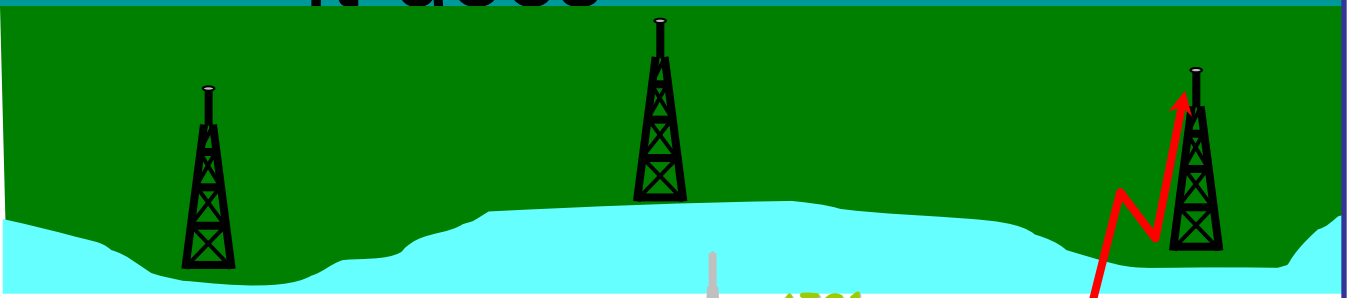
AIS - The "Core" of NAIS

Originally conceived by international community for navigation safety...AIS is both:

- A Standard –
  - For communicating maritime navigation safety and security information
  - Internationally adopted as a requirement of vessels covered by the Safety of Life at Sea Convention (SOLAS)

- A Technology –
  - Shipboard broadcast system that acts like a transponder
  - Operates in the Very High Frequency (VHF) maritime band – "line of sight"
  - Permits the voiceless exchange of information between AIS-equipped vessels and shore-side stations
  - Information is continually and automatically updated in near real-time and received by all AIS-equipped ships and shore stations in its vicinity

AIS – how it works and what it does



AIS1 Ch. 87B
AIS2 Ch. 88B
DSC Ch. 70

4500+ rpts per minute…

Each time slot represents 26.6 milliseconds.

Self Organizing Time Division Multiple Access



ATON Buoys

…1101010110101……

Dynamic (2-10 sec)

- MMSI / IMO#
- POSITION
- ACCURACY (+/-10m)
- UTC
- COURSE (COG)
- SPEED (SOG)
- HEADING
- NAV STATUS
- RATE OF TURN

Static (6 min.)

- VESSEL NAME
- CALL SIGN
- LENGTH / BEAM
- TYPE OF SHIP
- ANTENNA LOCATION

Voyage Related

- DRAFT
- HAZ CARGO ONBOARD
- ETA / DESTINATION
- ROUTE PLAN

Safety Related

- SHORT TEXT MESSAGES

NAIS Services – What you get

- **Automatic reception of AIS information (vessel ID, location, speed, & other navigational information) nationwide out to 2,000 nm from shore**
- **Transmission of AIS messages out to 24 nm**
- **Blue Force (Government Asset) Tracking & data exchange**
- **Vessel data for fusion with other maritime info database systems for intelligence and operational decision makers**
- **Vessel ID and tracking via Common Operational Picture and sharing with other agencies**



NAIS Acquisition - 3 Increments

I-1 Receive Only in Critical Ports

- Partnership w/ Naval Sea Logistics Center:
- Validated government design
- Purchased and installed AIS receive-only equipment at USCG designated sites
- Designed and implemented integrated support

I-1 Ongoing…transitioning to sustainment

Increment 1 design and performance/support data provided as Government Furnished Information for Increment 2.

Summary :

- Multiple contracts, Military Interdepartmental Purchase Requests (MIPRs) & Memorandums of Agreement (MOAs) to balance need for:
- Interoperability
- Leveraging existing Government infrastructure and expertise
- Competition
- Best technical solutions and minimizing reliance on proprietary systems

I-2 Nationwide Coverage w/ Transmit & Receive

- Best Value, Trade-off, Full & Open Competition
- Design, implement and test
- Receive/transmit, data processing & interoperability
- Full system integration
- System support as determined by Integrated Logistics Support Plan

I-3 Long-range Receive:

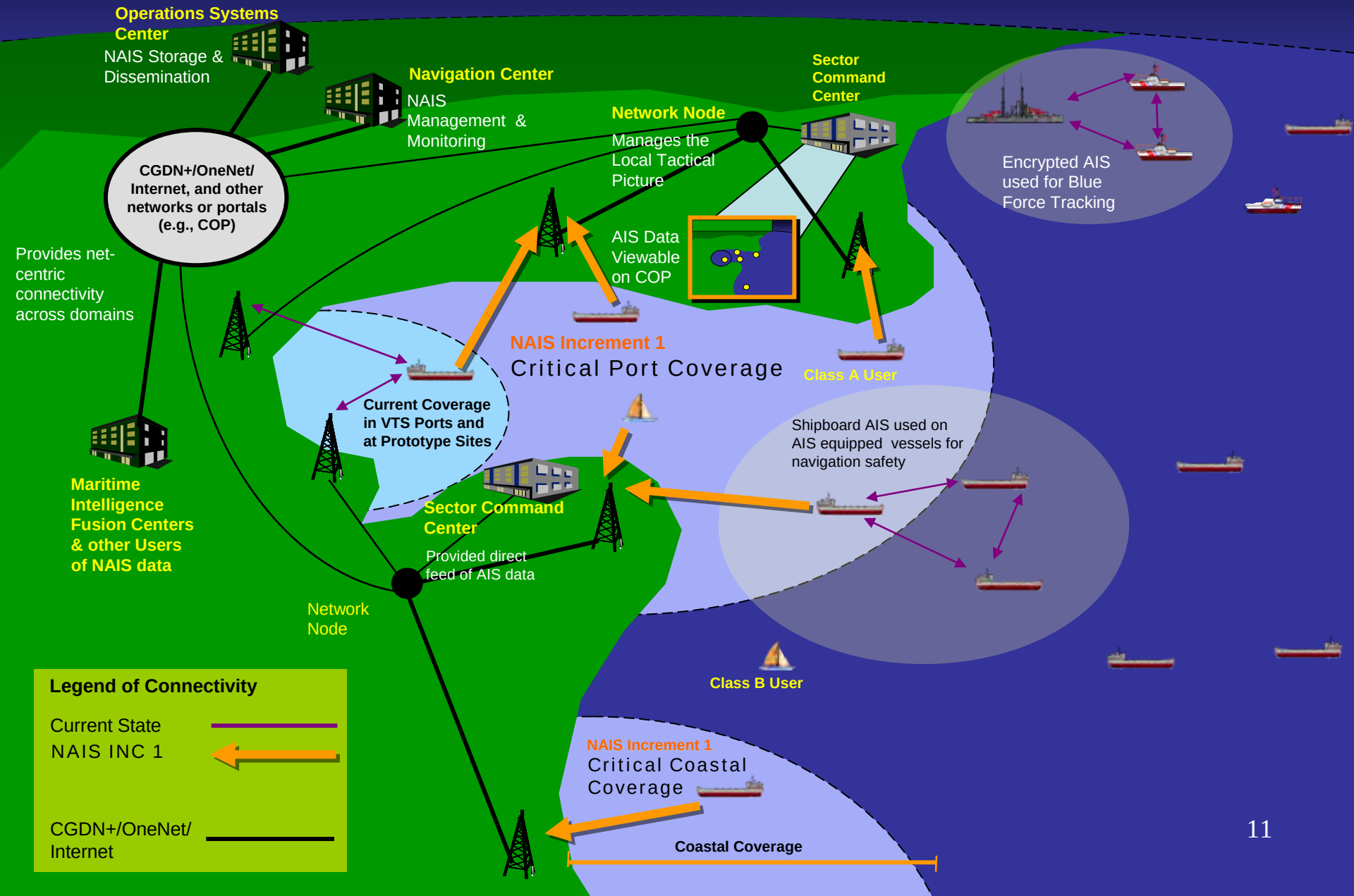
- Service Contract to satellite provider
- Contract for AIS on offshore platforms
- MIPR to National Data Buoy Center for AIS on data buoys
- System support to be included in each contract

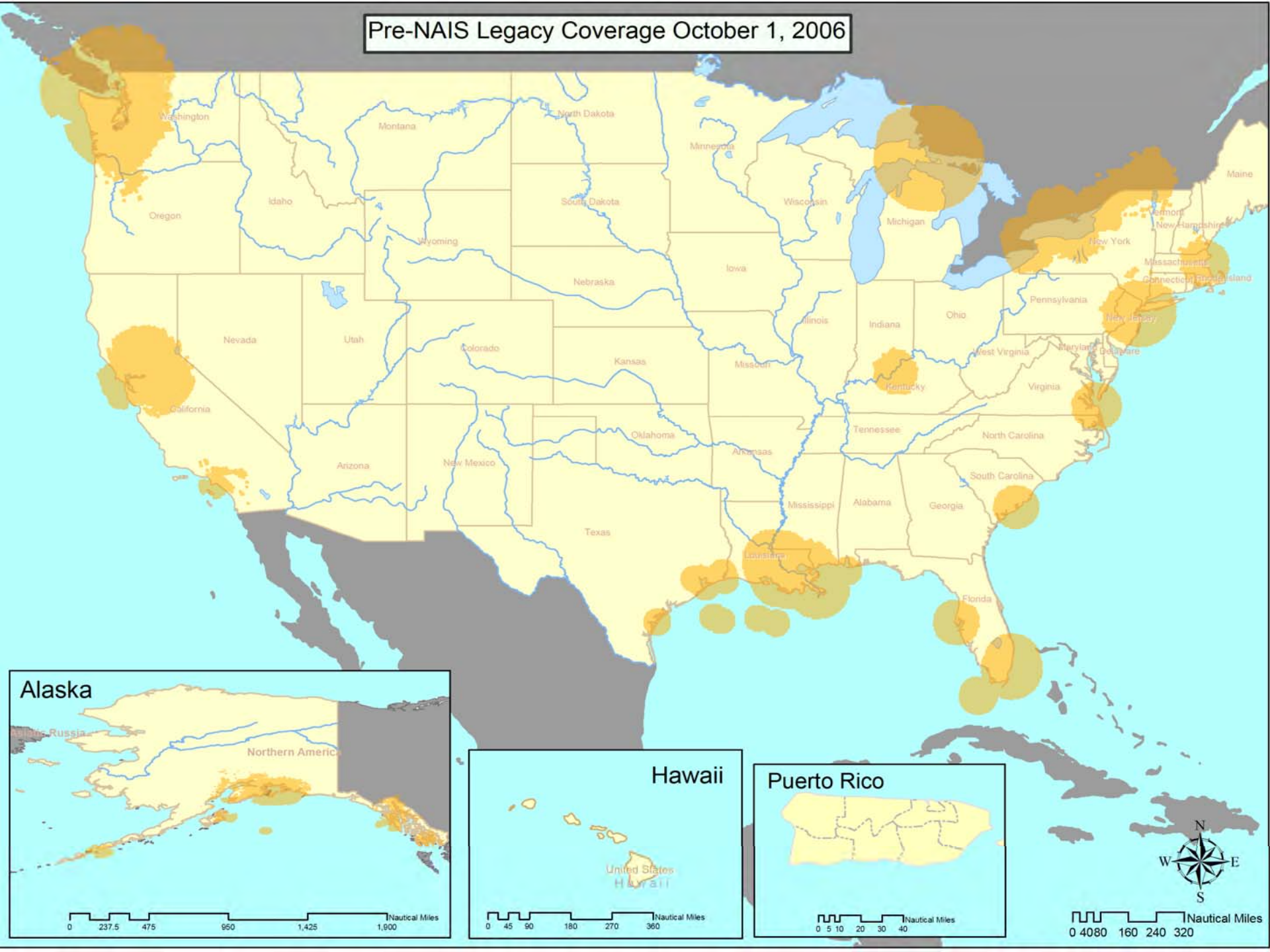
Backbone For All Increments

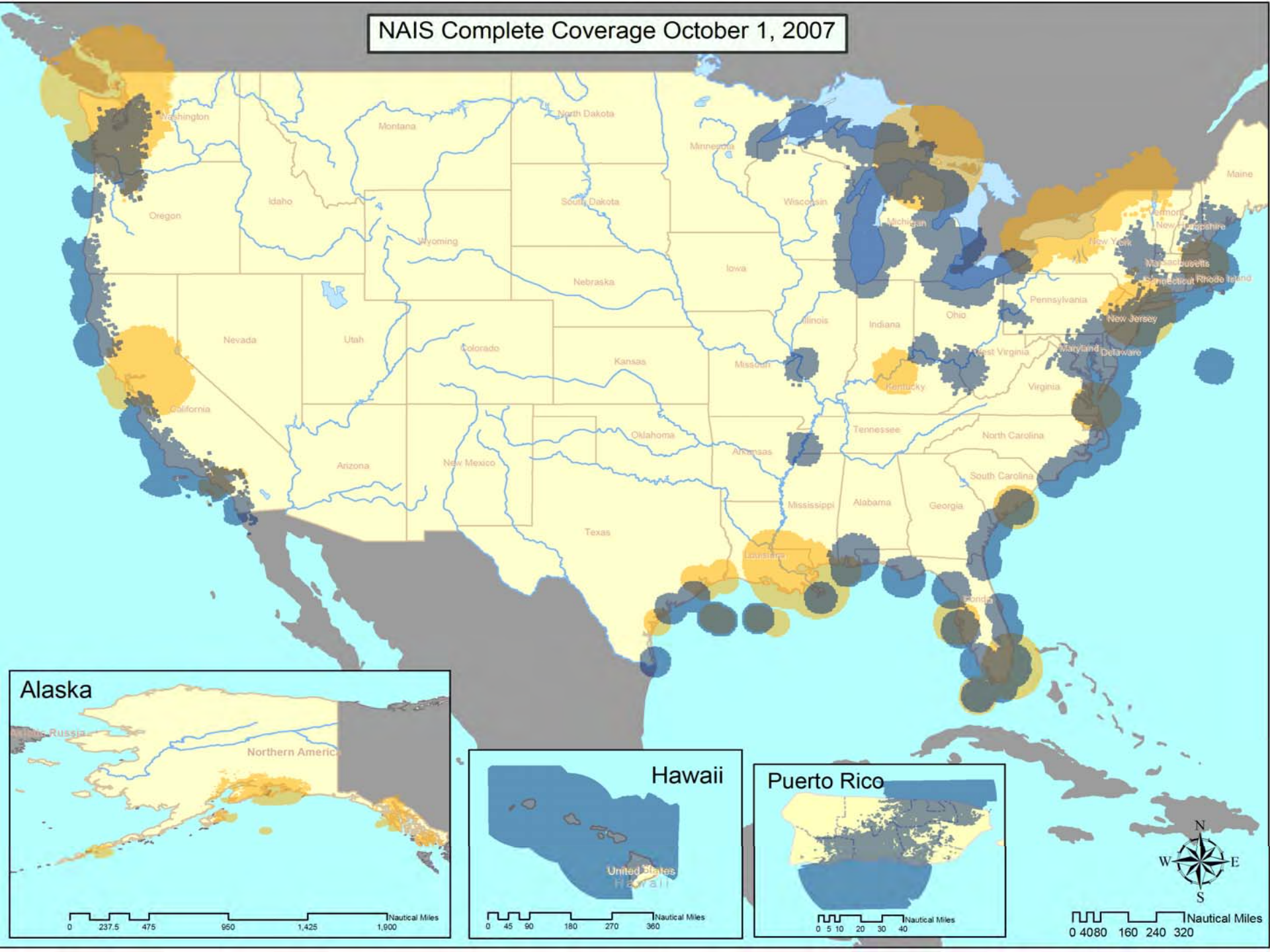
Telecommunication and Information Systems Command (TISCOM) Connectivity Services (CGDN+/DHS OneNet)
Operations Systems Center (OSC) for Enterprise Data Warehouse Services
Navigation Center (NAVCEN) for System Operations Center Services

Nationwide AIS Operational View 1

Increment 1 – Receive Only in 55 Critical Ports + 9 Coastal Areas

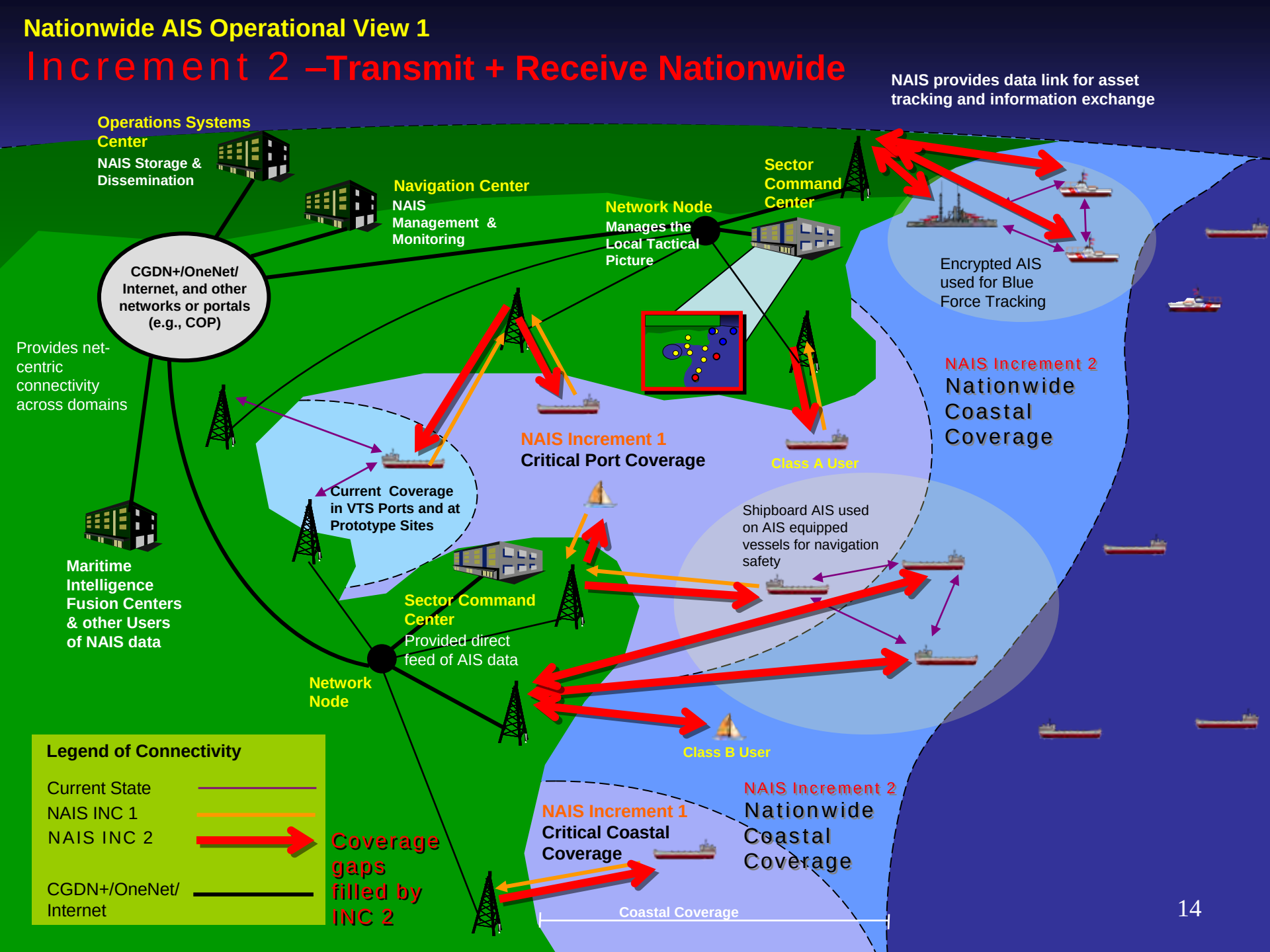



Pre-NAIS Legacy Coverage October 1, 2006
Washington
Montana
North Dakota
Minnesota
Maine
Oregon
Idaho
South Dakota
Wisconsin
Michigan
Vermont
New Hampshire
New York
Massachusetts
Connecticut
Rhode Island
Wyoming
Iowa
Nebraska
Pennsylvania
New Jersey
Illinois
Indiana
Ohio
Nevada
Utah
Colorado
Kansas
Missouri
West Virginia
Maryland
Delaware
Kentucky
Virginia
California
Oklahoma
Tennessee
North Carolina
Arkansas
Arizona
New Mexico
South Carolina
Mississippi
Alabama
Georgia
Texas
Louisiana
Florida
Alaska
Asiatic Russia
Northern America
0 237.5 475 950 1,425 1,900 Nautical Miles
Hawaii
United States
Hawaii
0 45 90 180 270 360 Nautical Miles
Puerto Rico
0 5 10 20 30 40 Nautical Miles
N
W
E
S
0 4080 160 240 320 Nautical Miles


NAIS Complete Coverage October 1, 2007
Washington
Montana
North Dakota
Minnesota
Maine
Oregon
Idaho
South Dakota
Wisconsin
Michigan
Vermont
New Hampshire
New York
Massachusetts
Connecticut
Rhode Island
Wyoming
Iowa
Nebraska
Pennsylvania
Ohio
Illinois
Indiana
New Jersey
Nevada
Utah
Colorado
Kansas
Missouri
West Virginia
Maryland
Delaware
Kentucky
Virginia
California
Oklahoma
Tennessee
North Carolina
Arkansas
Arizona
New Mexico
South Carolina
Mississippi
Alabama
Georgia
Texas
Louisiana
Florida
Alaska
Northern America
Nautical Miles
0 237.5 475 950 1,425 1,900
Hawaii
United States
Hawaii
Nautical Miles
0 45 90 180 270 360
Puerto Rico
Nautical Miles
0 5 10 20 30 40
N
W
E
S
Nautical Miles
0 4080 160 240 320

Nationwide AIS Operational View 1

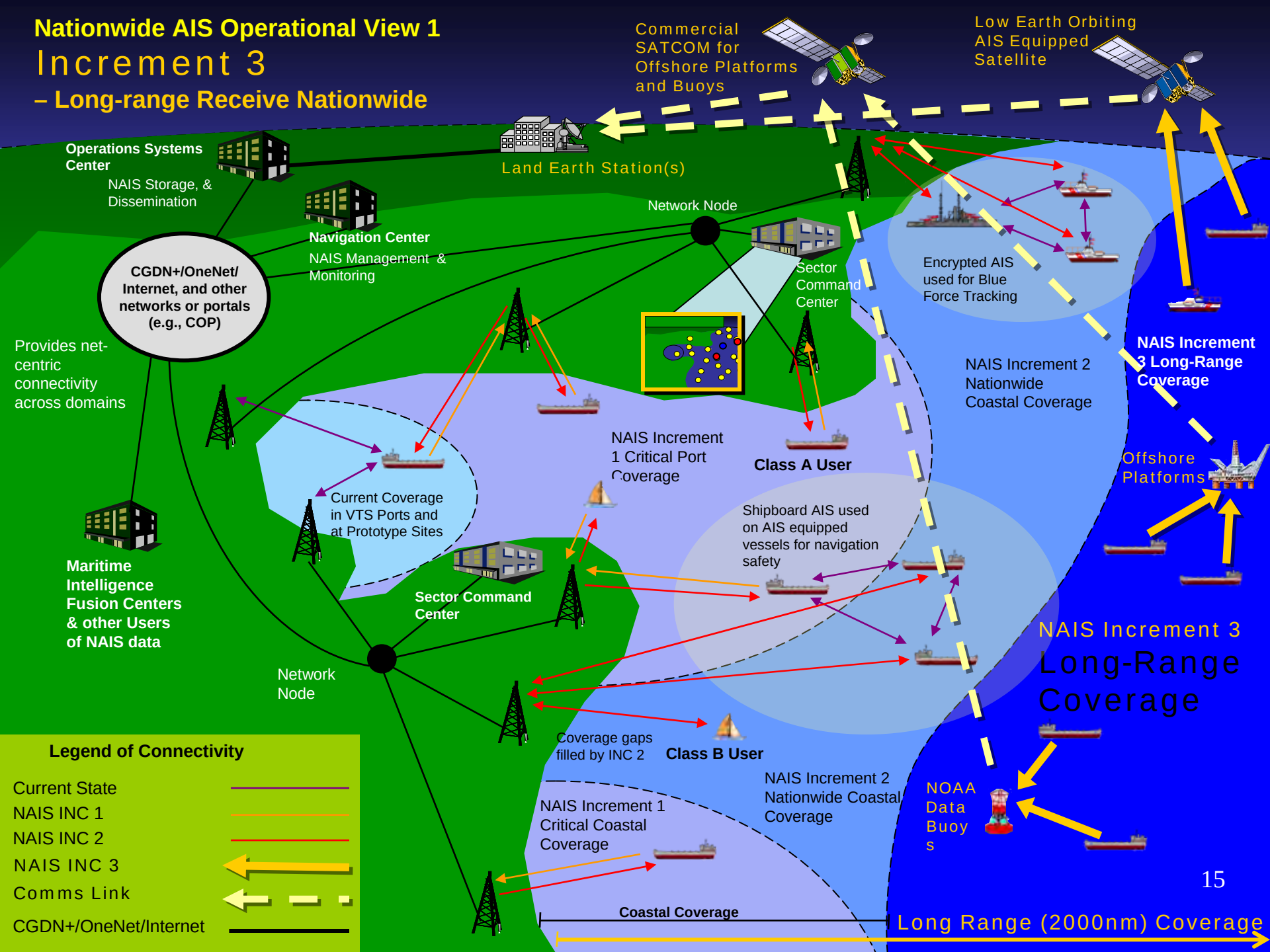
Increment 2 –Transmit + Receive Nationwide



Nationwide AIS Operational View 1

Increment 3

– Long-range Receive Nationwide



Near-Term Events

- Increment 1:
  - Sponsor's Assessment of OT&E
  - Complete transition to sustainment
- Increment 2:
  - Release I-2 Phase I RFP (Nov '07)
  - Award Contract (4th Qtr FY08)
- Increment 3:
  - Proof of Concept Satellite Launch (Dec '07)
  - Satellite and Weather Buoy Concept Testing Report (3rd Qtr FY08)

Key Contacts & Information Links

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Project Manager
202.475.3120

Gene Lockhart
Deputy Project Manager
202.475.3144

Kerri Williams
Contracting Officer
202.475.3192

Other Resources:

NAIS Project Website: www.uscg.mil/nais

NAIS I-2 RFP Development Website: www.naisproject.net

USCG NAVCEN Website: http://www.navcen.uscg.gov

Questions ?

Leading Change from the Middle 2001-2007



"Any commander who fails to exceed his authority is not of much use to his subordinates."

ADM Arleigh Burke

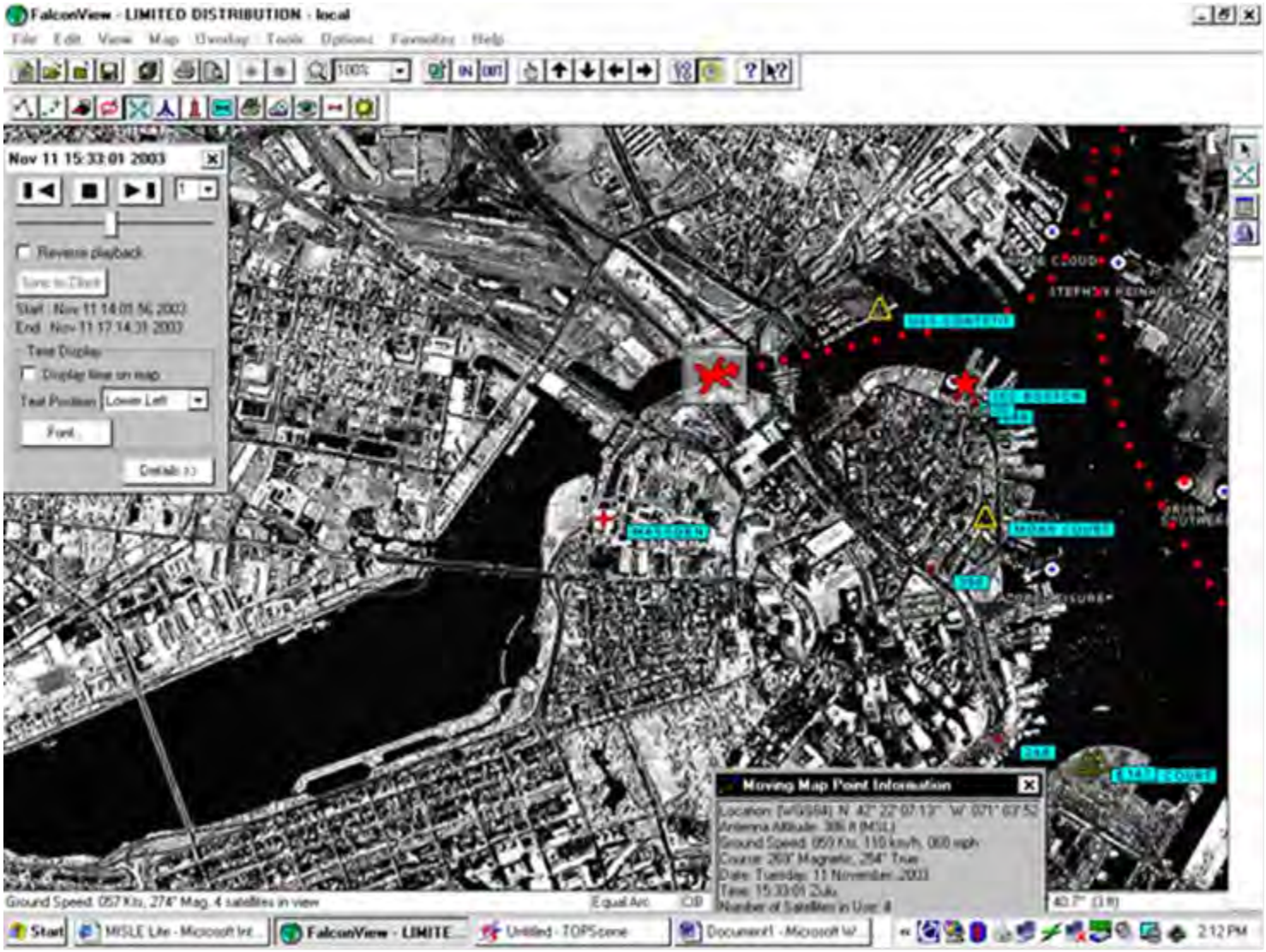
Leading Change from the Middle

- What did we help accomplish?

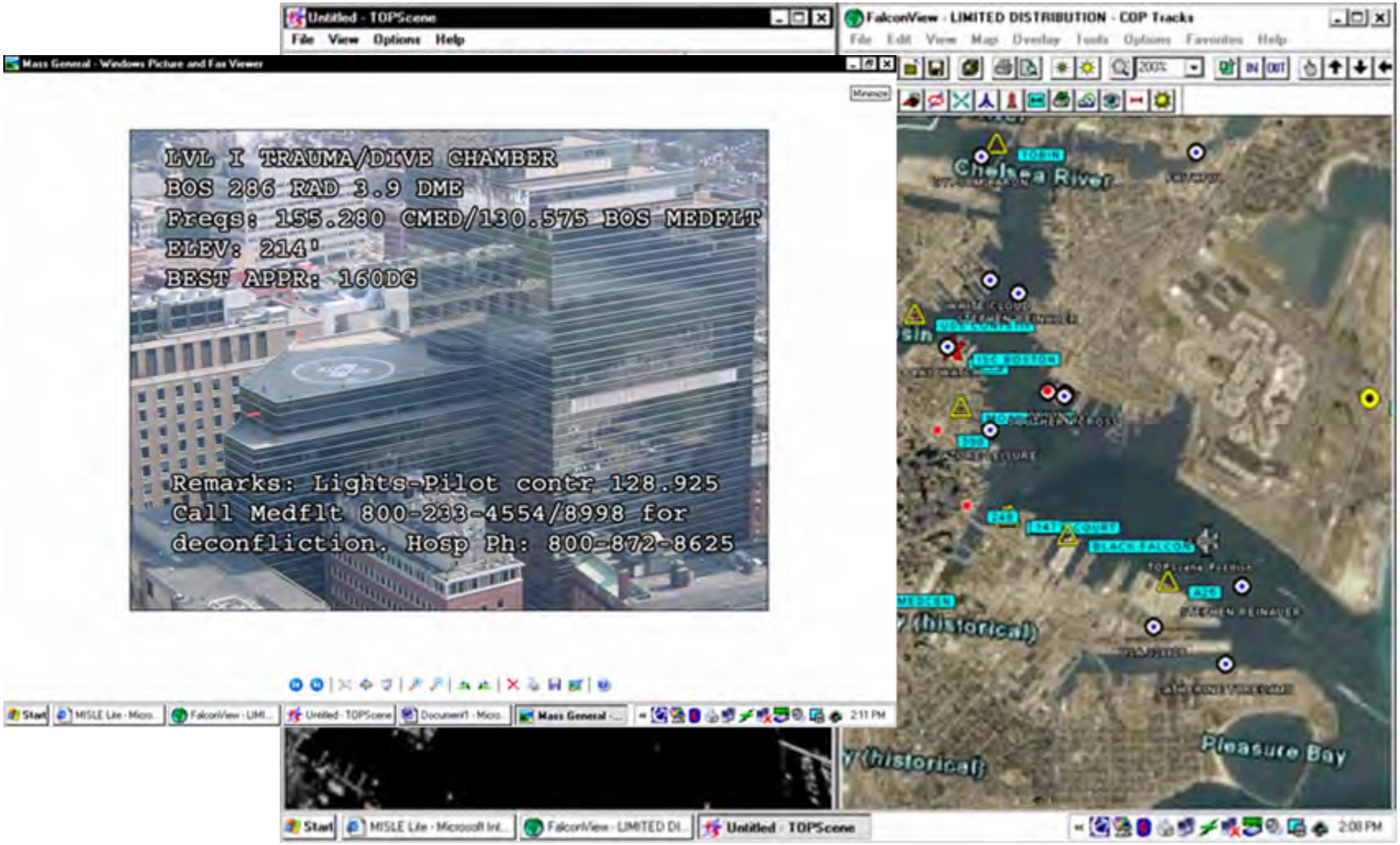
Leading Change from the Middle

- Enterprise deployment of National Graduate School Masters Program
- Enterprise certification of Toughbook tablet computer
- Enterprise deployment of MISLE Lite
- Enterprise deployment of CG Mission Planning and Execution System
- Enterprise approval for connecting cellular air cards to Coast Guard Data Network
- A more efficient and effective Coast Guard

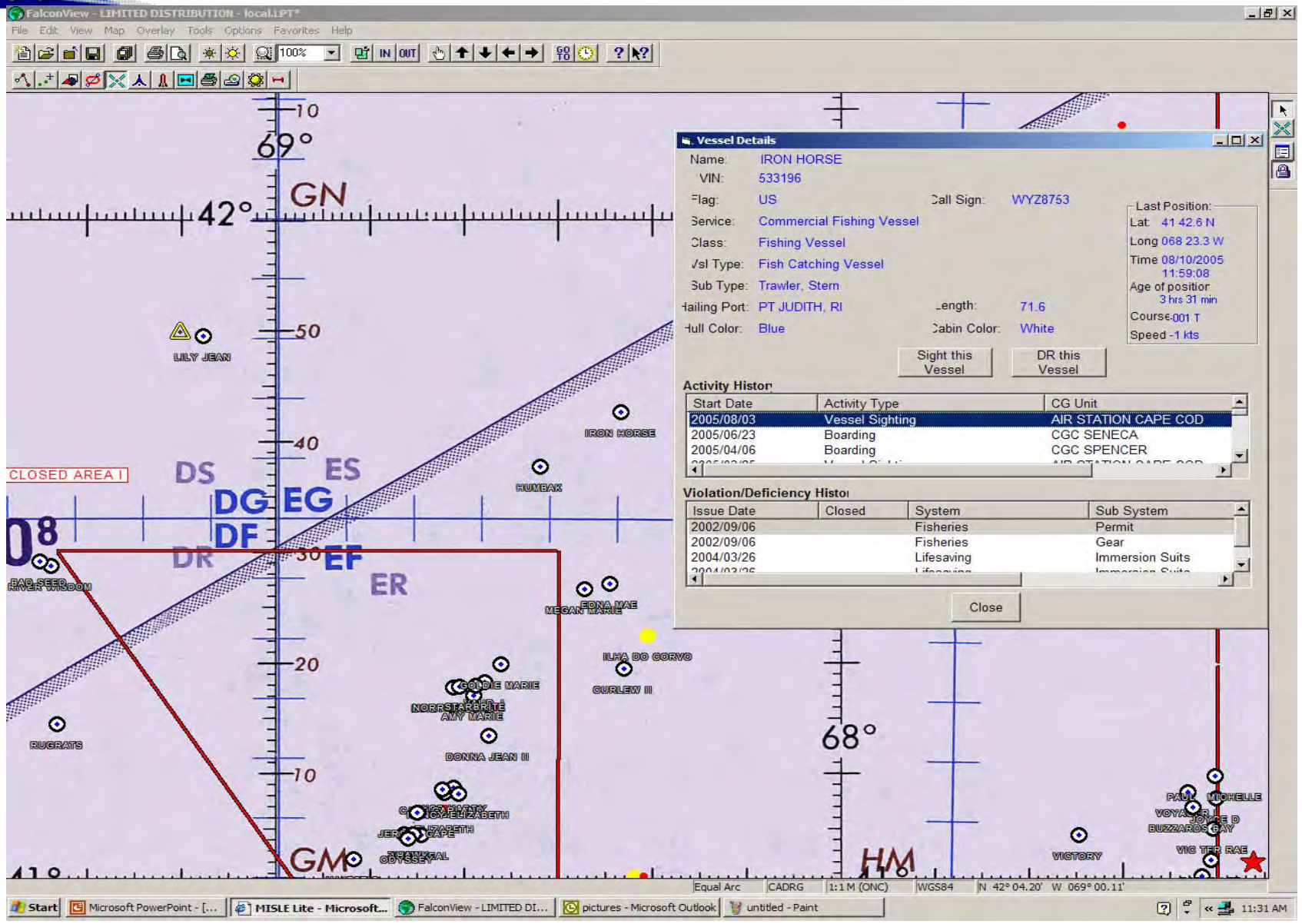
Leading Change from the Middle



Leading Change from the Middle



Leading Change from the Middle



Leading Change from the Middle

- More importantly, how did we do it?

Leading Change from the Middle

Collaboration between hundreds of Coast Guard men and woman, DOD and DHS partners, industry, and academic partners

Just a few that come to mind:

Air Station Cape Cod Flight Mechanics, Rescue Swimmers, Storekeepers, and Yeoman

Bill Imle, Geoff Abbott, Lil Maizer, Bob DeYoung, Bill Balsinger, Ryan Kowalske, Matt Carty, Tim Travis, Michael Krouse, Hank Davison, Paul Hastert, Stephen Hoogasian, Snake Clarke, Doug Robbins, Lou Williams, Rick Barone, Eric Ridge, Ed Friedman, Bob Gee, Robert Netsch, Ryan Wheeler, Joe Healy, Paul Deveau, Charlie Mathieu, Pete Batcheller, Bob Feigenblatt, Rick Christoffersen, Bill Saunders, Dorothy Winchell, Freda Anderson, Tom Sperduto, Bob Griffin, Bob Giffen, Mike Butler, Ralph Kohler, Bonnie Stratton, Dave Morgan, Mitch Morrison, Dave Sohn, Audrey Pfeiffer, Nancy Weiss, Dan Ronan, Jack Santucci, Chris Bailey, Michael Boykin, Toni Dineen

Leading Change from the Middle



Leading Change from the Middle



Questions?

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508-360-4398
christopher.l.kluckhuhn@uscg.mil





Represented by

Kevin Lawson

Applications Development Branch Chief

Office of Information Technology

Transportation Security Administration

kevin.lawson@dhs.gov

The IdeaFactory Site



The IdeaFactory Innovation Process



Stop by **BOOTH #404** for a demonstration



Idea Factory

Please send all inquiries about the IdeaFactory to:

ideafactory@dhs.gov

Virtual World, Real People



U.S. Coast Guard Innovation Expo
October 29 - Nov 1, 2007
New Orleans, LA

John Lester (Pathfinder Linden)
Boston Operations Director
Linden Lab





what is Second Life?

Second Life is a unique online world

- international community, multiuser, persistent world
- not a game
- Linden Lab provides a platform and tools for content creation
- all content created and owned by the residents
- client is Open Source

best fictional analogs are Stephenson's Metaverse from "Snow Crash" or Vinge's Otherverse from "True Names"

A new approach to world building



- Stream all content via broadband
- Extremely dynamic content
- Apply distributed/grid computing

15,000 CPUs
375 square miles
Escape, Entertainment, Education, Work, Advocacy
Free to Access, Fees for Land Ownership









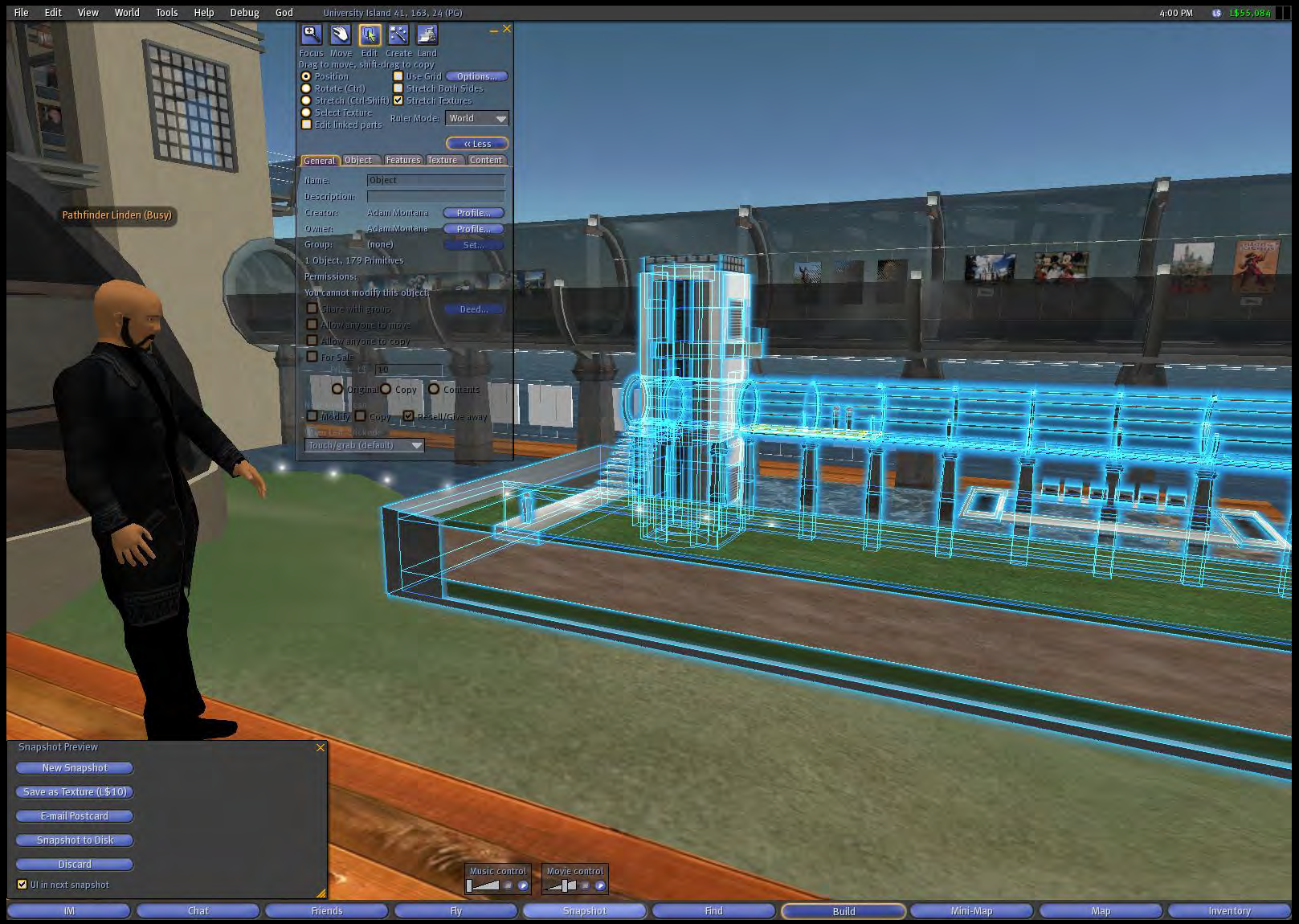
Demographics





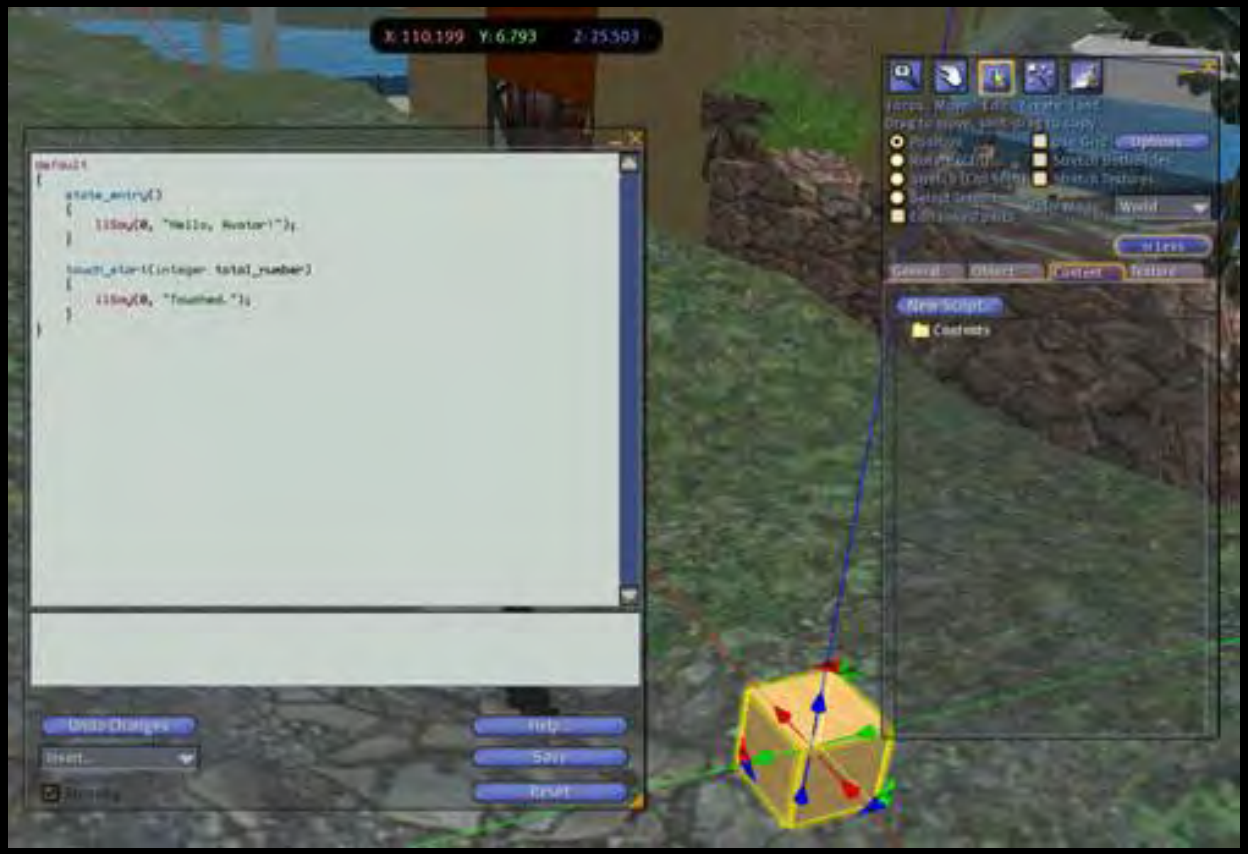
- SL community older and more gender balance than typical MMO games
- Gender neutral by hours of use
- Median age of 35
- Real world skills translate into Second Life (remember, this isn’t a game)

Building in 3D using geometric primitives



http://tinyurl.com/2bwrtj

Breathing Life into Objects with Scripting



Any object can be given physical behavior, interactivity,
and can communicate with the world
(e.g., email, HTTPRequest, XML-RPC)

Property Rights

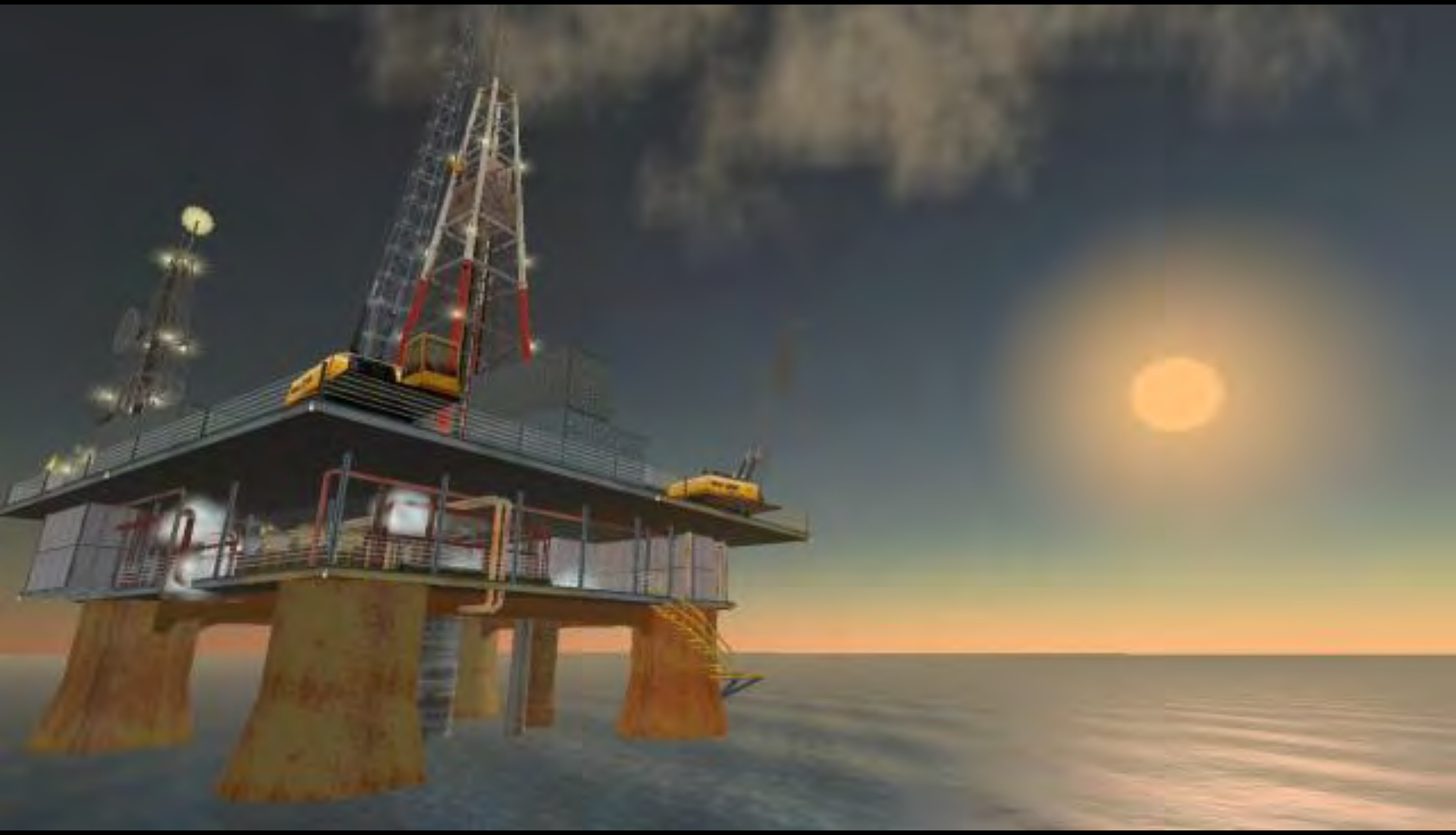


In Second Life, residents own their creations

What does this mean?

- Residents retain their Intellectual Property rights to their creations
- Residents may buy and sell L$ for US$
- Residents may license their creations back into the real world

It’s about the richness of relationships between People and Places



Emotional Bandwidth

:(:) ;P

Emotional Bandwidth



Use real-world social cues and proxemics, animations and sounds,
and create your visual identity






3824


ERNEST
ERNEST
ERNEST


regina spektor

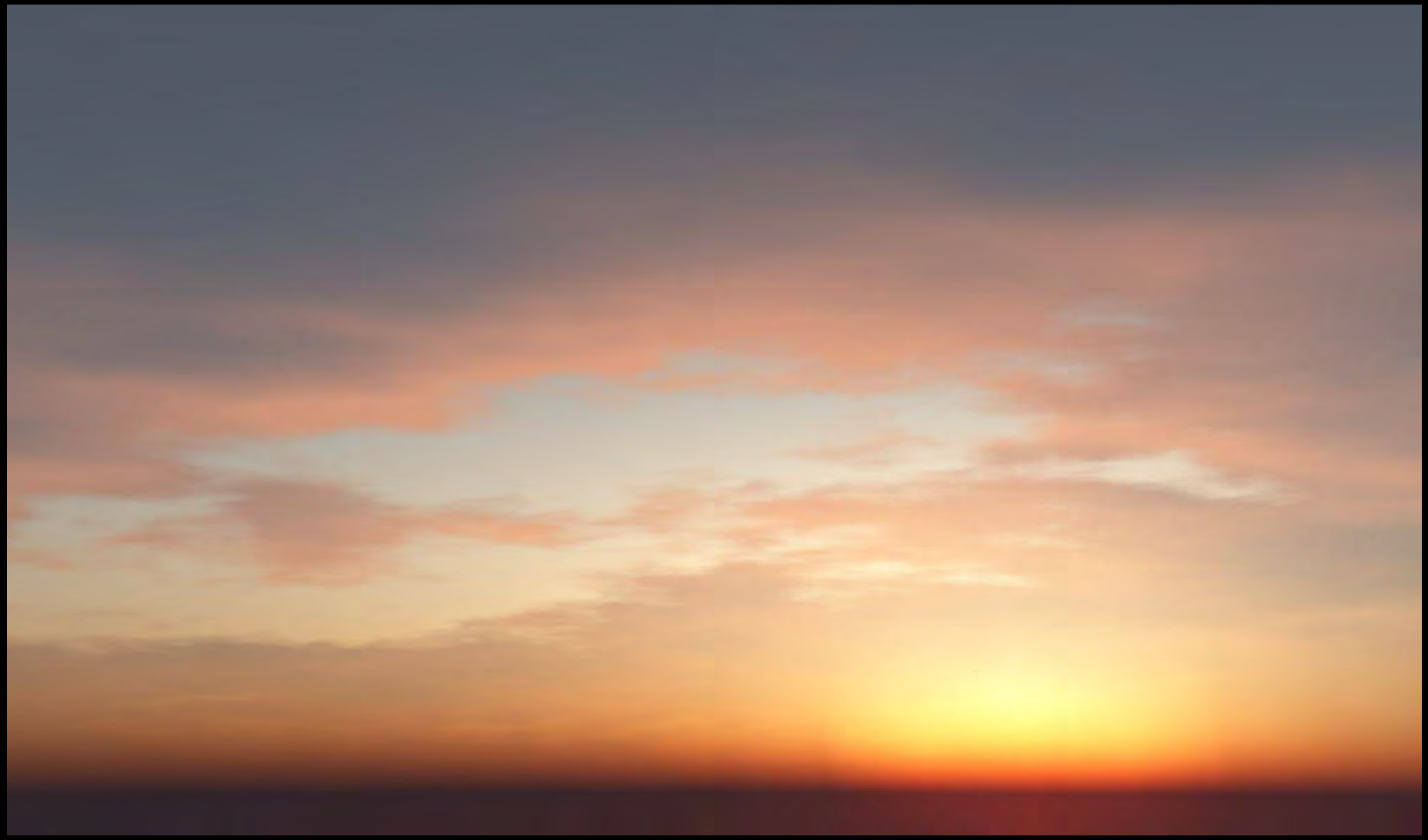


People + Tools + Shared Spaces = Metaverse

Increased Perceptual Immersion
leads to
Increased Emotional Bandwidth

We are trading the Tyranny of Geography
for the Bondage of Bandwidth

Advanced Atmospheric Rendering



"WindLight" – Customizable and Tradable Assets

Voice



Spatialization and Attenuation

Sculpted Primitives – “Sculpties”









Creating Complex and Organic Shapes

Shared Spaces based on Reality



Vassar College's recreation of the Sistine Chapel

Shared Spaces based on Reality



Vassar College's recreation of the Sistine Chapel

Shared Spaces based on Reality



Vassar College's recreation of the Sistine Chapel

Shared Spaces based on Imagination



“Straylight” Island – Created using Sculpted Primitives

Shared Spaces based on Imagination





"Straylight" Island – Created using Sculpted Primitives

Perceptually Immersive Environments



Windlight Feature – Customized and Sharable Atmospheric Effects











Companies

- IBM, Cisco: 6,000 employees
- Starwood Hotels “aloft” - real hotel prototyping with customer input
- Pontiac - engineers meeting with Residents
- http://secondlife.reuters.com

Real Educators

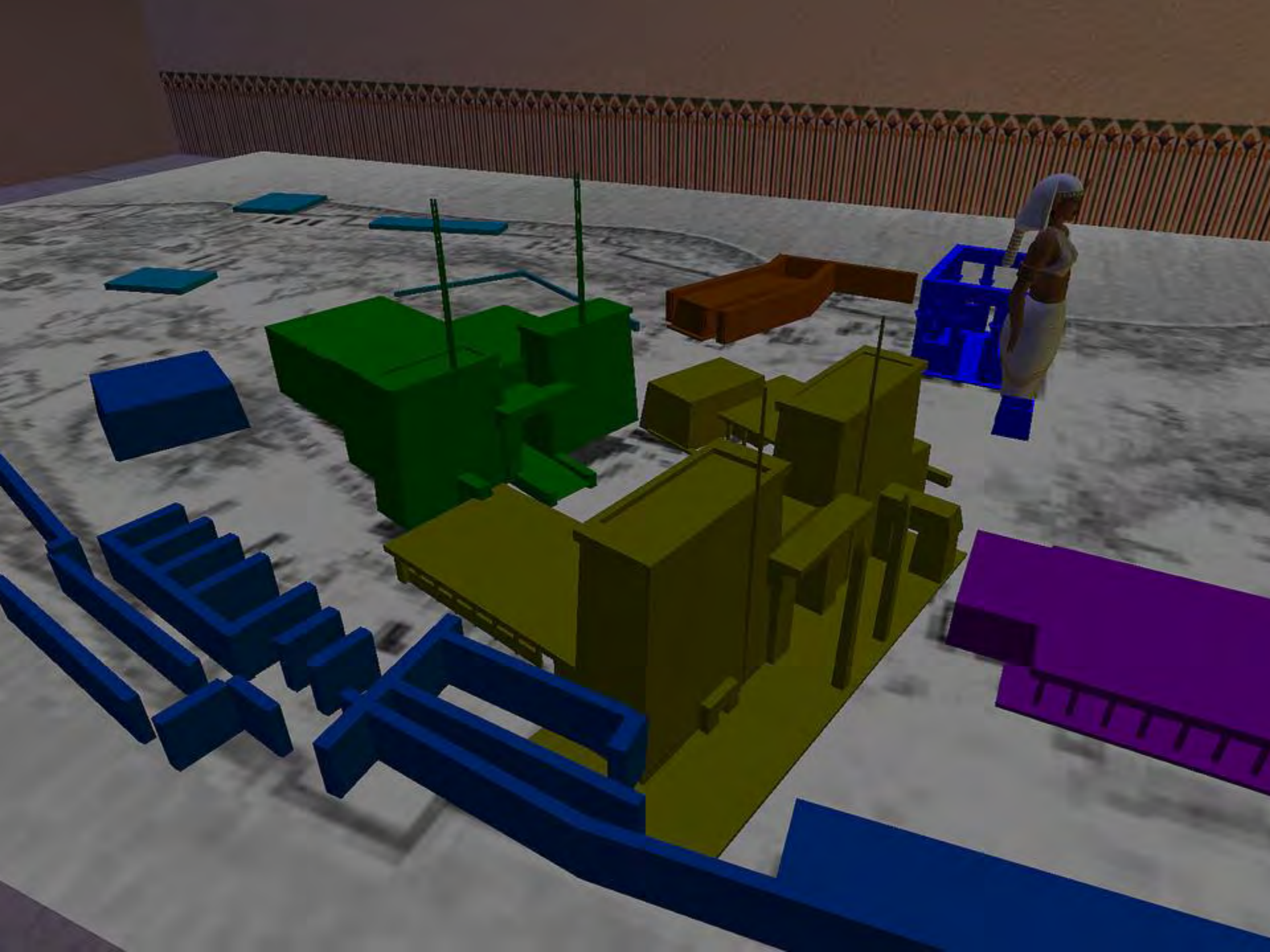


- Teach using simulation and experiential learning
- New media art, programming, cultural studies, language training…
- Over 300 different universities and academic organizations

Personal Creativity



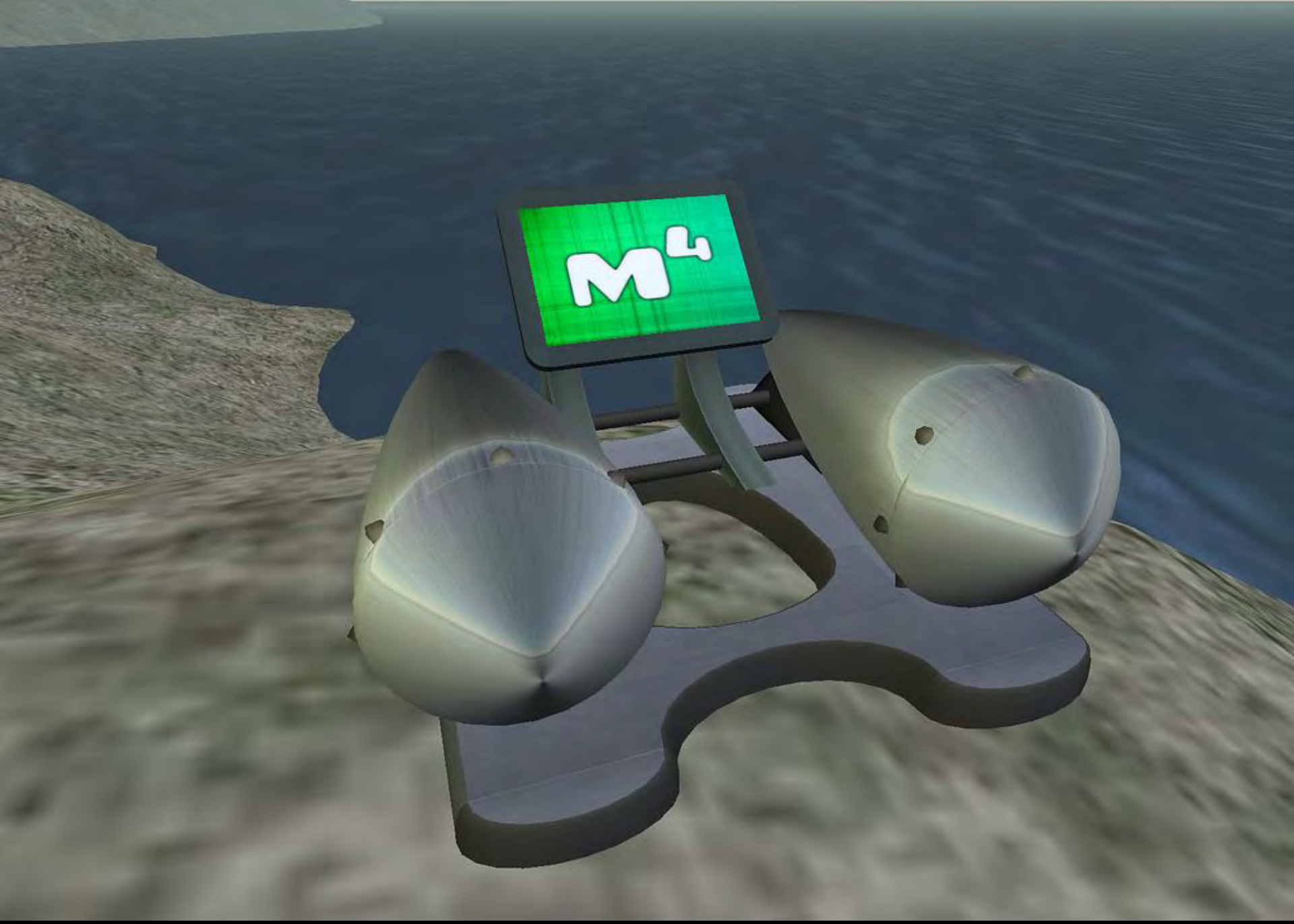


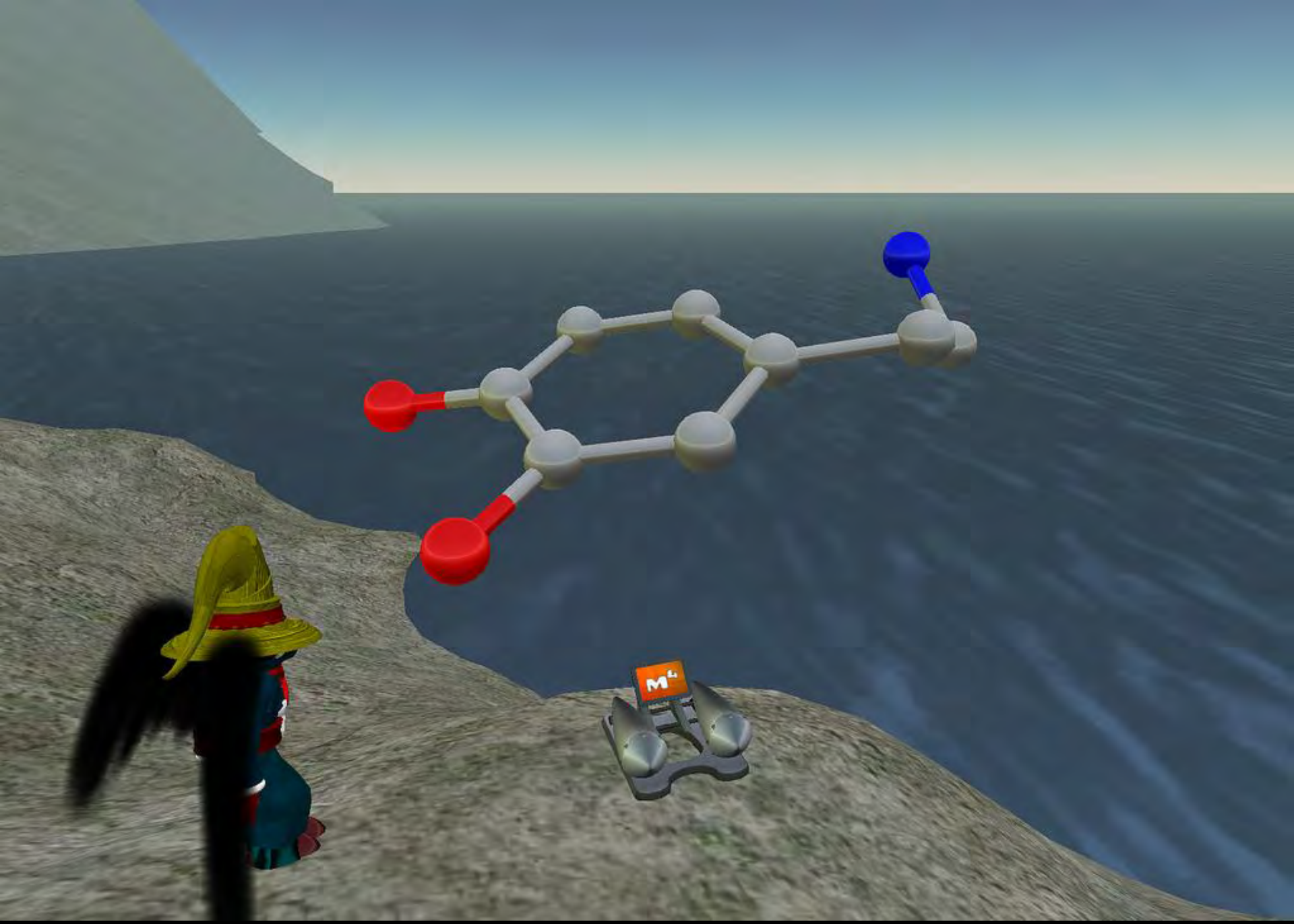


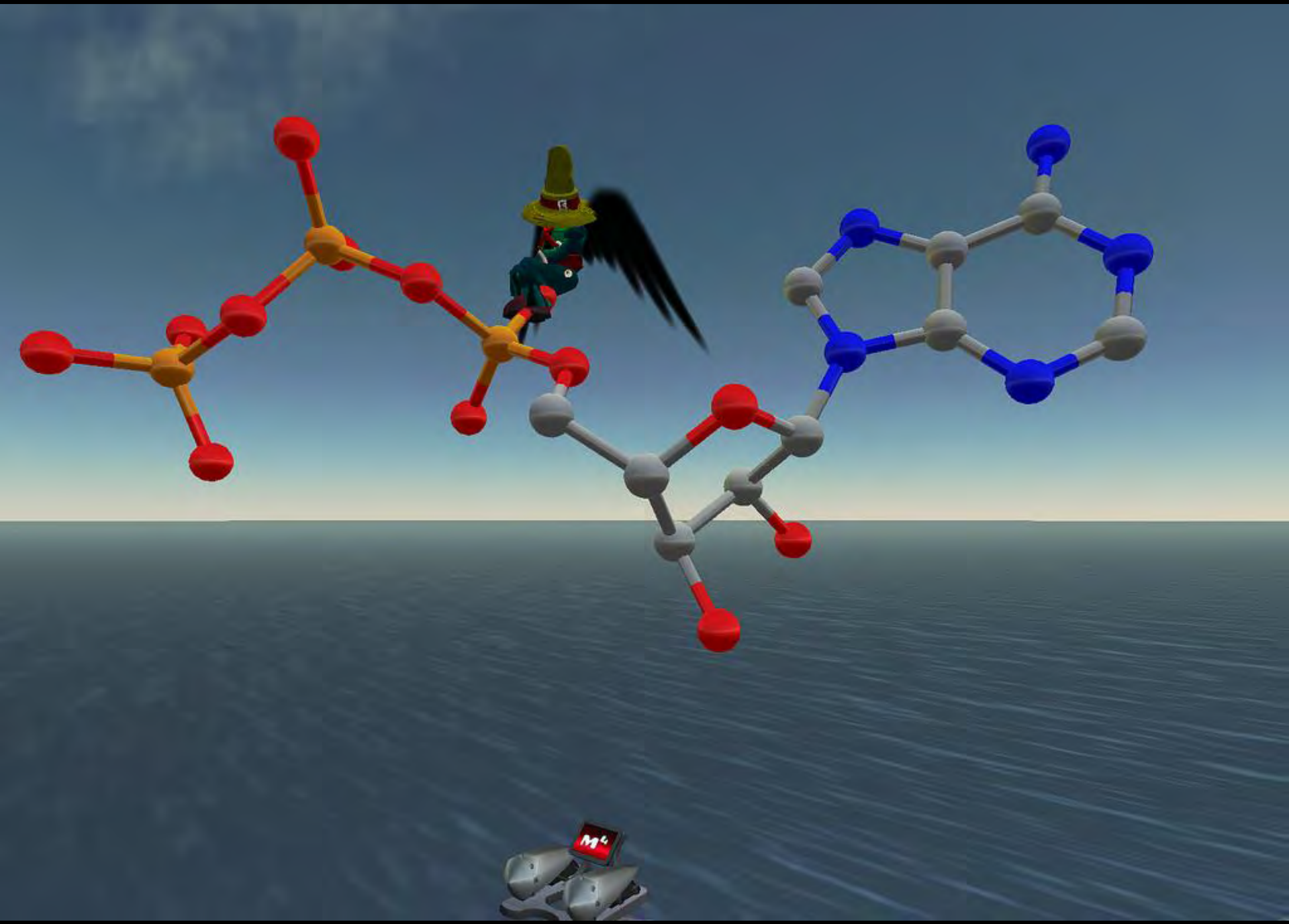


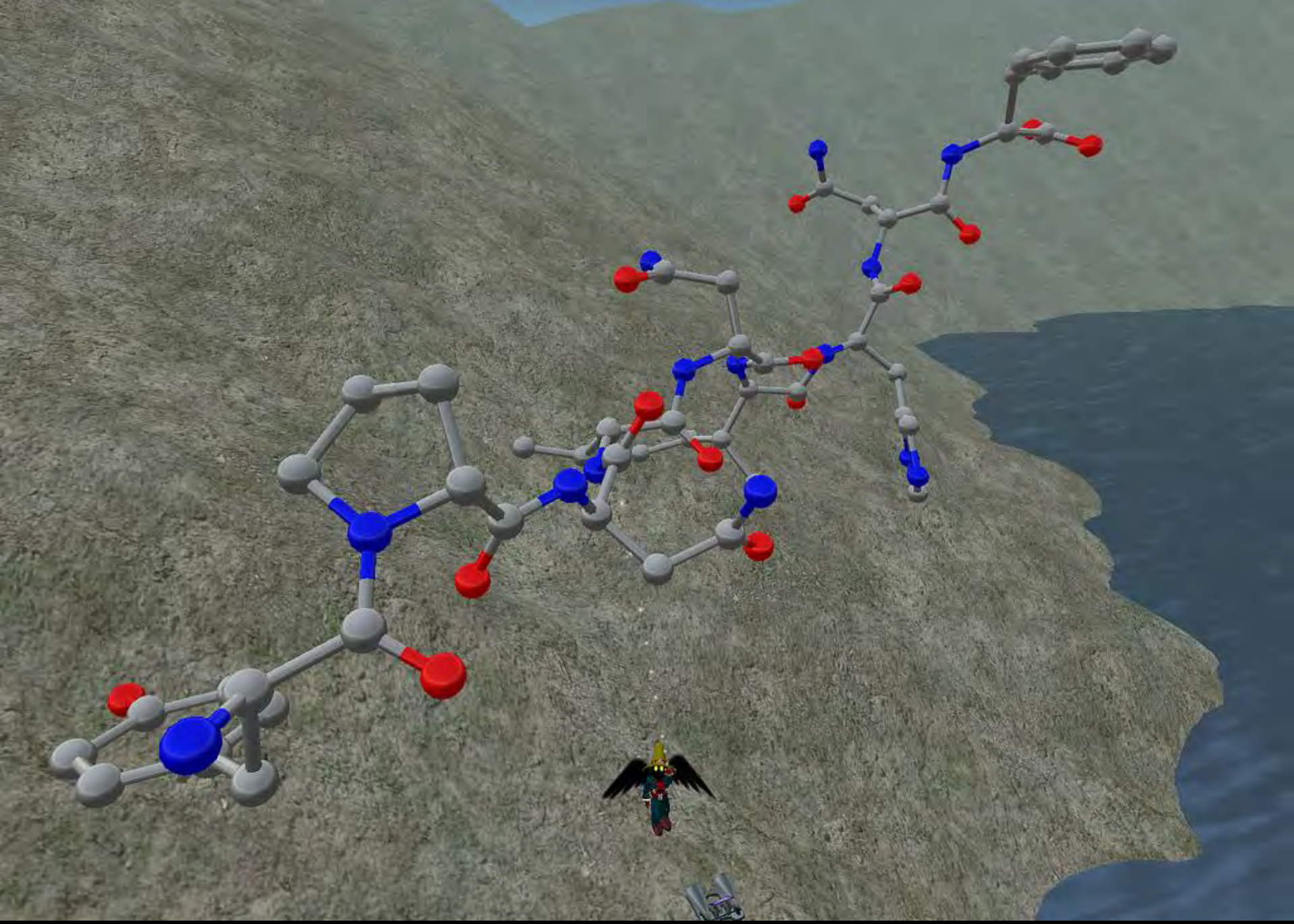



M4


M4







NOAA - Education in Second Life
http://tinyurl.com/yovhmp



NOAA - Education in Second Life
http://tinyurl.com/yovhmp



NOAA - Education in Second Life
http://tinyurl.com/yovhmp



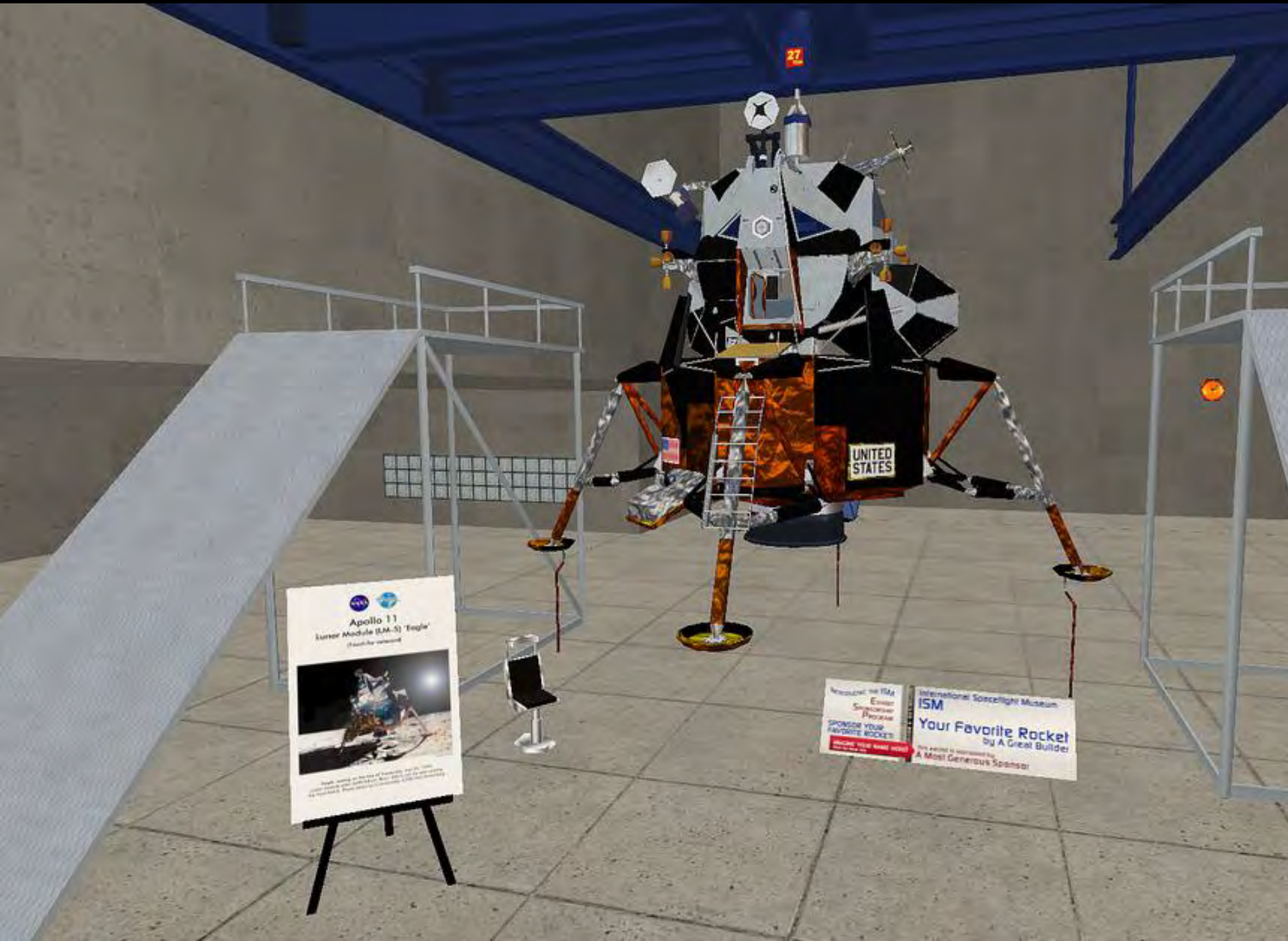
Aimee Weber's Hurricane Hunter Demo

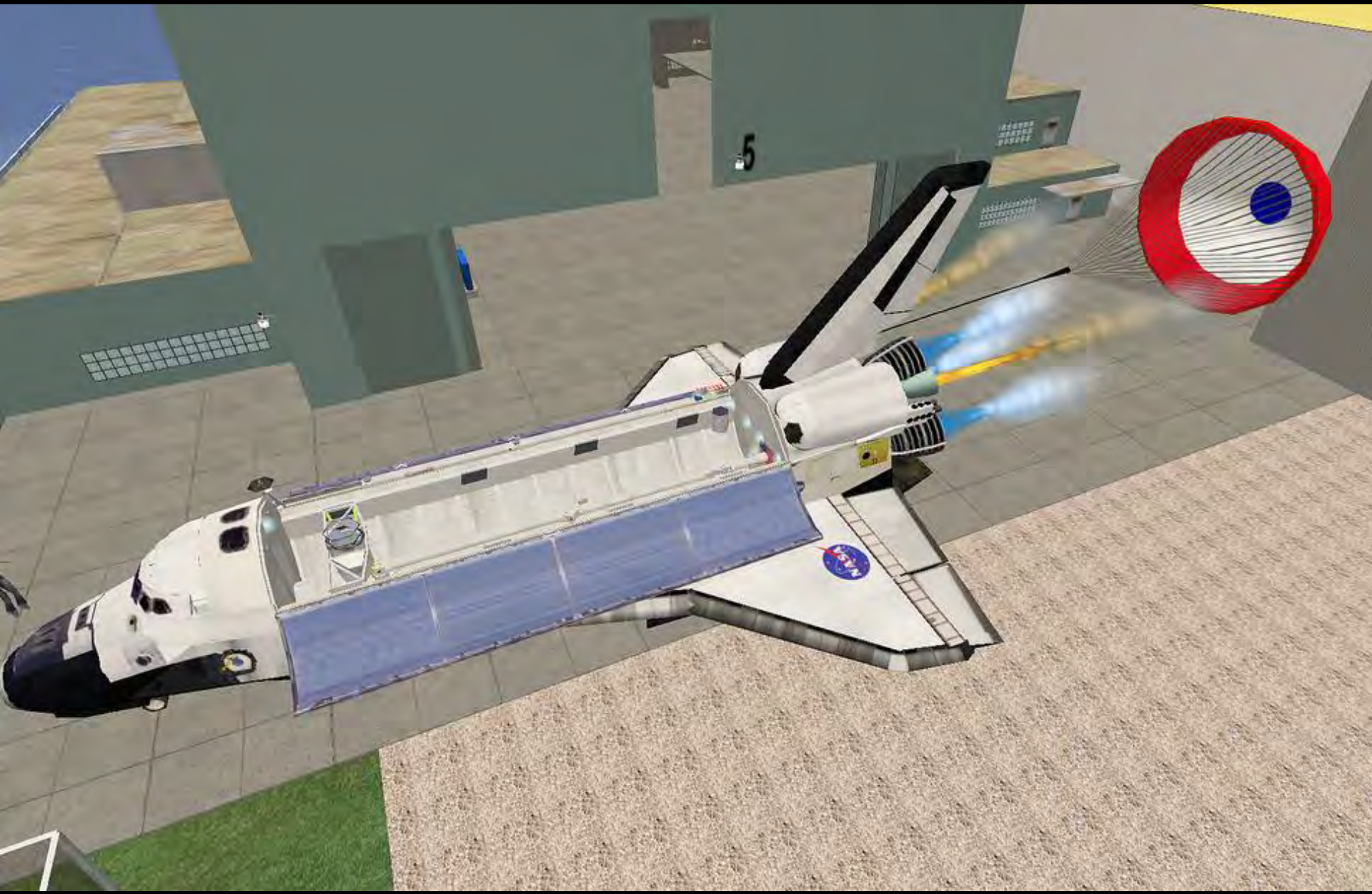
NOAA - Education in Second Life
http://tinyurl.com/yovhmp



NASA - International Spaceflight Museum




27
UNITED STATES
Apollo 11
Lunar Module (LM-5) 'Eagle'
International Spaceflight Museum
ISM
Your Favorite Rocket
by A Great Builder
A Most Generous Sponsor
SPONSOR YOUR FAVORITE ROCKET

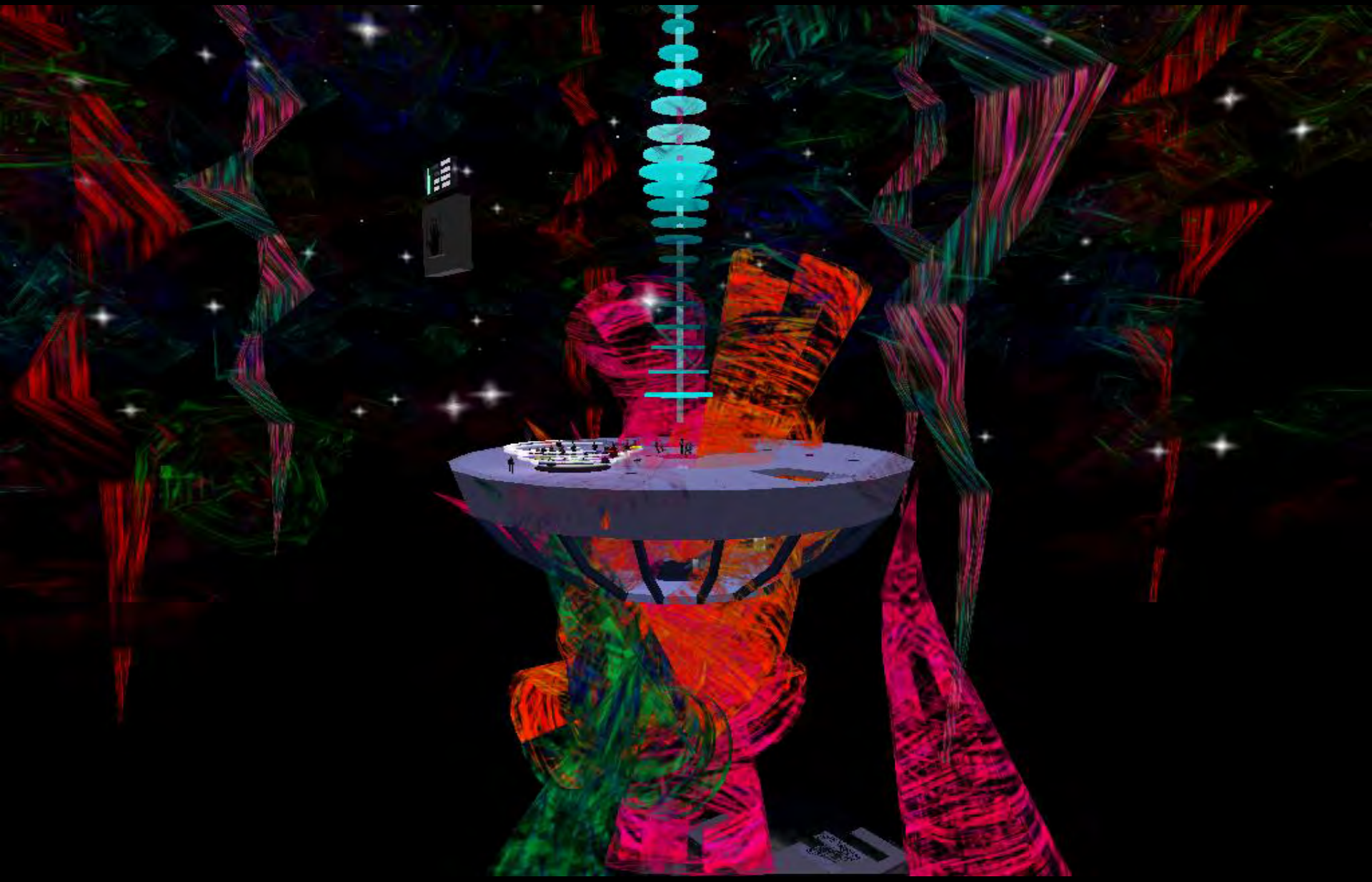

5
NASA

New Media Art



- DanCoyote Antonelli's Live Performance Art

New Media Art

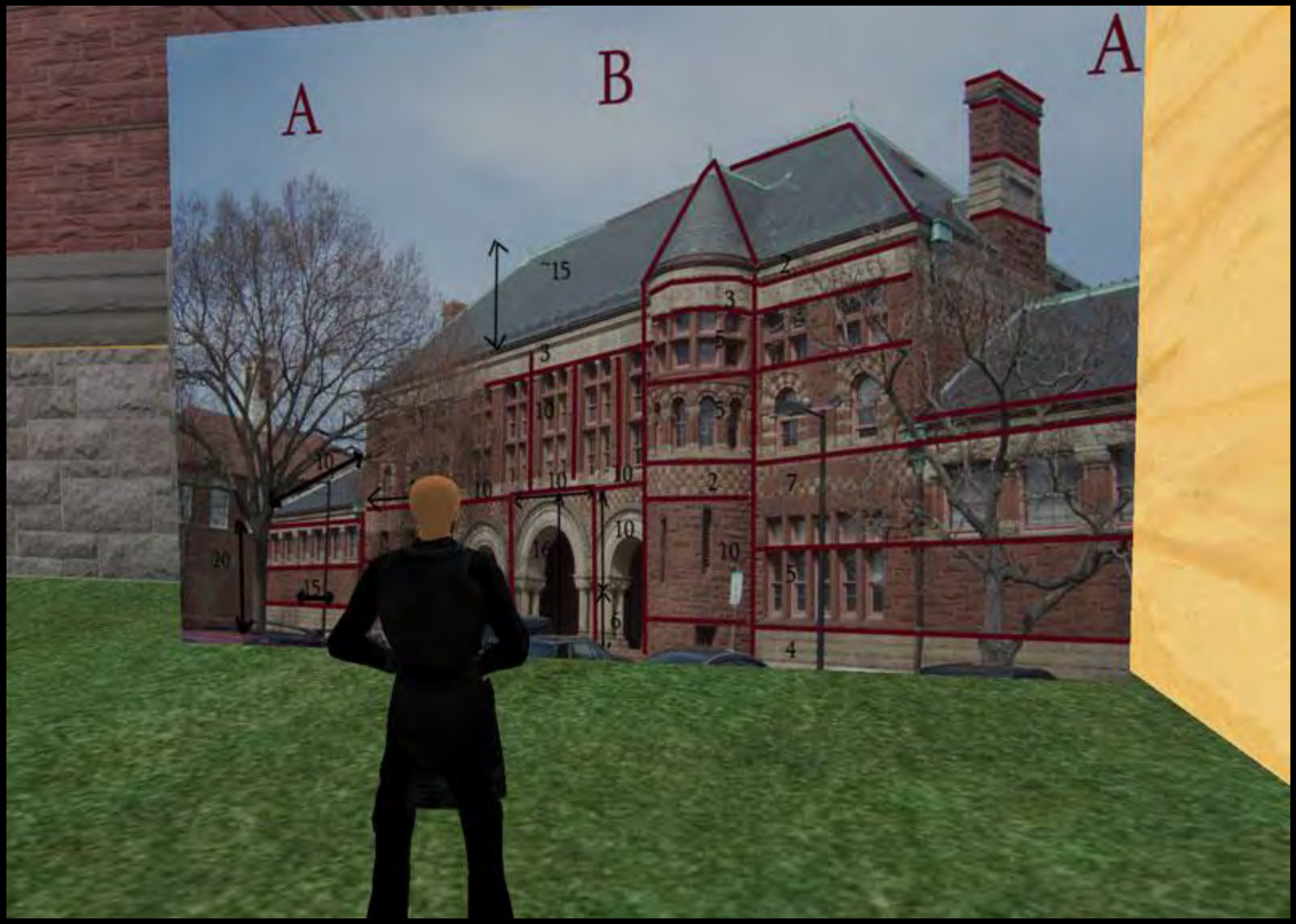


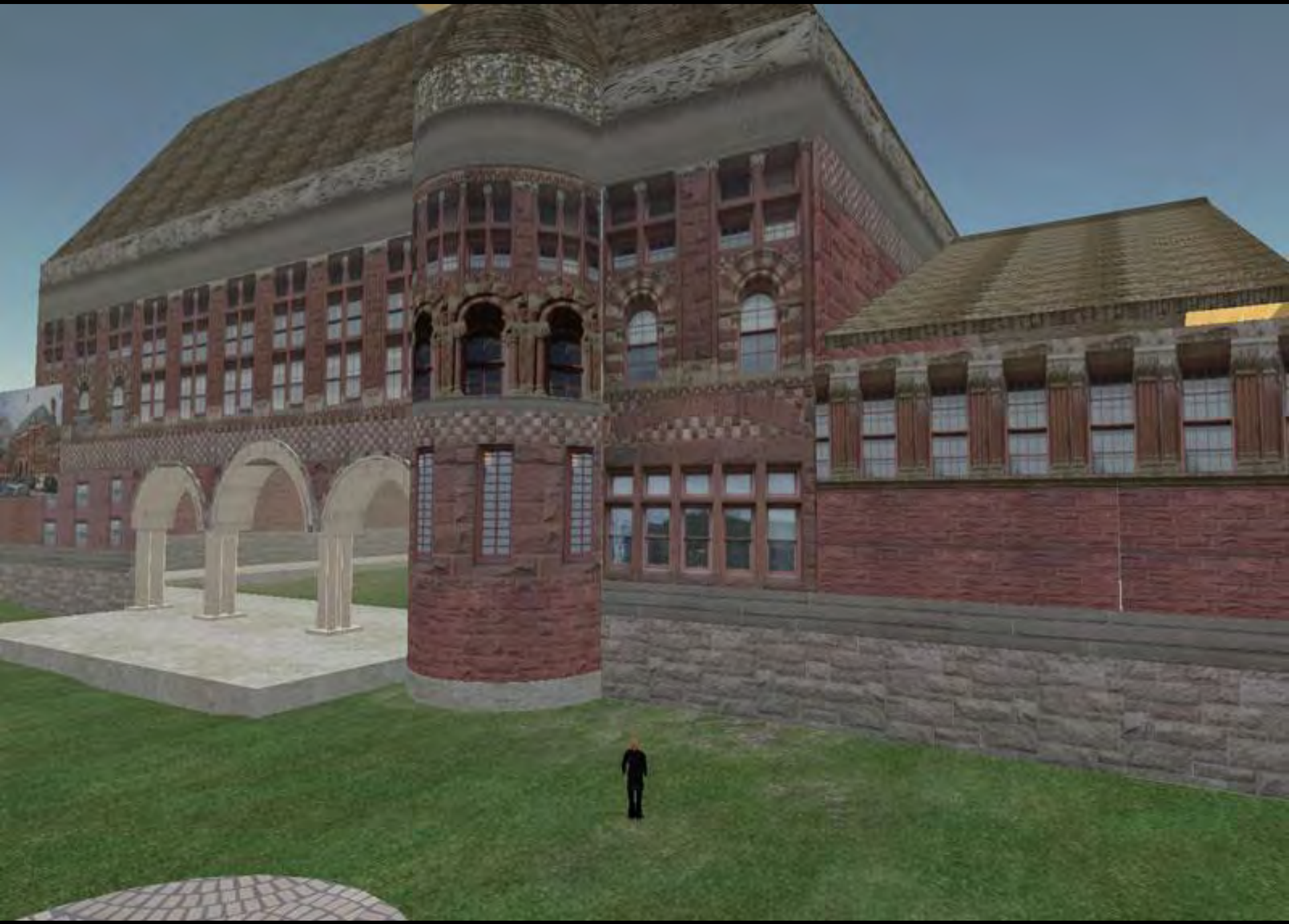
Creating a Digital Ecosystem



Ecosystem Working Group - http://tinyurl.com/t7w7t

Harvard's Austin Hall – Berkman Center







Welcome to “Mixed Reality”

communities of support

Asperger's Syndrome
stroke survivors
depression support
cerebral palsy
children with cancer







From Creative Vision to Reality



Second Life Resident Simon Walsh, founder of "Wheelies"

http://tinyurl.com/y26hug

first responder and caregiver training



process
experience
empathy


Sick Delivery Point
Medical Screening
Secure Room
Registration
Dispensing / Vaccination Area
Observation
Mental Health Area
Mass Education
Special Needs Area
ASYMPTOMATIC
Administration Area
Greeter
ENTRANCE
Sick Assessment & Holding Area
SYMPTOMATIC
Triage


Screening
5

Innovation is atoms + electrons

I see people in Virtual Reality every day on the bus…

Tools for changing electrons into atoms…

The playing field is getting flatter…



3D Printing



Fabjectory.com

An Artifact from the Near Future



The Challenge of New Media



Bell's attempt to sell patent for telephone to Western Union
"Why would telegraph operators want to talk to each other?"

First "online" marriage, via telegraph, late 1800's

It took 65 years after the invention of the printing press for someone to decide that putting page numbers in books was a "good idea."

We get Mired in Past Frameworks



Phonograph and the Spoken Word

What does a "classroom" look like in a virtual world?

The telephone is not the telegraph

Movies are not plays

Thank you for listening



- John Lester (SL: Pathfinder Linden)
- Friend me on Facebook (John Lester)
- www.pathfinderlinden.com
- Pathfinder@lindenlab.com

Maritime Domain Awareness Day

"Operationalizing MDA"



2007 USCG Innovation Expo

Maritime Domain Awareness Day

"Operationalizing MDA"



2007 USCG Innovation Expo

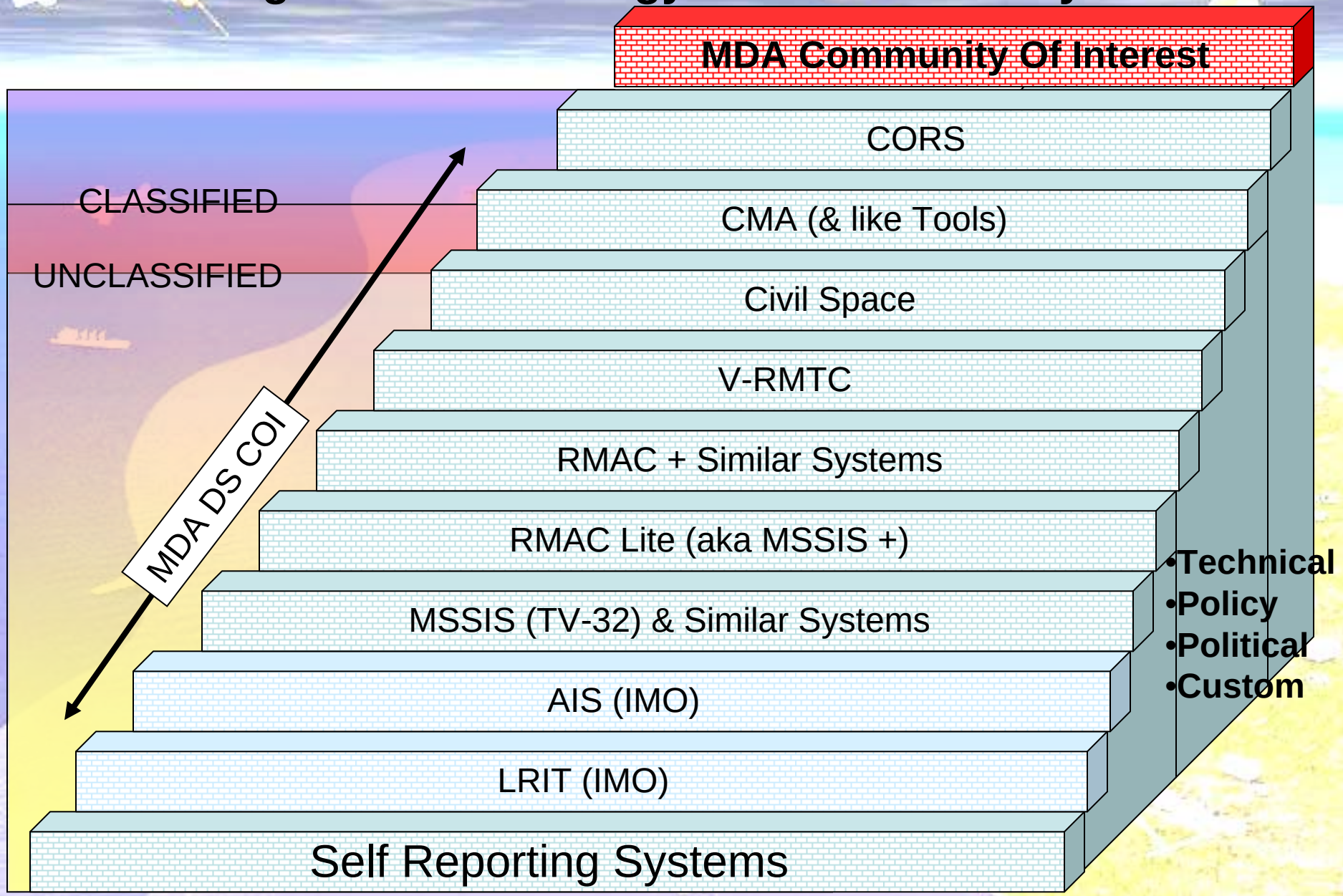
Maritime Domain Awareness Day

"Operationalizing MDA"



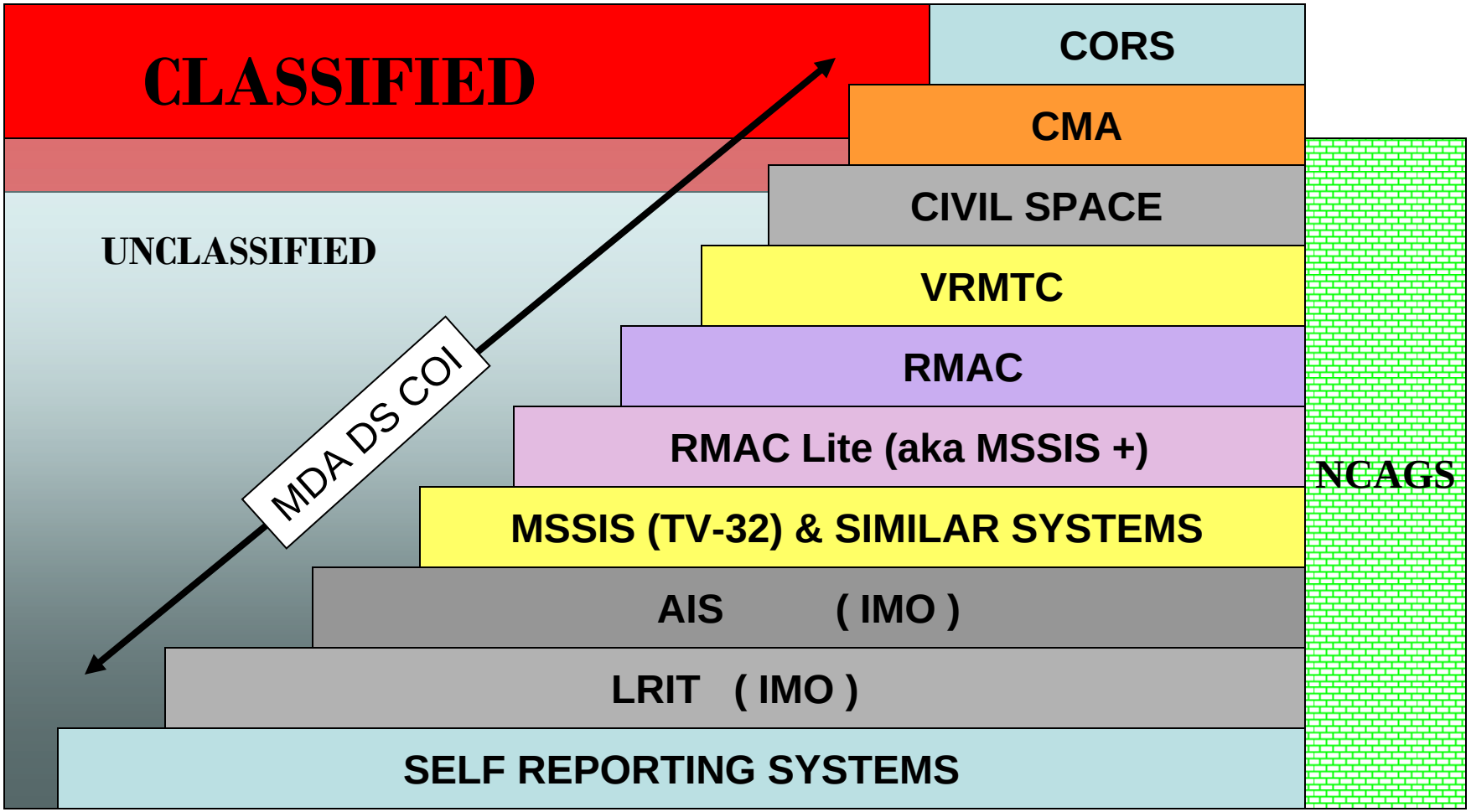
2007 USCG Innovation Expo

Sharing Data: Technology Issues and Policy Issues



Vessel Tracking: Commercial / Fishing / Working / Recreational

International Building Blocks for GMSA



Commercial / Fishing / Working / Recreational

U.S. Coast Guard Innovation Expo

October 30, 2007

DHS Science & Technology Directorate

Maritime Security Program

CAPT David Newton, USCG
Acting Director
Border & Maritime Security Division
Science and Technology Directorate

From Science and Technology… Security and Trust

Homeland Security











Representative Technology Needs

- Wide-area surveillance from the coast to beyond the horizon; port and inland waterways region – detect, ID, and track
- Data fusion and automated tools for command center operations
- Vessel compliance through non-lethal compliance methods
- Enhanced capability to continuously track contraband on ships or containers
- Improved ballistic personal protective equipment for officer safety
- Improved WMD detection equipment for officer safety; improved screening capability for WMD for maritime security checkpoints







Homeland Security

Wide-Area Surveillance

“Wide” area

- From the coast to beyond the horizon
- Port region
- Inland waterways



Technology shortfall

- Three capability areas:
  - Detection
  - Identification
  - Tracking

Operator issues/concerns

- Legacy surveillance tools designed for supporting pre-9/11 mission set (response-oriented)
- Need for *persistent* surveillance capability
- Classification of small, stealthy vessels
- Ability to access and fuse intelligence data into actionable information

Homeland Security

Wide-Area Surveillance (continued)

Cross-functional values of the technology

- Primary customers – USCG, CBP (AMO)
- Planned partnership with other relevant agencies to prototype and evaluate long-term solutions to WAS sensor and platform requirements



Future anticipated deployments

- Demonstrate a persistent WAS COTS/GOTS capability to explore CONOPS and data integration issues
- Deliverable systems will be driven by the results of the demonstration and in conjunction with customer input throughout the program development process

Homeland Security

Data Fusion and Automated Tools for Command Center Operations

Example – Response to the terrorist attacks of 9/11

- Internal agency challenges
- Inter-agency coordination challenges

Technology shortfall

- Situational awareness tools
- Decision support technologies
- Interoperability when not co-located
- Intelligence asset processing technologies
- *Success depends upon interoperability of multiple systems at differing levels of technological sophistication*



Operator issues/concerns

Note – S&T is seeking to support the mandate in the Safe Port Act of 2006, Section 108, to establish interagency operational centers for port security at all high-risk priority ports

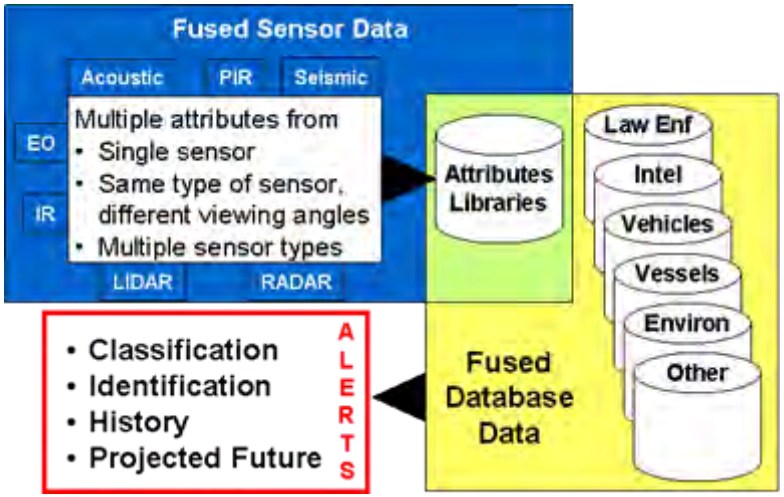
- Multiple sources of data → *timely*, *actionable* information
- Balancing agency-specific capability requirements with those of response partners

Homeland Security

Data Fusion and Automated Tools for Command Center Operations (continued)

Cross-functional values of the technology

- Primary customer – USCG
- "Port partners": CBP, TSA, Port Authorities, local metropolitan police and fire departments
- Technical challenges inherent in this effort will impact all agencies with operational responsibilities in response to national emergencies, including terrorist events and natural disasters



Future anticipated deployments

- Pilot program to assess, develop advanced situational awareness and collaboration tools
- Advanced fusion technologies

Homeland Security

Vessel Compliance

Border enforcement personnel have limited tools to compel the compliance of suspect vehicles/vessels

*** Border Security IPT crosswalk**



Technology shortfall

- Non-lethal
- Platform compatibility limitations
- Ability to stop multiple boat types
- Limiting collateral damage
- Leveraging technologies used to stop terrestrial vehicles

Operator issues/concerns

- Compatibility with current CONOPS
- Training and maintenance requirements
- Maximum safety during follow-on interdiction by law enforcement personnel

Homeland Security

Vessel Compliance (continued)

Cross-functional values of the technology

- Primary customers – USCG, CBP, and ICE
- Seeking technologies deployable from multiple platforms: vehicles, vessels, and aircraft
- Ideal solutions will be deployable against both terrestrial and maritime threats



Future anticipated deployments

- Investigate EMP approaches for vehicles and vessels
- Investigate and test feasibility of alternative technologies

Homeland Security

Border Officer Tools & Safety

Provides technologies that will enable border security law enforcement agents to perform their tasks in a border security operation with a higher level of safety







Technology shortfall

- Personal protective equipment (PPE)
  - Effectiveness against increasingly lethal ballistics
  - Weight restrictions
- Detection equipment
  - Handheld
  - “Through-the wall”
  - Humans and contraband

Operator issues/concerns

- Suitable for use across with full spectrum of operational scenarios (PPE)
- Compatibility with DoD, DoJ, and state-of-the art industry equipment (PPE)
- Ease of use, minimal maintenance requirements (Detection equipment)

Homeland Security

Border Officer Tools & Safety (continued)

Cross-functional values of the technology

- Primary customers – USCG, CBP, and ICE
- Seeking solutions that will meet the requirements of all three agencies
- Success will result in the cross-cutting desire to:
  - reduce officer fatalities
  - reduce illegal entry of people and contraband







Future anticipated deployments

- Improved ballistic protection meeting the needs of multiple DHS enforcement agencies
- Handheld inspection devices suitable for hidden compartments on ships or in vehicles

Homeland Security



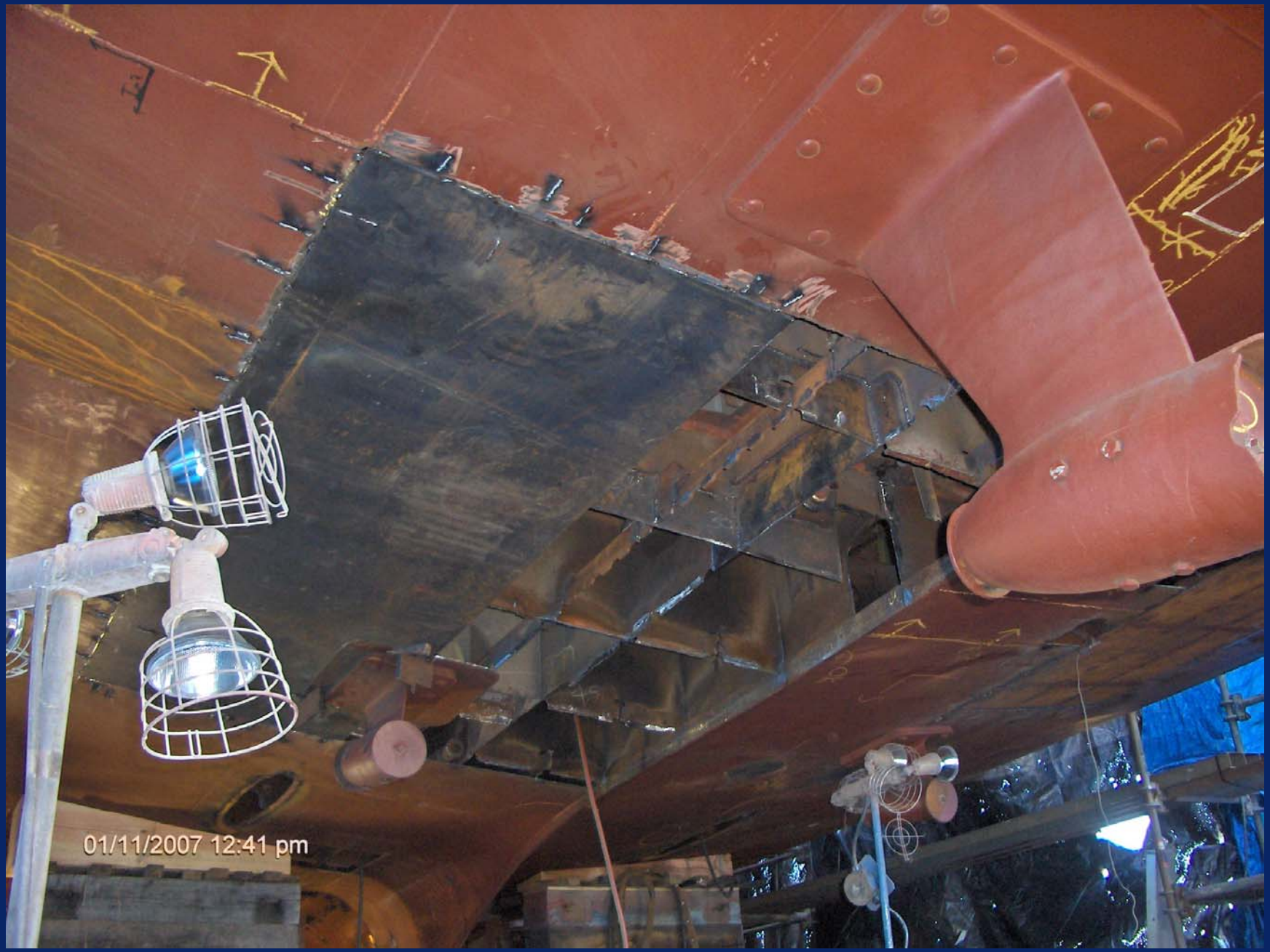
Homeland Security



Acquisition Directorate






01/11/2007 12:41 pm




U.S. COAST GUARD


GAYDOS
U.S. COAST GUARD
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round
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01/11/2007 12:49 pm




HROP GRUMMAN SHIP SYSTEMS
U.S. COAST GUARD
750


750
750




U.S. COAST GUARD


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NORTHR GRUMMAN SHIP SYSTEMS
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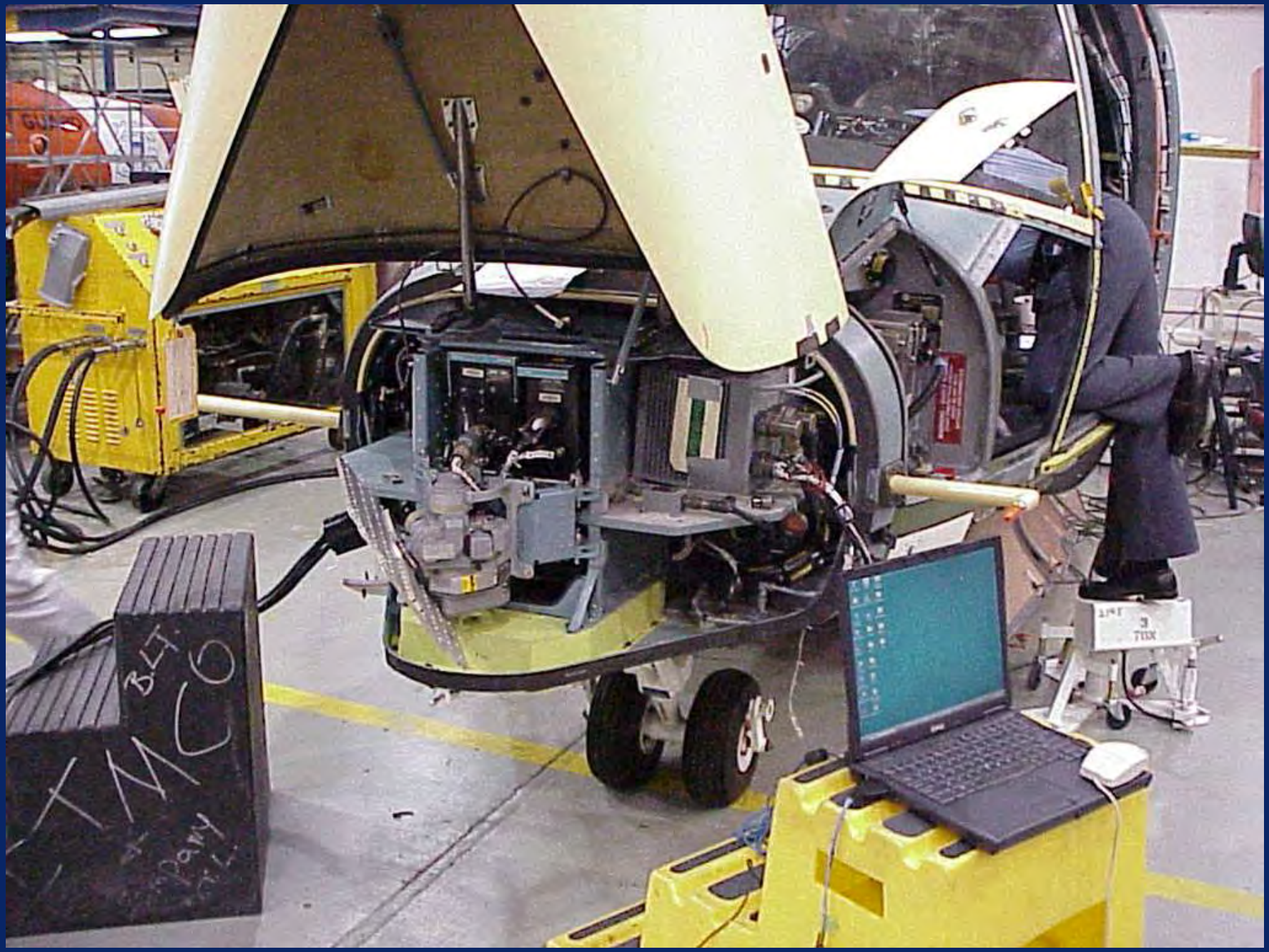

Stepping Ceremony
THOLF (WMSL
Tuesday, July 17
CO: CAPTAIN PATRICK
USCGC BERTHOLF
WMSL-750
Mast Stepping
17 July, 2007


2006


PROJ
Genie S-85



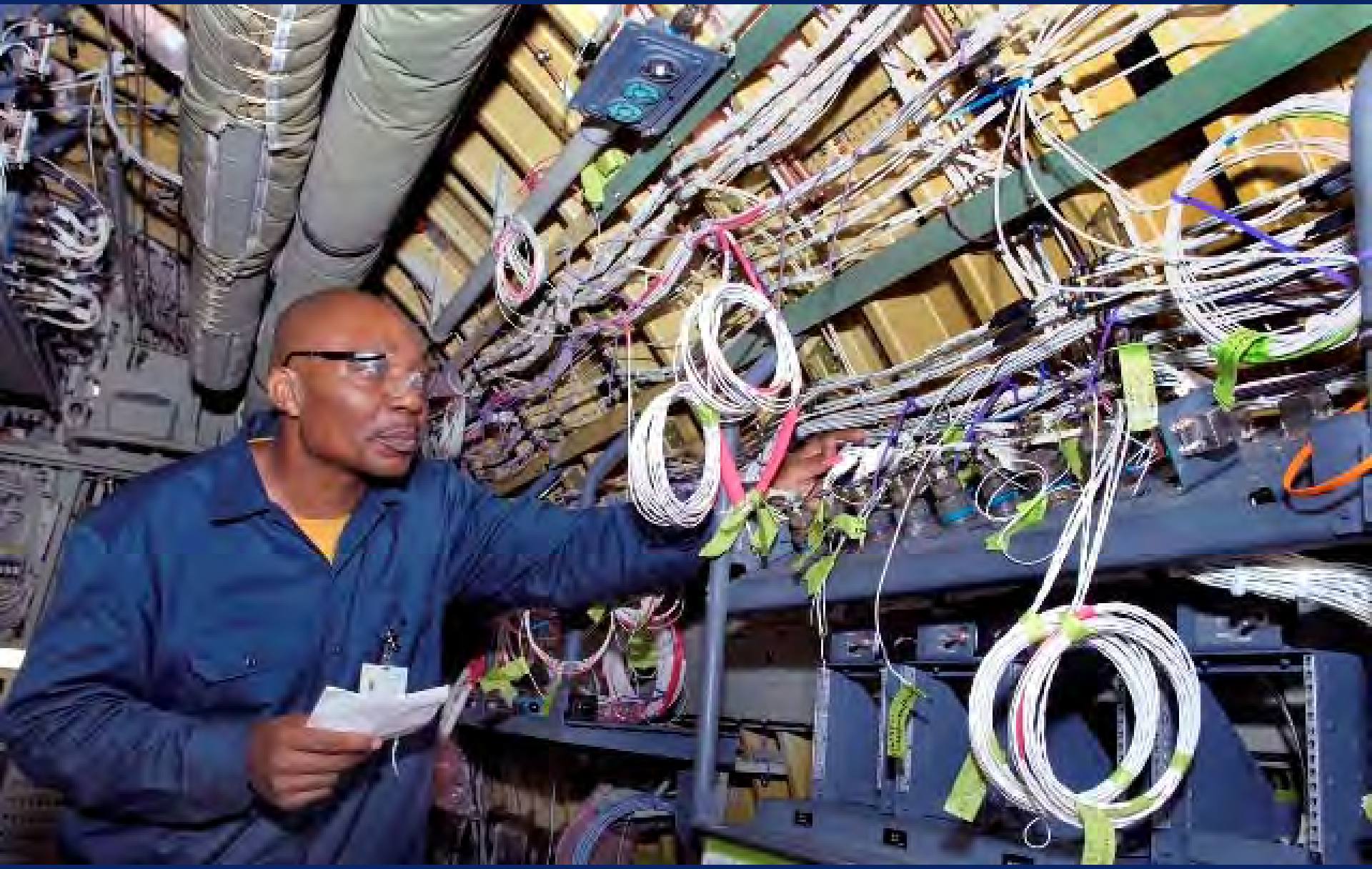

U.S. COAST
2004


B.L.T.
TMCO

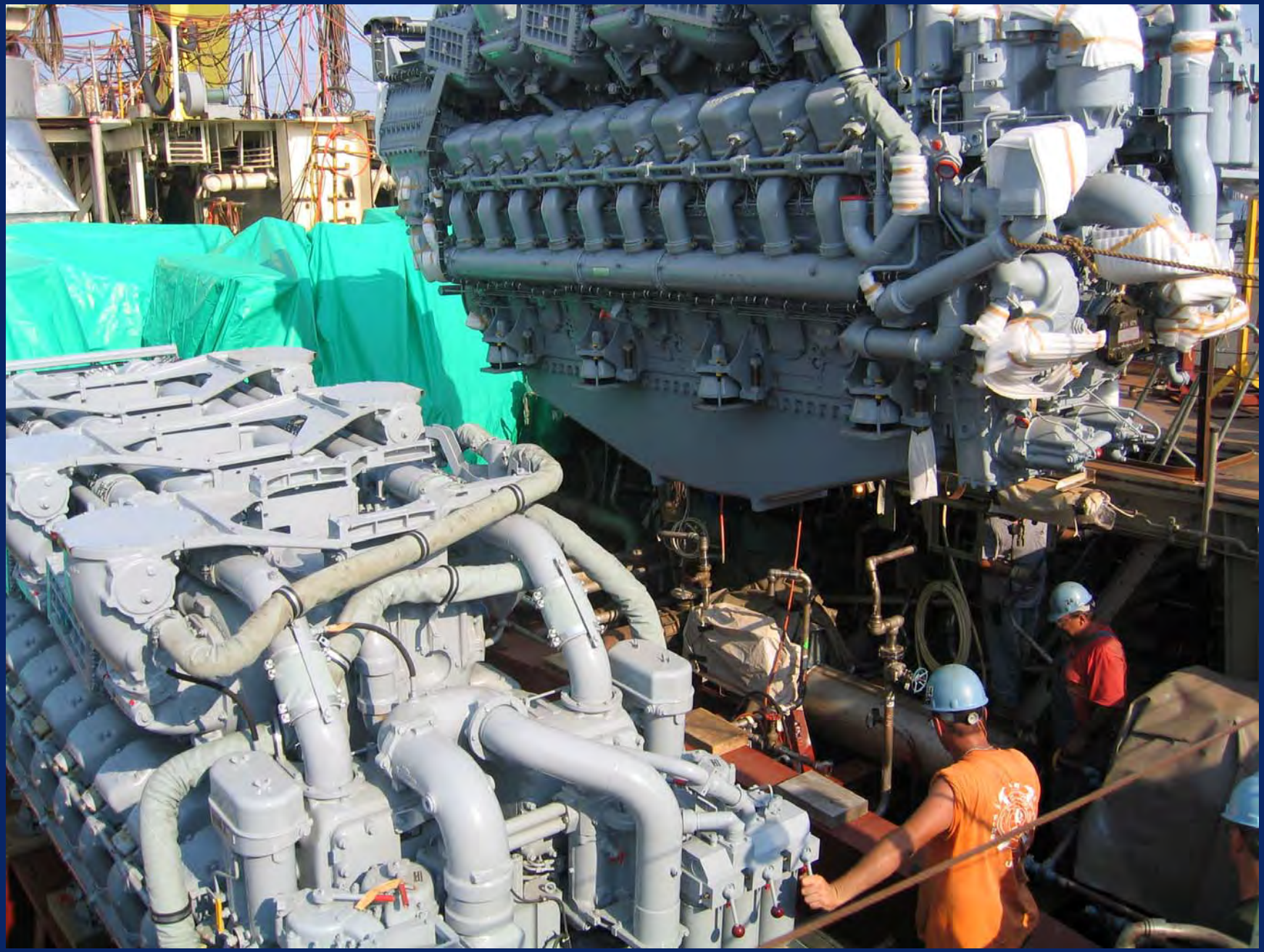

2006
ELIZABETH CITY
AIRCRAFT ON JACKS
JAN 11 2007




MSP FWD
I/O PANEL




NORTHROP GRUMMAN SHIP SYSTEMS
750




1230

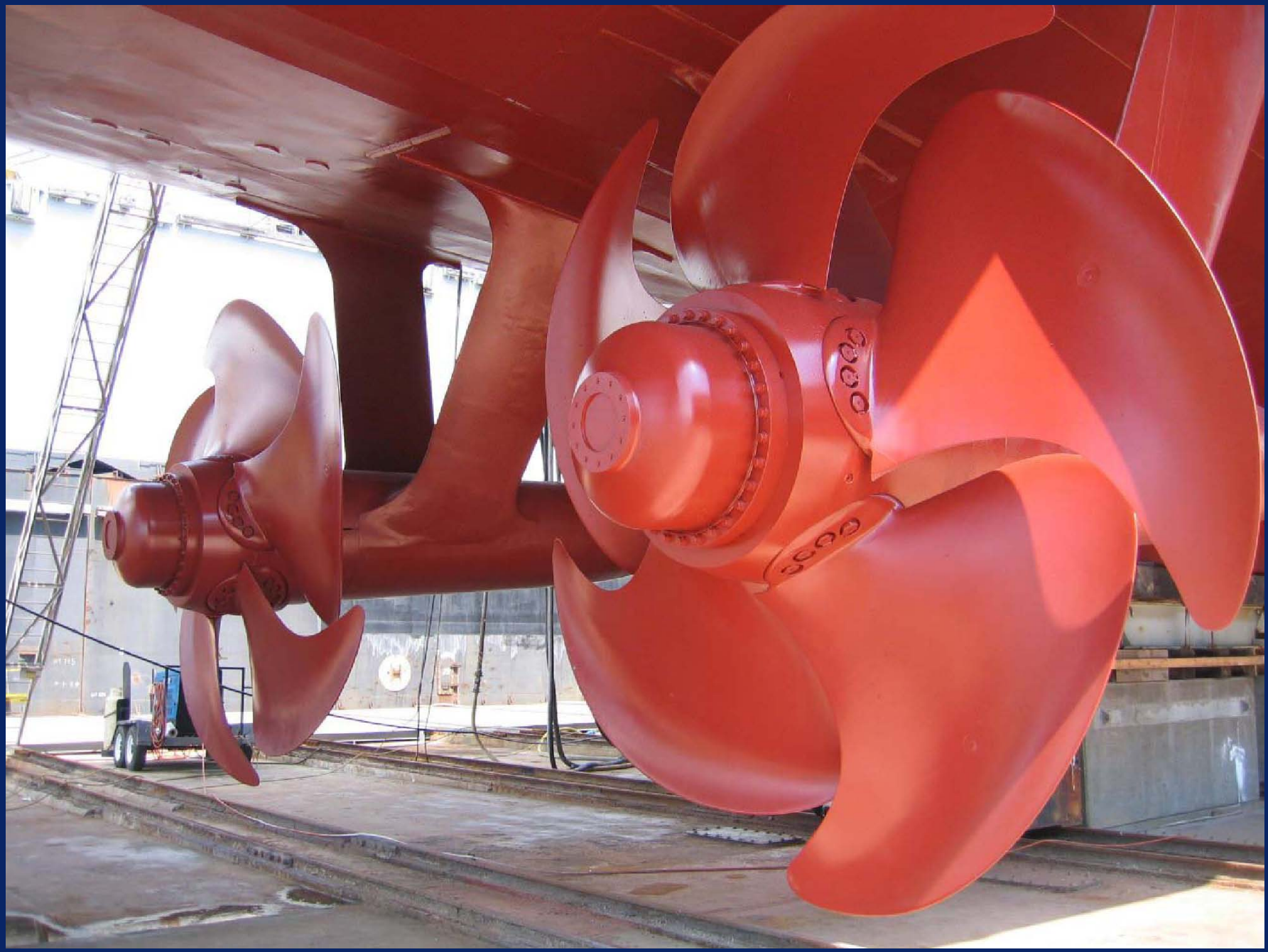

SHIP SYSTEMS
INGALLS
GB
3330


JOULE YACHT TRANSPORT INC.


U. S. COAST GUARD
30




HROP GRUMMAN SHIP SYSTEMS
U.S. COAST GUARD
750




BERTHOLF


U.S. COAST GUARD
JOULE YACHT TRANSPORT inc.


USCG
U.S. COAST GUARD
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2303
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TFSP-001




750
Genie S-85


U.S. COAST GUARD


PROJ

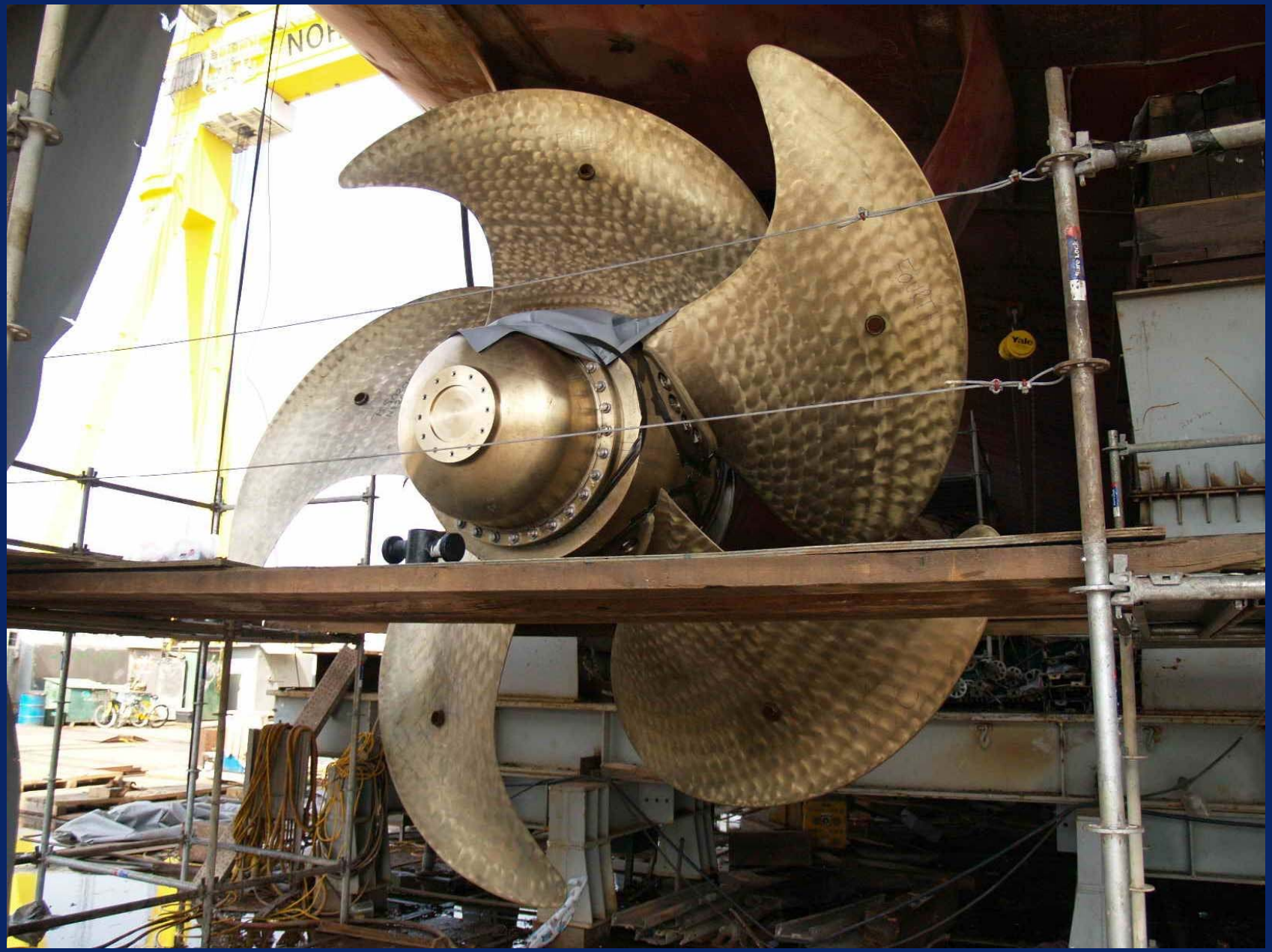

GRUMMAN SH
SYSTEMS

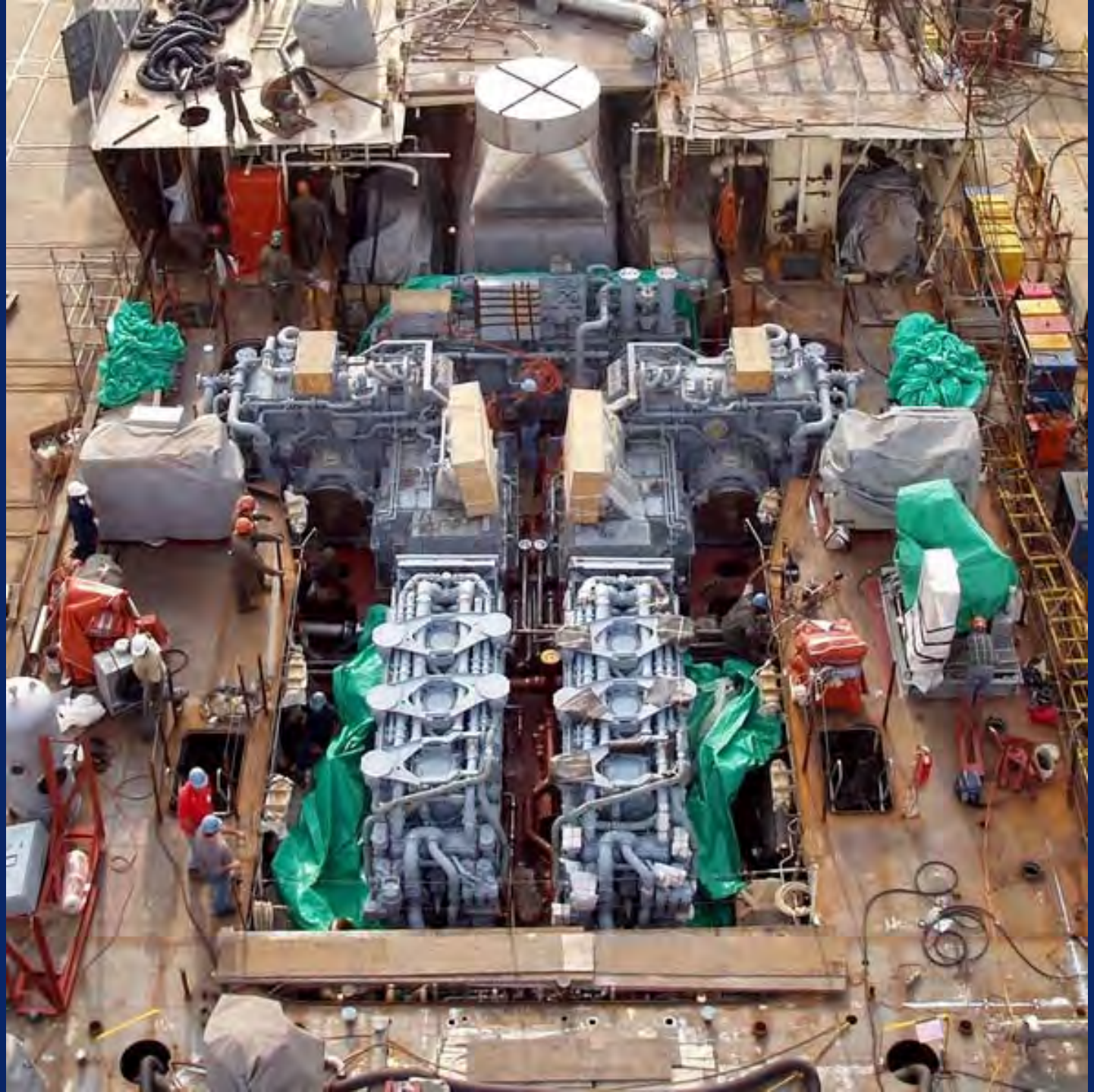

200 CARTRIDGES
7.62 MM, M13
ARTONS,
M62-4 M80
89H601L638


GRUMMAN




DANGER
HIGH
VOLTAGE


Vale




U. S. COAST GUARD
87325






U.S. COAST GUARD




POWER DISTRIBUTION PANEL (FWD)
BARCO
Integrated C4I System Framework (ICSF)
DAISY DATA






6027
U.S.
COAST GUA D

First Responder Technologies (R-Tech)

Tech Clearinghouse
TechSolutions

Greg Price
Science and Technology Directorate
Department of Homeland Security

Homeland Security

TechSolutions

The mission of TechSolutions is to rapidly address technology gaps identified by Federal, State, Local, and Tribal first responders

- Field prototypical solutions in 12 months
- Cost should be commensurate with proposal but less than $1M per project
- Solution should meet 80% of identified requirements
- Provide a mechanism for Emergency Responders to relay their capability gaps
  - Capability gaps are gathered using a web site (www.dhs.gov/techsolutions)
- Gaps are addressed using existing technology, spiral development, and rapid prototyping
- Emergency Responders partner with DHS from start to finish

Rapid Technology Development

Target: Solutions Fielded within 1 year, at ~<$1M

Homeland Security

TechSolutions Investments

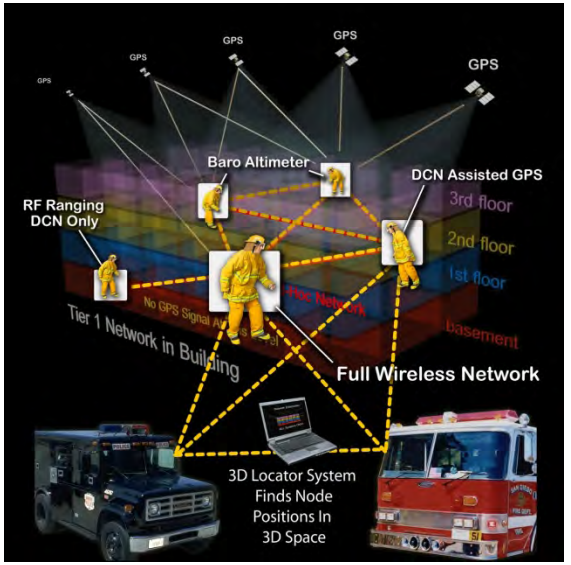
Next Generation Breathing Apparatus



Ocular Scanning Nerve Agents/Toxic Gases



3-D Location



Biometric Identification



Fire Ground Compass



Carrizo Cane – Bio Agent



TechSolutions Investments

Patient Triage
Mass Casualty Vital Sign Monitoring



Interoperable Communications



Seatbelt Safety

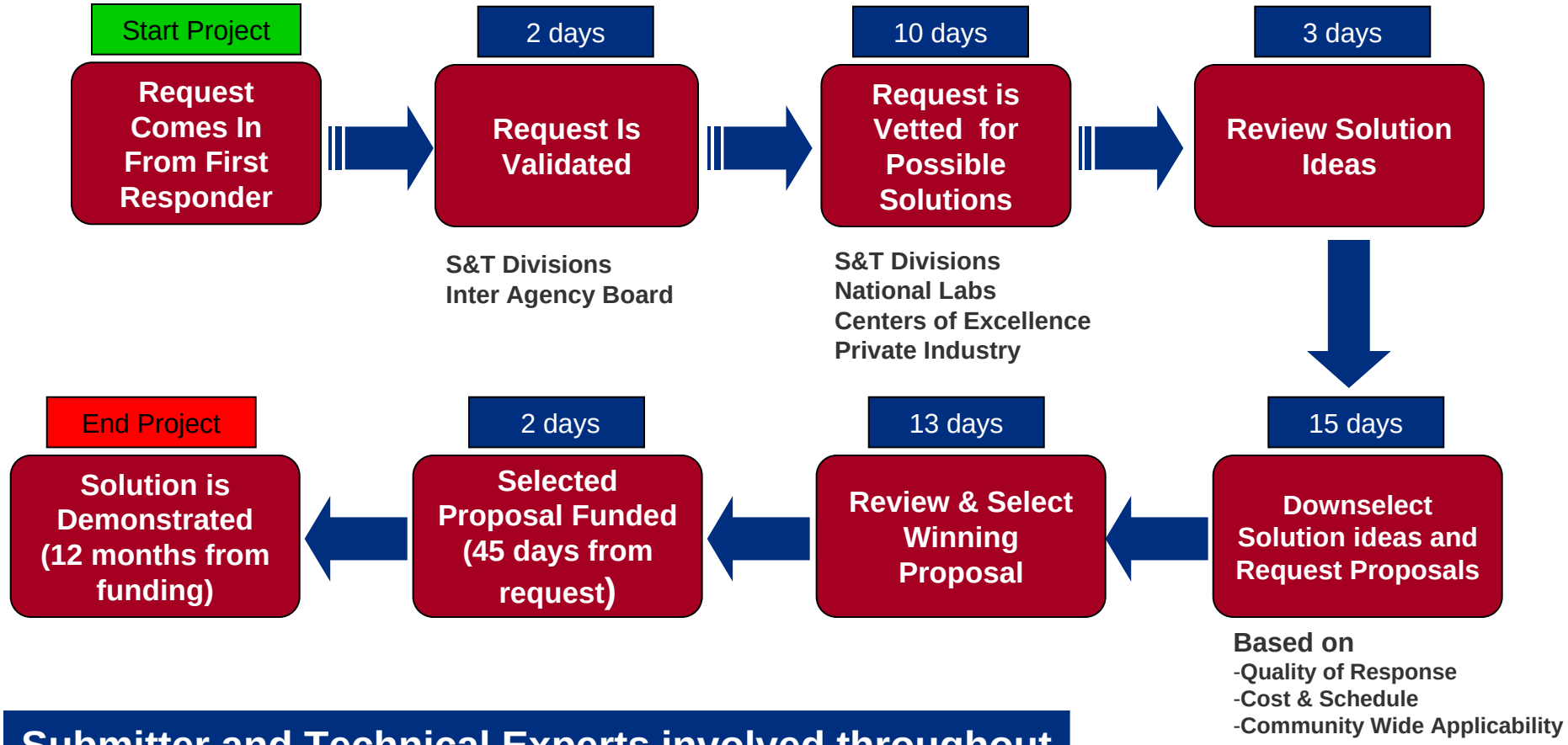


Vehicle Mounted Chem/Bio Sensor Detection



Homeland Security

TechSolutions Review Process



Submitter and Technical Experts involved throughout

Homeland Security

U. S. COAST GUARD INNOVATION



IMPROVING MISSION EXECUTION AND SUSTAINMENT

Creating USCG's Contribution to National MDA

RDML Rob Parker

Assistant Commandant for Capability

United States Coast Guard

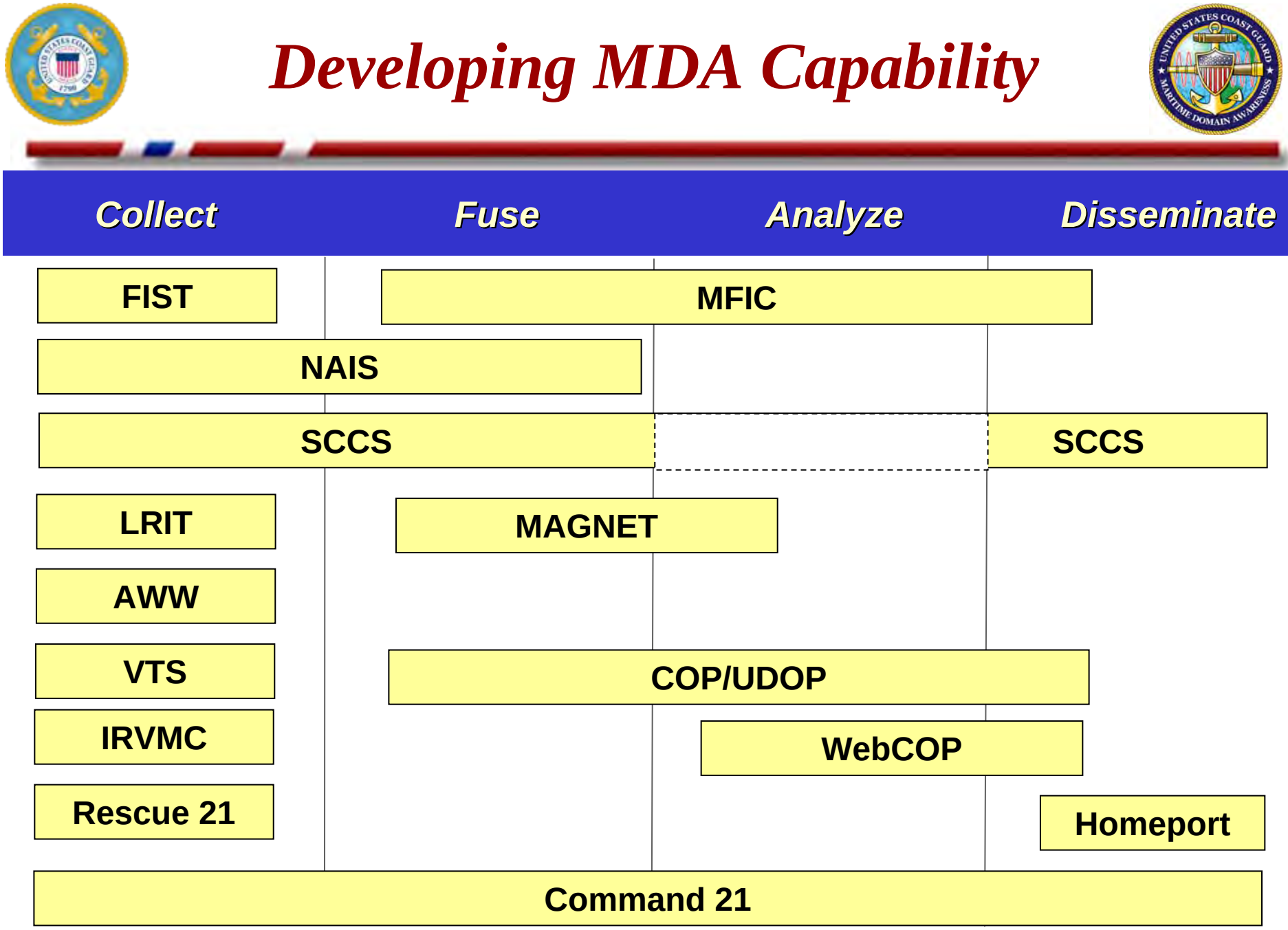
29 October 2007

MDA Process

Observables	Collect	Fuse	Analyze	Disseminate	Decide/Act
• Vessels • People • Facilities • Cargo • Infrastructure • Sea lanes • Threats • Friendly forces • Weather	• Sensors • Operators & field personnel • Intel Sources • Open source • Private sector data • Law enf	• Tracks w/ tracks • Data w/ data • Tracks w/ data	• Anomaly detection • Pattern recog & analysis • Compare w/ rules • Research tools	• Networks • Displays (COP/UDOP) • Command centers	• Strategic • Operational • Tactical

MDA = Intelligence + Situational Awareness

Developing MDA Capability

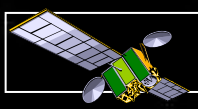


MDA Capabilities - Topics of Discussion

- **Collection**
  - **Nationwide AIS**
  - **Long Range Identification & Tracking**
  - **Inland Rivers Vessel Movement Center**
- **Fusion & Analysis**
- **Dissemination**

MDA Layered Coverage Areas

LRIT



- Global position reporting mandated by SOLAS regulations.
- 4 daily broadcasts mandated by IMO
- More than 160 contracting governments participating in LRIT.
- Track 40,000+ SOLAS Class vessels globally.
- Satellite based reporting.

NAIS



- Nationwide network of towers & transceivers.
- VHF radio-based (line of sight technology), self-generated vessel reports mandated by IMO/SOLAS regulations.
- Conceptually similar to aircraft transponders.
- Provides AIS data feed to CG enterprise data stores.
- Inside 50 NM: near real time reports (seconds/minutes).
- Inside 2000NM: less frequent satellite based coverage.

Command 21



- SCC monitors vessel behavior with radars and cameras.
- Corroborate vessel behavior with actions advertised in LRIT/NAIS.
- Joint planning and operations tools.
- Real-time operational decision support.
- Covers critical port/coastal approaches to 24NM.
- Ingests fused intel products from systems like MAGNet and other Situational Awareness data.

CG Enterprise

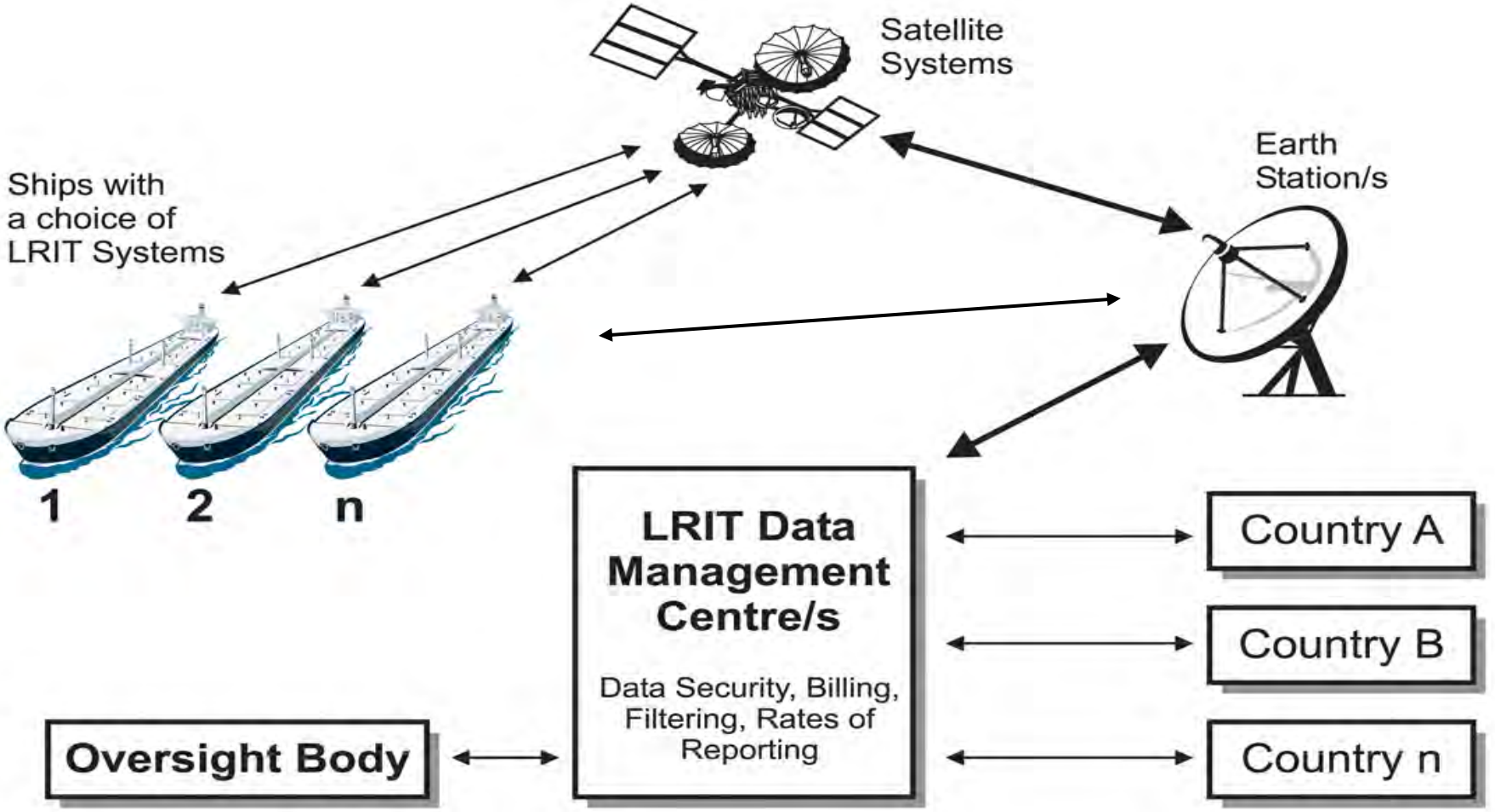
Foreign Port

US Port

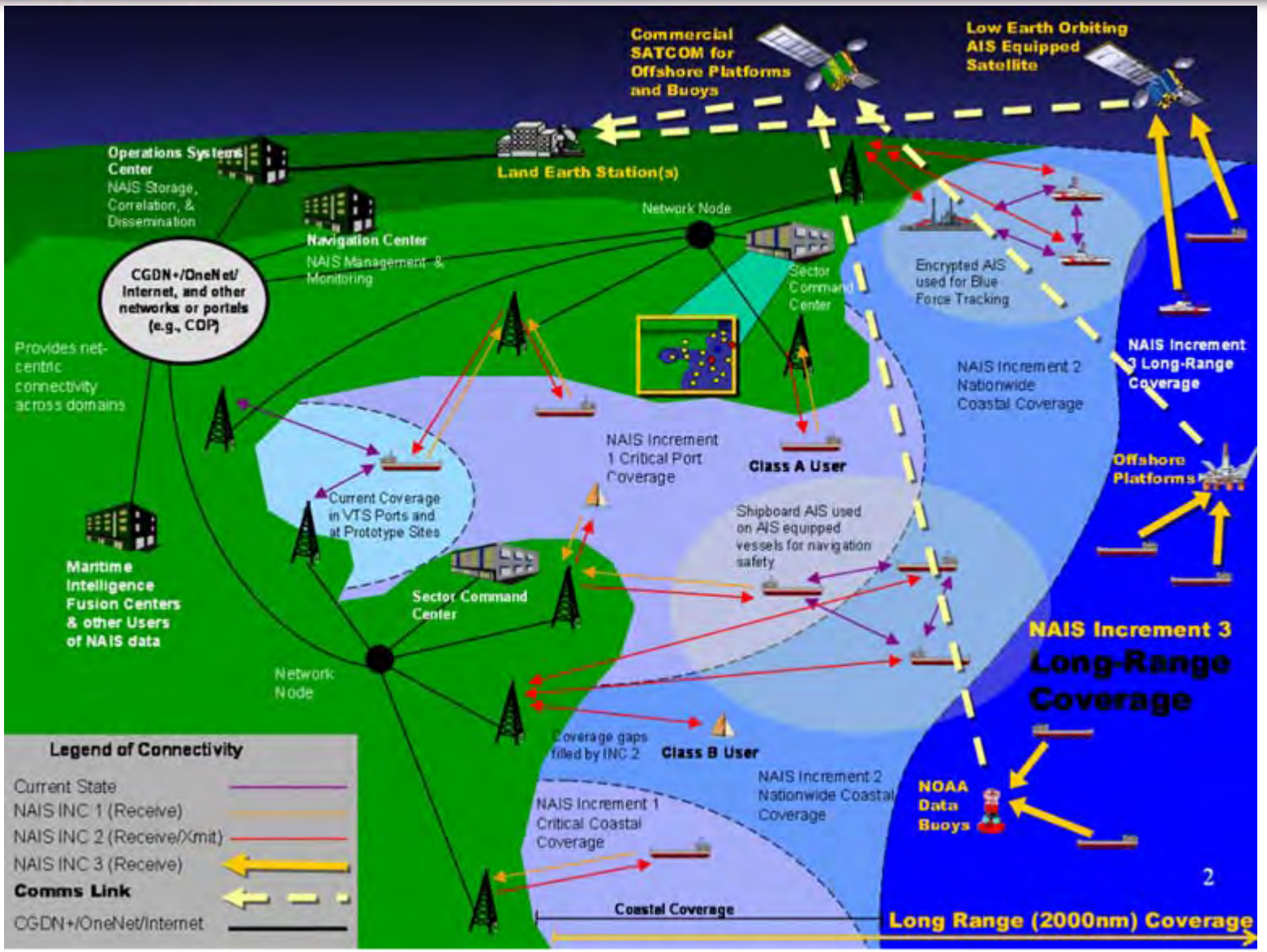
All 3 tracking systems feed data to CG enterprise data warehouse for strategic fusion.

LRIT Concept

(Used with Permission of Inmarsat)



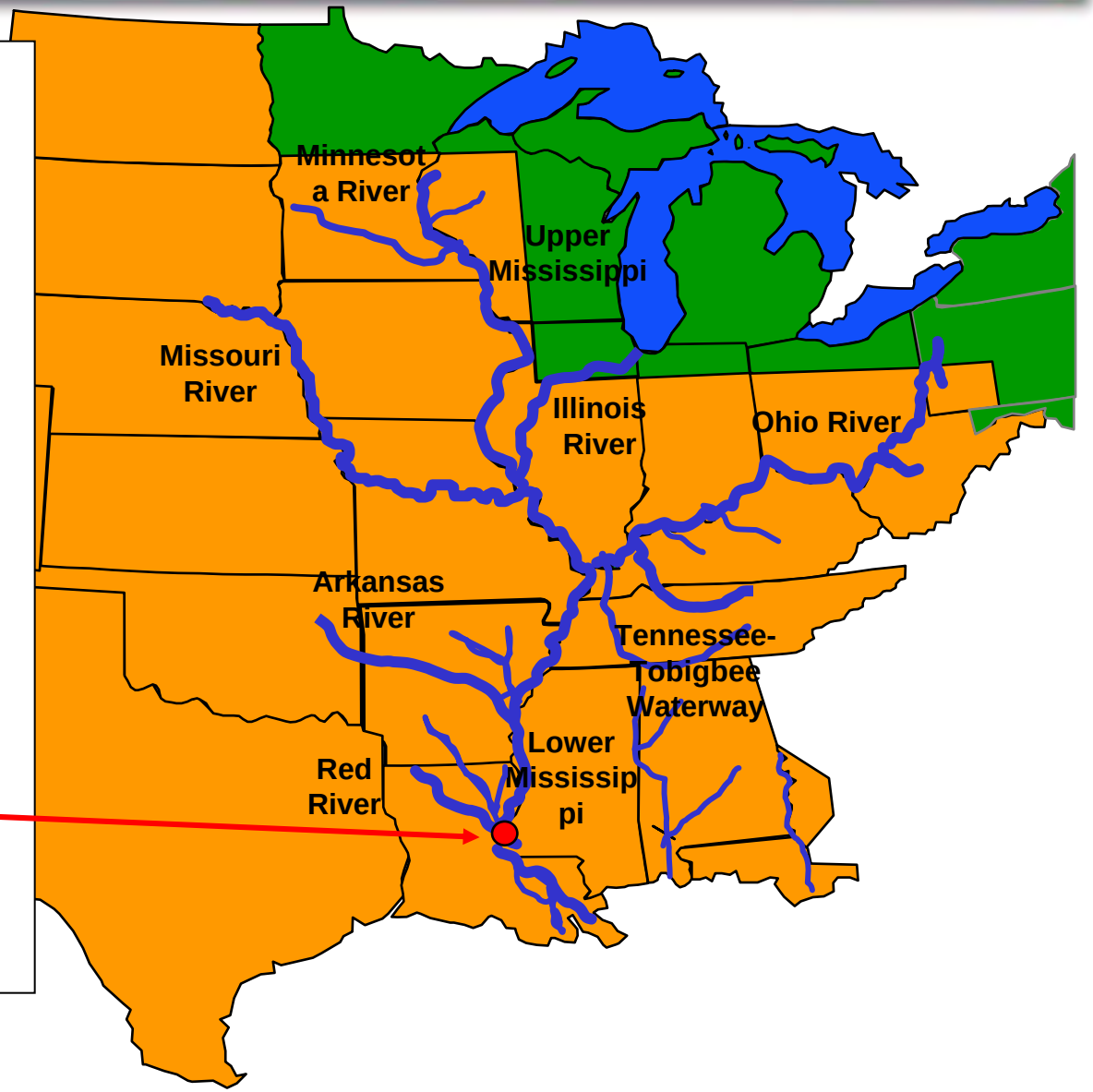
Future NAIS Operational View



Inland Rivers Vessel Movement Center

Reporting AOR

- 10,300 miles of inland rivers
- Tracks all CDC movements and status changes
- Feeds track data to the COP via MISLE
- Ends at Mile Marker 235 near Baton Rouge, LA



MDA Capabilities - Topics of Discussion

- **Collection**
- **Fusion & Analysis**
  - **Maritime Awareness Global Network**
  - **Common Operational Picture / User Defined Operational Picture**
- **Dissemination**

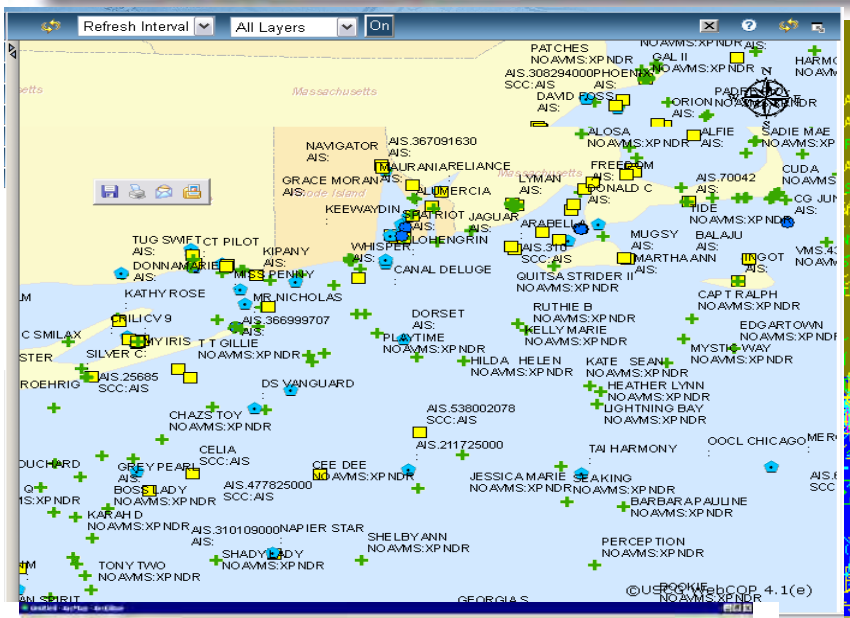
Maritime Awareness Global Network

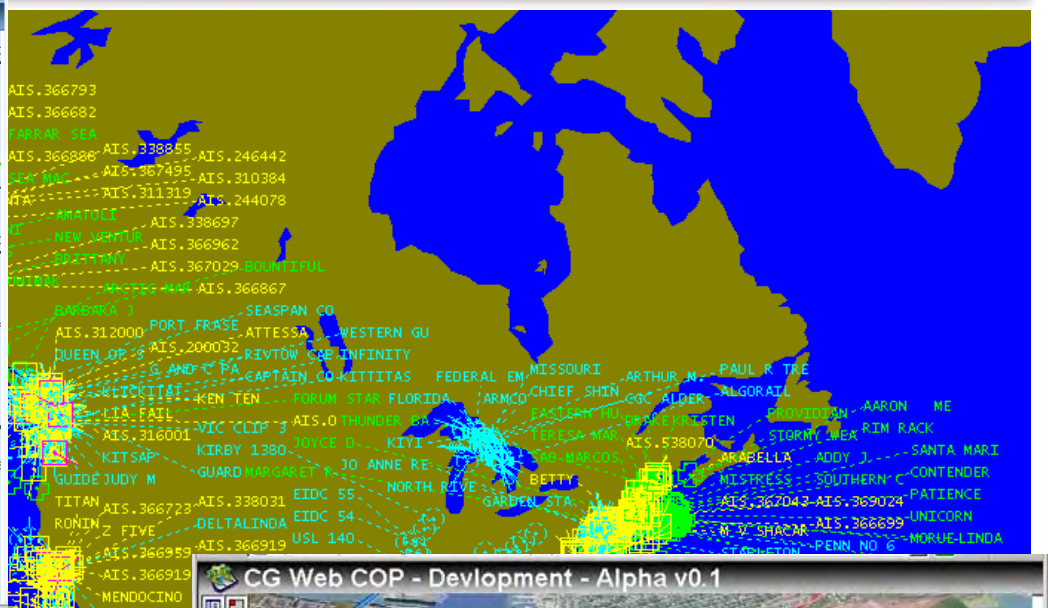


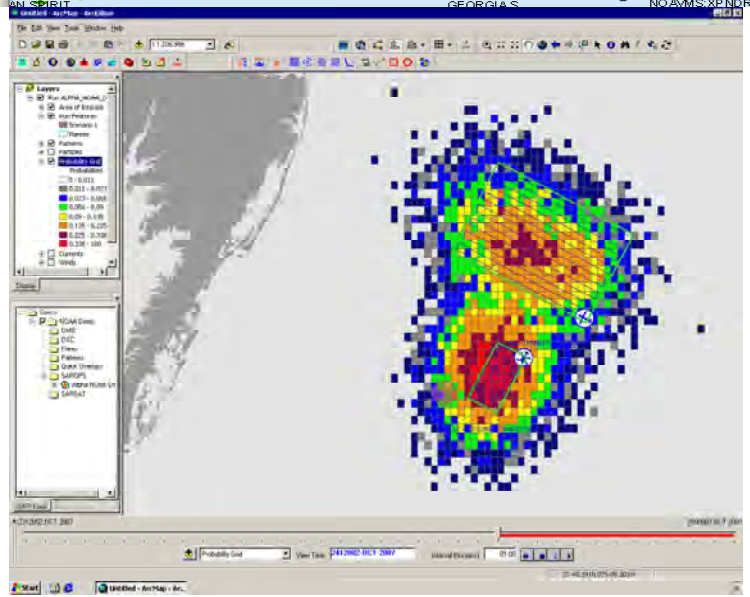
MAGNet:

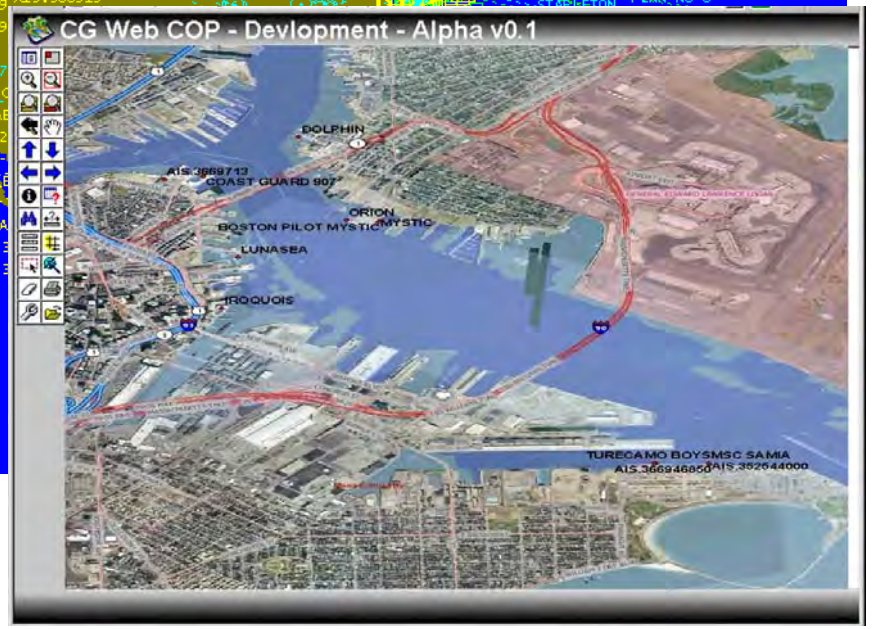
- a multi-faceted intelligence capability;
- built on an integrated, multi-level data repository, dissemination vehicle, and decision support system;
- that extracts and combines information from government, commercial and private sector sources;
- delivers strategic and tactical intelligence to the USCG and government agencies at operational and policy levels;
- that enhances U.S. maritime security and advance all USCG missions…

COP/UDOP


Refresh Interval
All Layers
On
NAVIGATOR
GRACE MORAN
KEEWAYDIN
TUG SWIFT
CT PILOT
KIPANY
DONNA MARIE
MISS PENNY
KATHY ROSE
MR NICHOLAS
CANAL DELUGE
DORSET
RUTHIE B
KELLY MARIE
PLAYTIME
HILDA
HELEN
KATE
SEAN
HEATHER LYNN
LIGHTNING BAY
CAPT RALPH
EDGARTOWN
MYSTIC WAY
DS VANGUARD
CHAZS TOY
CELIA
GREY PEARL
BOSS LADY
KARAH D
TONY TWO
SHELBY ANN
SHADY LADY
PERCEPTION
TAI HARMONY
JESSICA MARIE
SEAKING
BARBARA PAULINE
OOCL CHICAGO
CEE DEE
©USCG WebCOP 4.1(e)


AIS.366793
AIS.366682
AIS.366886
AIS.338855
AIS.246442
AIS.367495
AIS.310384
AIS.311319
AIS.244078
AIS.338697
AIS.366962
AIS.367029
AIS.366867
AIS.312000
PORT FRASE
ATTESSA
WESTERN GU
AIS.200032
RIVTOW
CAP INFINITY
CAPTAIN CO
KITTITAS
FEDERAL EM
MISSOURI
ARTHUR M.
PAUL R TRE
CHIEF SHIN
GGC ALDER
ALGORAIL
FORUM STAR
FLORIDA
ARMCO
AIS.316001
KIRBY 1380
GUARD
MARGARET
JO ANNE RE
NORTH RIVE
BETTY
AIS.538070
ARABELLA
ADDY J.
SOUTHERN C
CONTENDER
PATIENCE
UNICORN
MORUE-LINDA
AIS.367043
AIS.369024
AIS.366699
M V SHACAR
PENN NO 6
AIS.338031
DELTALINDA
EIDC 55
EIDC 54
USL 140
AIS.366723
TITAN
RONIN
Z FIVE
AIS.366959
AIS.366919
MENDOCINO
AIS.366817
AIS.367012
MARY ANN
MOOSE WARRE
AIS.300000
FREEMONT
BROOKS RYA
AIS.371265
AIS.308484



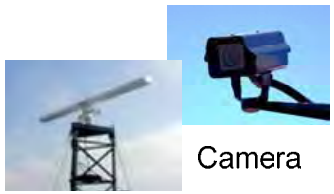

CG Web COP - Devlopment - Alpha v0.1
DOLPHIN
AIS.368713
COAST GUARD 907
ORION
MYSTIC
BOSTON PILOT MYSTIC
LUNASEA
IROQUOIS
TURECAMO BOYSMSC SAMIA
AIS.366946850
AIS.362644000

MDA Capabilities - Topics of Discussion

- **Collection**
- **Fusion & Analysis**
- **Dissemination**
  - **Command Centers**

Command Centers

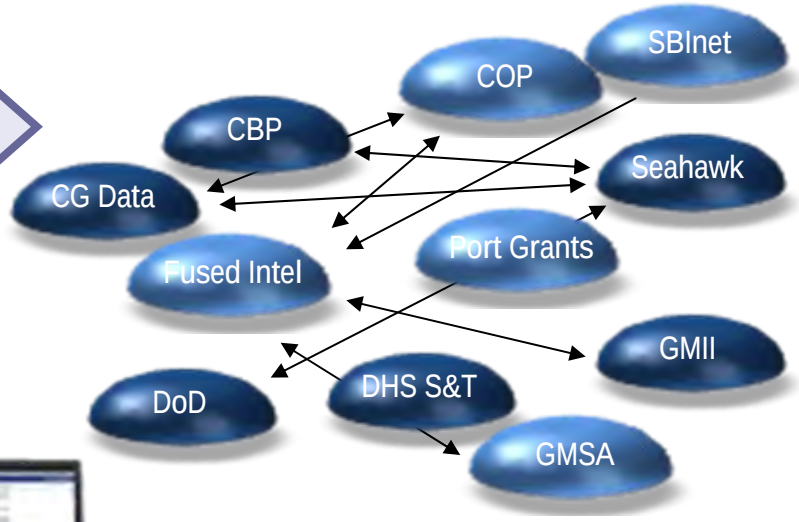
See Understand Share



Camera

Radar

Link Information with Operations





Turning Awareness Into *Action*

Questions?


U.S. DEPARTMENT OF
HOMELAND SECURITY

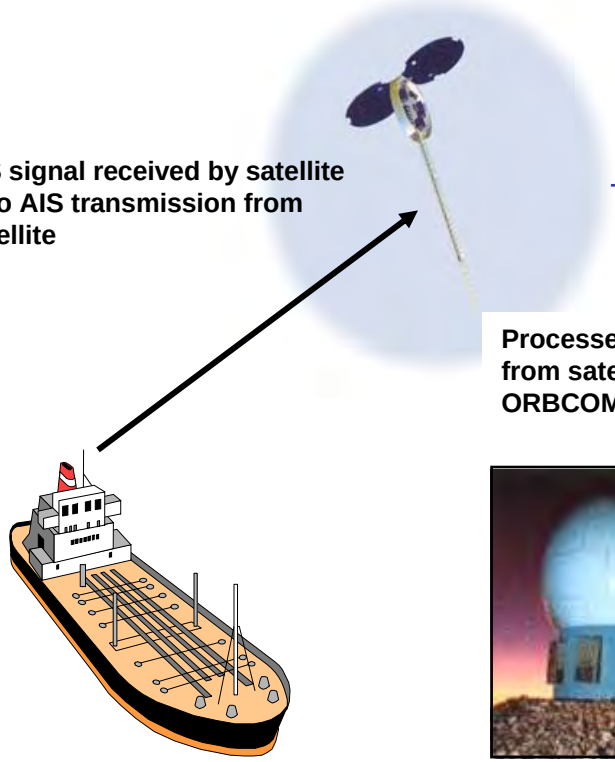

UNITED STATES COAST GUARD
SEMPER
PARATUS
1790

AIS Via Commercial LEO Satellite

- **Launch scheduled for Dec 2007**

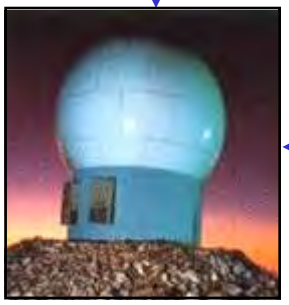
AIS signal processed onboard satellite – remove data to lessen bandwidth, meet reporting requirements, etc.

AIS signal received by satellite – no AIS transmission from satellite



Vessel equipped with AIS

Processed AIS data sent from satellite to GES via ORBCOMM data link



Gateway Earth Station (GES)

AIS data routed through NCC – quality check, satellite maintenance, etc.



Network Control Center (NCC)

USCG receives data and incorporates into appropriate command and control (C2) systems), distributes to other users as appropriate



USCG Data Network – distribute to end users

Field Intelligence Support Teams

FISTs:

- 30 ports have dedicated FISTs
- Provides port-level intelligence collection and reporting
- Liaison with Federal, state, local, tribal, and industry partners
- Provides better port-level threat assessments
- Report on activities in foreign ports using information gathered from ship master and crew interviews
- Source development and lead generation
- Generate Field Intelligence Reports (FIRs)

Maritime Intelligence Fusion Centers

- Mission: Timely, Fused, Actionable Intelligence for…
  - Coast Guard Operational Commanders
  - DoD & National Intelligence Community
  - Federal, State, and Local Law Enforcement Partners
- Intelligence Program Management for each CG Area and 24x7 Intelligence Watch Center
- Provides Intel Analysis and Collection for the following mission areas:
  - Terrorism
  - Targeting (Vessel Screening)
  - Transnational Crime (Migrants / Drugs / Piracy)
  - Living Marine Resources (LMR)
  - Geo-Political
- MIFC Locations:
  - Pacific Area (MIFC PAC) – Alameda, California
  - Atlantic Area (MIFC LANT) – Virginia Beach, Virginia

Acquisition Directorate

Research & Development Center

Maritime Domain Awareness Data Sharing

Jay Spalding, U. S. Coast Guard

Presentation to USCG MDA Day

29 October 2007

Topics

Data Sharing Overview

Spiral 1 and 2 Update

Spiral 3 Planning

Discussion

Current Environment

Crises create unanticipated data needs…

Look to recent events:

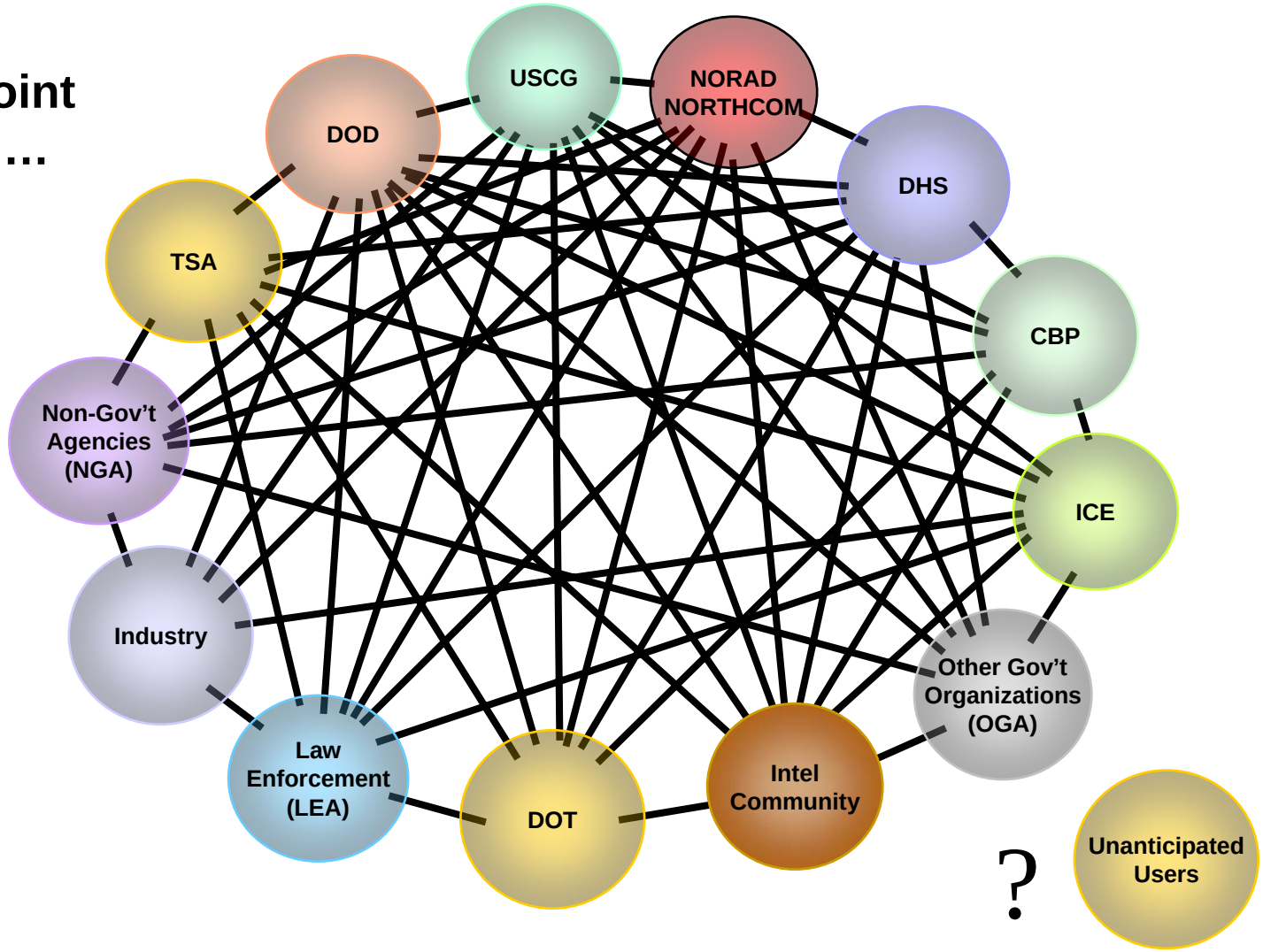
- 2000 Terrorist Attack on USS Cole in Yemen
- 9/11/2001 Terrorist Attack in USA
- 2004 Tsunami in Southeast Asia
- 2005: Hurricane Katrina Devastation in USA

Intergovernmental Federal Cooperation is essential

Current infrastructure is not responsive…

The Current Paradigm

…point-to-point data sharing…



Purpose

Wanted – Net-centric data sharing for the maritime community

Benefits :

Scalable and adaptable to the community

Flexible and agile decision-making and execution

Efficient in cost, schedule, and performance

Improves community partnerships across boundaries

Maritime Fusion Challenge

Current Tasking: Corresponds with MDA Essential Tasks: Find, ID, track

Data

Information

Operationally Actionable Information

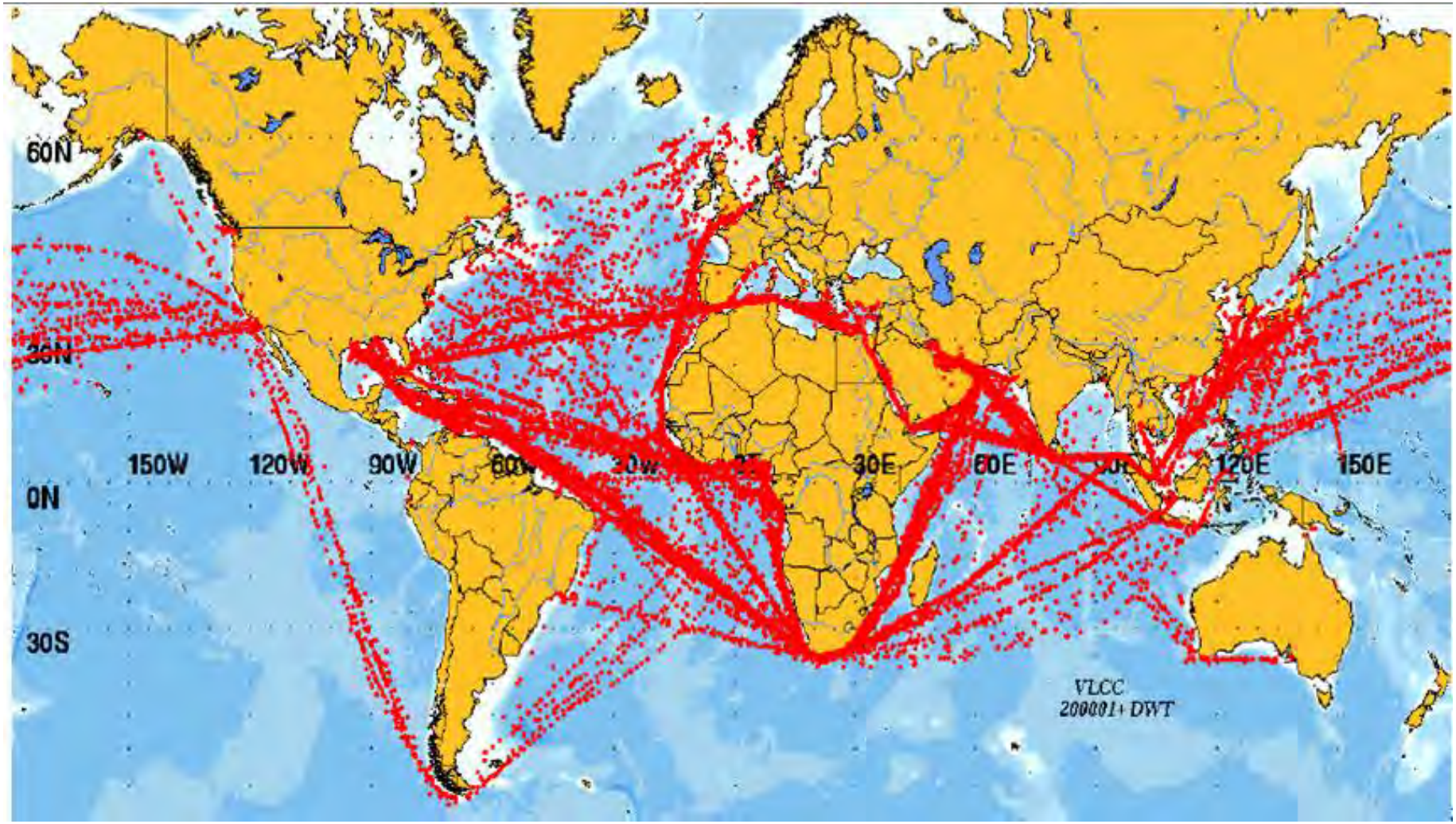


Gather data from disparate sources:
- Commercial
- Foreign Partners
- Law Enforcemer
- Military

Develop Maritime Situational Awareness
- Reconcile data sensitivities
- Fuse data into information
- Display for info for human understandi (User-Defined Operational Picture - UD

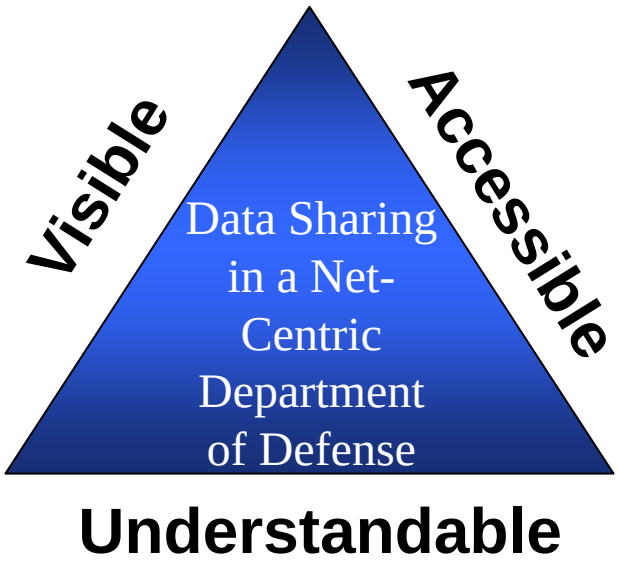
Establish Maritime Situational Awareness:
- Understand the "normal" situation
- Recognize the anomalies
- Direct the operational actions

Global Maritime Situational Awareness



Communities of Interest

A collaborative group of people that must exchange information in pursuit of its shared goals, interests, missions, or business processes and therefore must have a shared vocabulary for the information it exchanges … DOD Directive 8320.2



Services-Oriented Architecture (SOA)

Net-Centric Enterprise Services (NCES)

- Developed by Defense Information Services Agency (DISA)
- SOA for Department of Defense agencies & users
- Allowances made for non-DoD agencies & users

Homeland Security Information Network (HSIN)

- Developed by Department of Homeland Security
- Portal for non-DoD agencies & users

Coalition Warrior Interoperability Demonstration (CWID) and Trident Warrior (TW)

Spiral 1 & 2 Overview

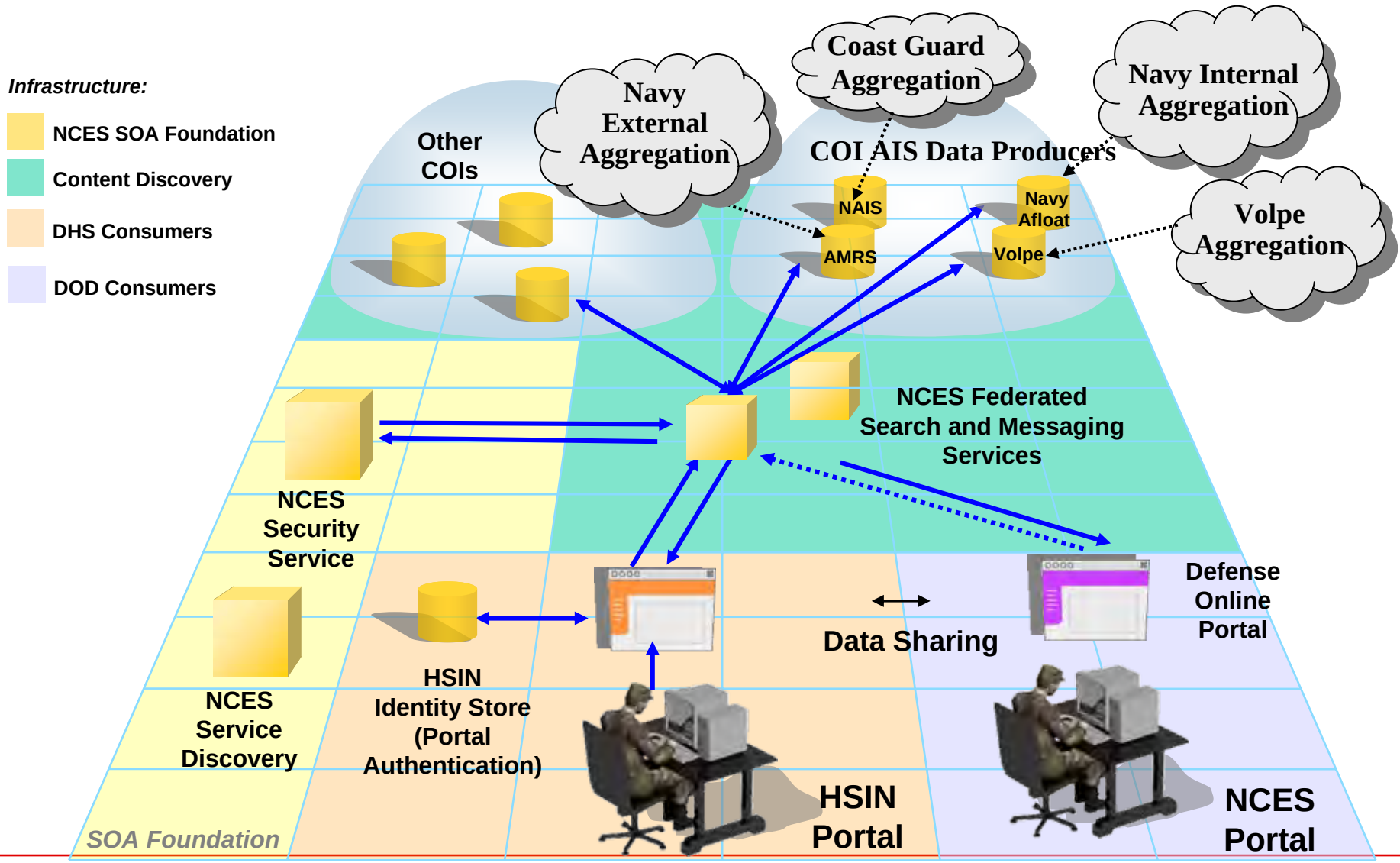
Spiral 1

- **Kickoff 22-23 February 2006**
- **Unclassified AIS Net-centricity (MDA $300K, CG-66 $600K)**
  - 4 Publishers in DoD, DHS, DOT
  - 4 Subscribers (UDOP) from DoD, DHS, DOT
- **NCES, HSIN Infrastructures Leveraged**
- **DoD CIO Demo at ONI – 17 Oct 2006**
- **N6 Demo Pentagon – 14 Dec 2006: CG-01 Participation**

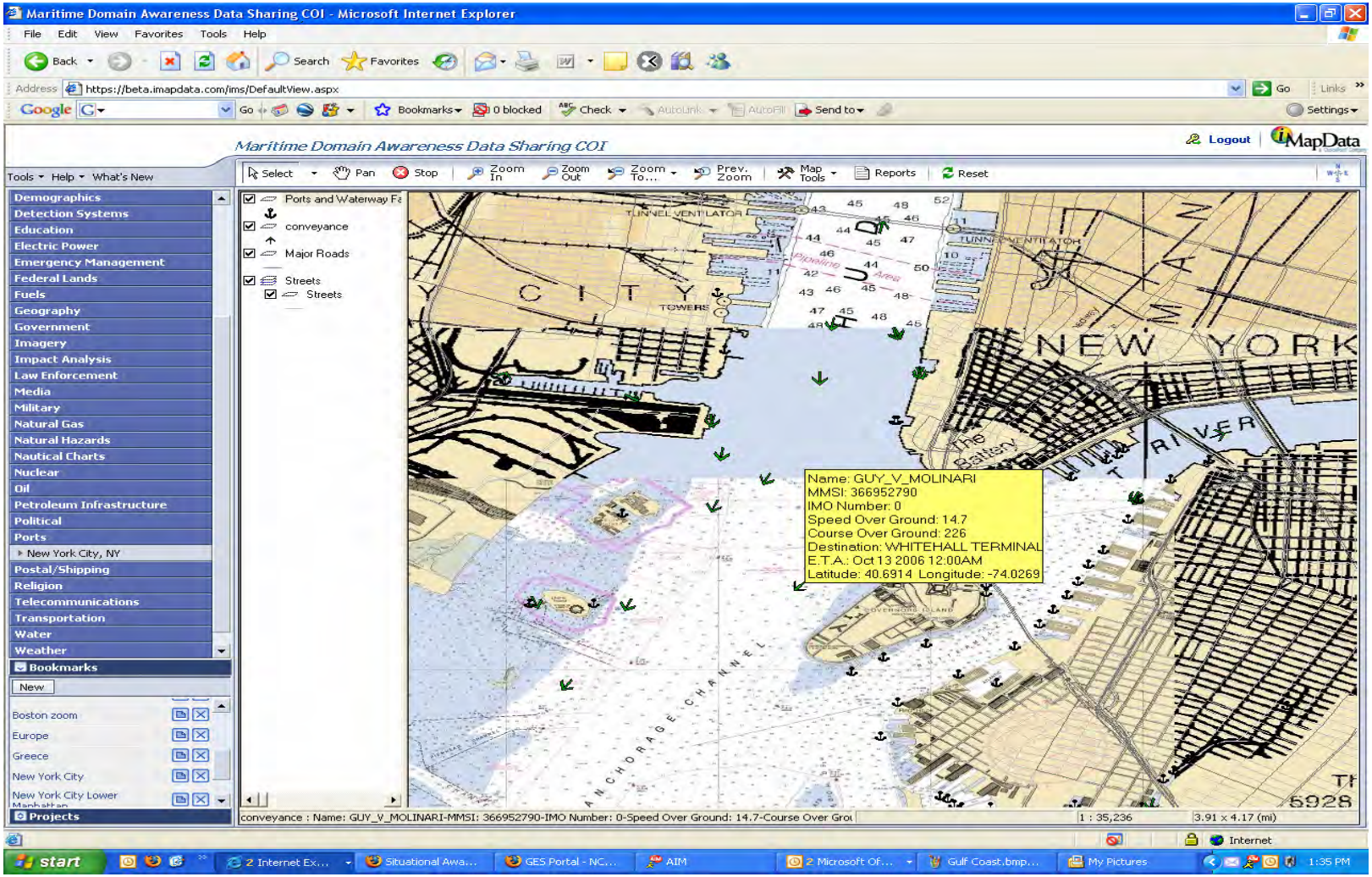
Spiral 2

- **Funded by USN N6 & USCG NAIS Program**
- **Adds Capability Enhancements & Data Services**
  - Enhance Security, Low-bandwidth users, High-Data Publishers, New publishers & data types (e.g., METOC, Imagery)
  - Historical Archiving, Anomaly Detection, Data Augmentation

High-Level Pilot Architecture



Legacy Viewer (iMap Data)



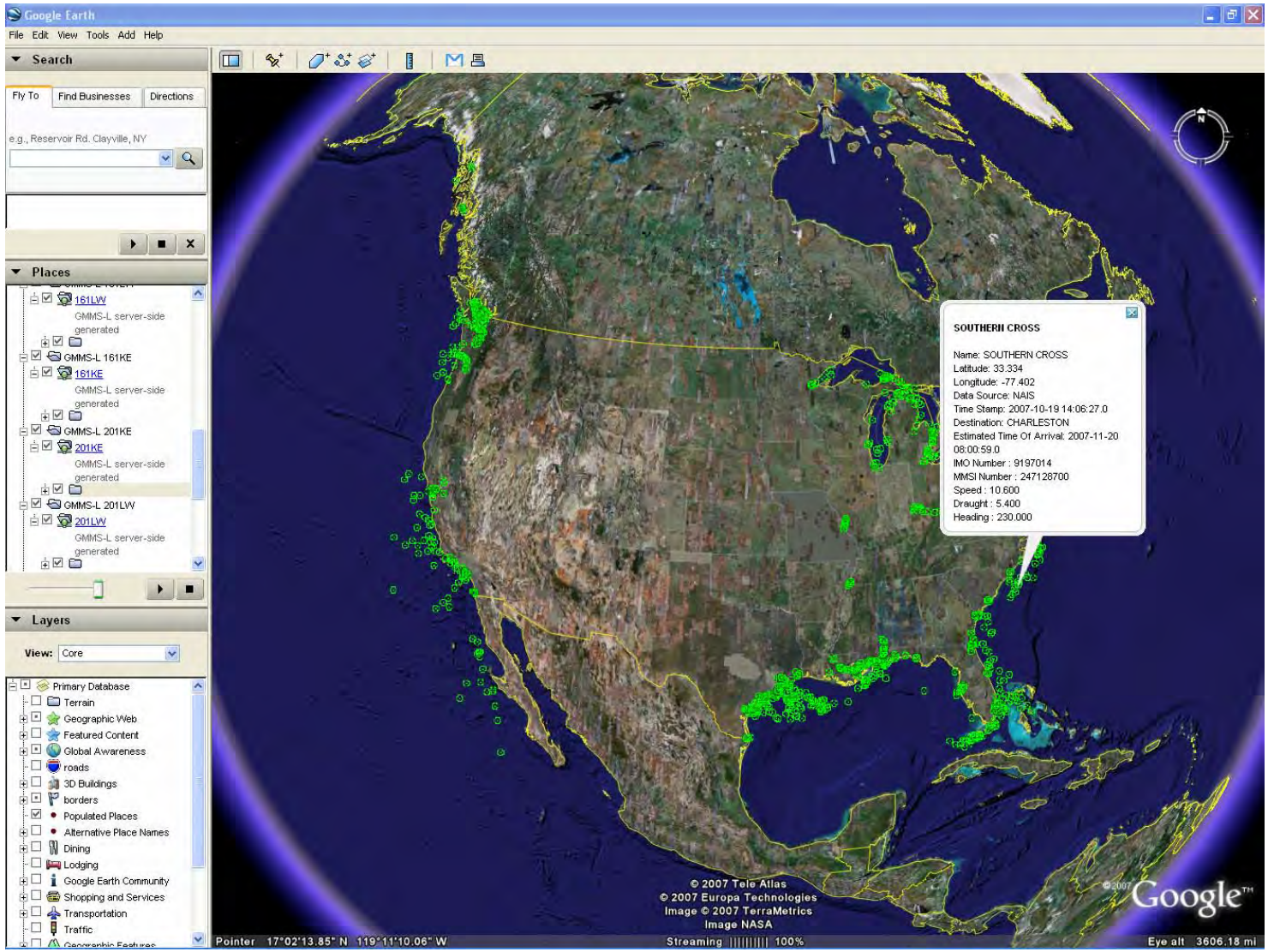
COI Collaboration site



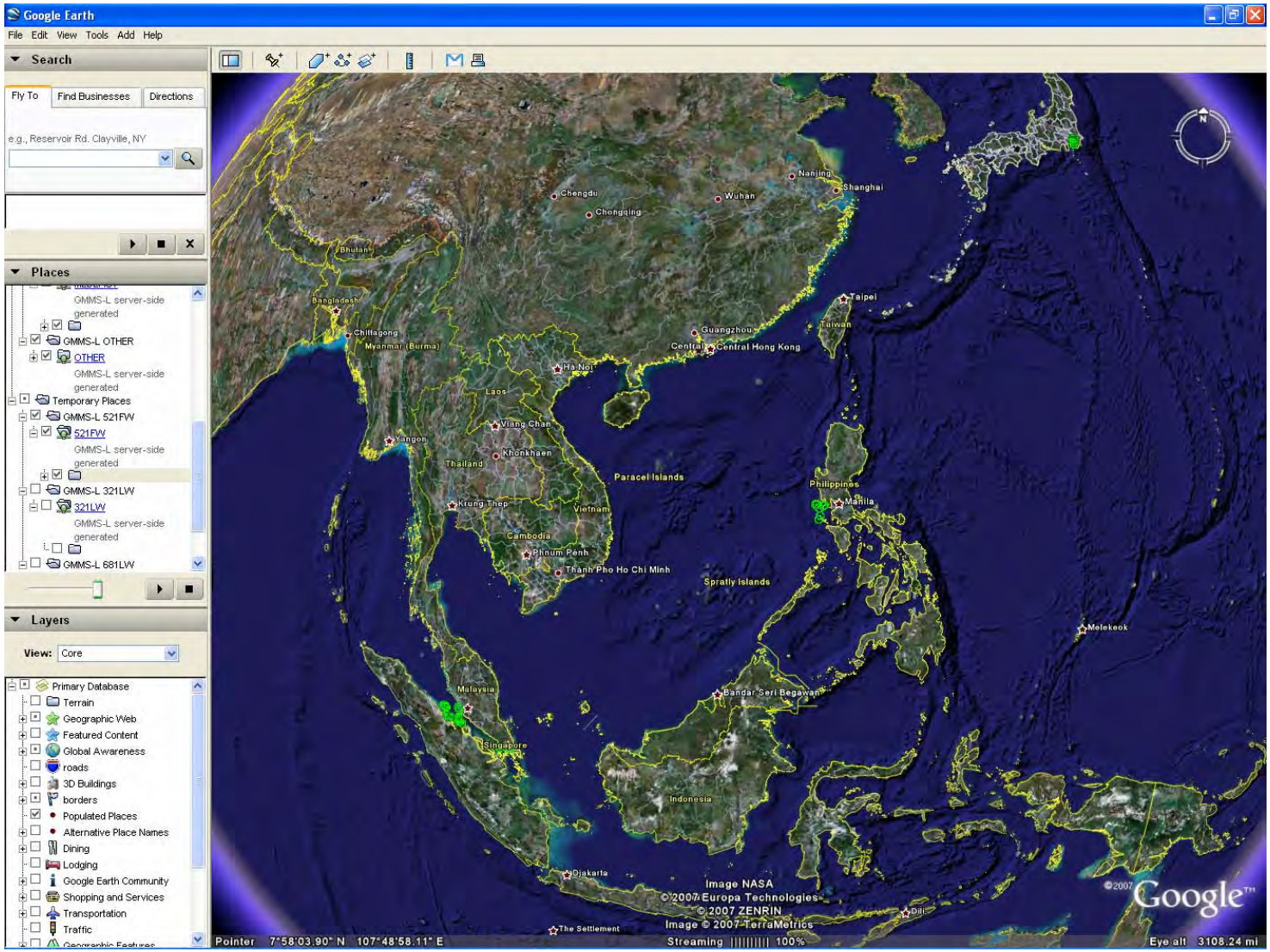
Site for Developers & Users



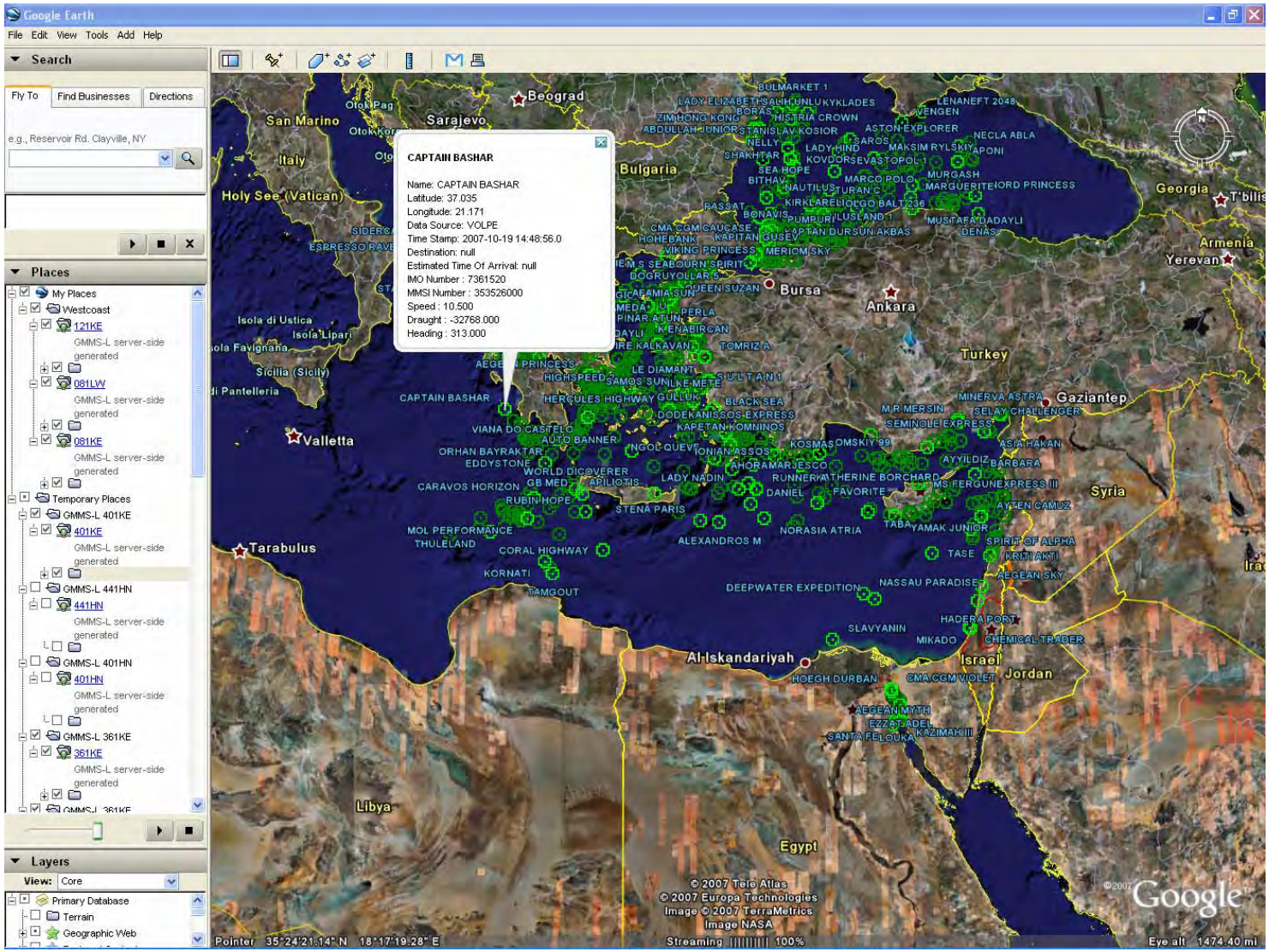
USCG NAIS


Google Earth
File Edit View Tools Add Help
Search
Fly To
Find Businesses
Directions
e.g., Reservoir Rd. Clayville, NY
Places
161LW
GMMS-L server-side generated
GMMS-L 161KE
161KE
GMMS-L server-side generated
GMMS-L 201KE
201KE
GMMS-L server-side generated
GMMS-L 201LW
201LW
GMMS-L server-side generated
Layers
View: Core
Primary Database
Terrain
Geographic Web
Featured Content
Global Awareness
roads
3D Buildings
borders
Populated Places
Alternative Place Names
Dining
Lodging
Google Earth Community
Shopping and Services
Transportation
Traffic
SOUTHERN CROSS
Name: SOUTHERN CROSS
Latitude: 33.334
Longitude: -77.402
Data Source: NAIS
Time Stamp: 2007-10-19 14:06:27.0
Destination: CHARLESTON
Estimated Time Of Arrival: 2007-11-20 08:00:59.0
IMO Number : 9197014
MMSI Number : 247128700
Speed : 10.600
Draught : 5.400
Heading : 230.000
© 2007 Tele Atlas
© 2007 Europa Technologies
Image © 2007 TerraMetrics
Image NASA
©2007 Google
Pointer 17°02'13.85" N 119°11'10.06" W
Streaming 100%
Eye alt 3606.18 mi

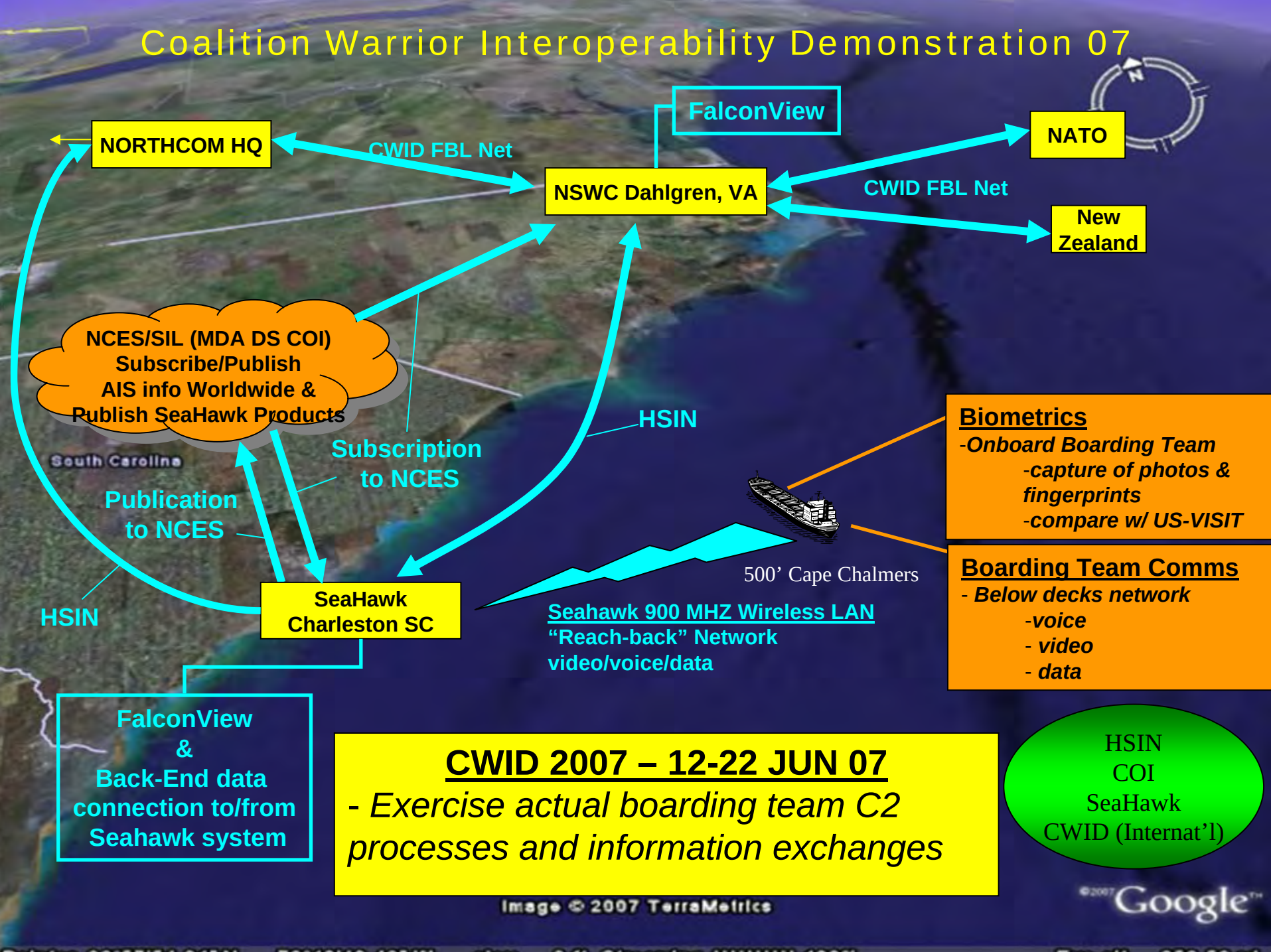
NAVY & AMRS


Google Earth
File Edit View Tools Add Help
Search
Fly To
Find Businesses
Directions
e.g., Reservoir Rd. Clayville, NY
Places
GMMS-L server-side generated
GMMS-L OTHER
OTHER
Temporary Places
GMMS-L 521FW
521FW
GMMS-L 321LW
321LW
GMMS-L 681LW
Layers
View: Core
Primary Database
Terrain
Geographic Web
Featured Content
Global Awareness
roads
3D Buildings
borders
Populated Places
Alternative Place Names
Dining
Lodging
Google Earth Community
Shopping and Services
Transportation
Traffic
Chengdu
Chongqing
Wuhan
Nanjing
Shanghai
Taipei
Taiwan
Guangzhou
Central
Central Hong Kong
Bhutan
Bangladesh
Chittagong
Myanmar (Burma)
Ha Noi
Laos
Viang Chan
Yangon
Khonkhaen
Thailand
Paracel Islands
Philippines
Manila
Krung Thep
Vietnam
Cambodia
Phnum Penh
Thanh Pho Ho Chi Minh
Spratly Islands
Melekeok
Malaysia
Bandar Seri Begawan
Singapore
Indonesia
Djakarta
The Settlement
Dili
Image NASA
©2007 Europa Technologies
© 2007 ZENRIN
Image © 2007 TerraMetrics
©2007 Google
Pointer 7°58'03.90" N 107°48'58.11" E
Streaming 100%
Eye alt 3108.24 mi

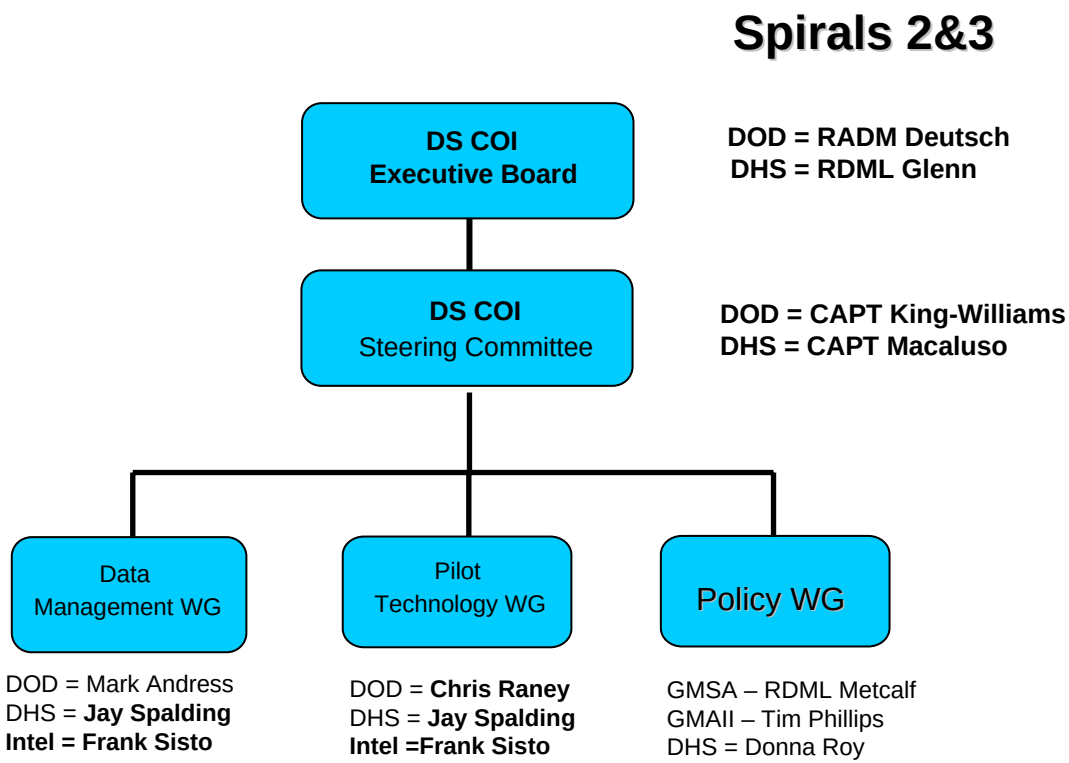
MSSIS – Volpe


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My Places
Westcoast
121KE
081LW
081KE
Temporary Places
GMMS-L 401KE
401KE
GMMS-L 441HN
441HN
GMMS-L 401HN
401HN
GMMS-L 361KE
361KE
Layers
View: Core
Primary Database
Terrain
Geographic Web
CAPTAIN BASHAR
Name: CAPTAIN BASHAR
Latitude: 37.035
Longitude: 21.171
Data Source: VOLPE
Time Stamp: 2007-10-19 14:48:56.0
Destination: null
Estimated Time Of Arrival: null
IMO Number : 7361520
MMSI Number : 353526000
Speed : 10.500
Draught : -32768.000
Heading : 313.000
Beograd
Sarajevo
San Marino
Italy
Holy See (Vatican)
Bulgaria
Georgia
Armenia
Yerevan
Bursa
Ankara
Turkey
Gaziantep
Syria
Valletta
Tarabulus
Libya
Egypt
Al-Iskandariyah
Israel
Jordan
Isola di Ustica
Isola Lipari
Sicilia (Sicily)
Isola Pantelleria
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Image © 2007 TerraMetrics
Image NASA
Google
Pointer 35°24'21.14" N 18°17'19.28" E
Streaming 100%
Eye alt 1474.40 mi

Coalition Warrior Interoperability Demonstration 07



Spiral 2 & 3 Governance



Spiral 3 Recommendation

Advance Notice of Arrival (ANOA) – CG-26

Single Integrated Look Out List (SILO) – ONI

ANOA – Sensitive Data Challenge – Develop Policy and Attribute-Based Access Control (ABAC) to enable Need-to-Share

SILO – Policy Challenge – Aggregation of Lists; Security Challenges (GENSER, SIPRNet)

Broadens & Augments Scope of Data Sharing; Beyond AIS

Catalyst Events – Trigger Higher-Level Data Services

Complement Efforts of Other Organizations (CBP, ICE)

Spiral 3 Recommendation

At Spiral 3 Kick-Off meeting, DS COI recommended Advanced Notice of Arrival (ANOA) and Single Integrated LookOut (SILO) List be made Net-Centric on NCES.

ANOA

Federal Regulation that ALL Vessels inbound or departing from the U.S. file a Notice of Arrival at least 96 Hours in advance

ANOA contains vessel, voyage, cargo, crew, passenger, equipment condition, etc.

Collected by USCG; currently shared with intel and operations centers through manual web interaction, fax, and point-to-point data connections.

SILO

"Maintain in coordination with cognizant authorities and centers, a single, integrated lookout (SILO) list of all vessels of domestics and global interest."

- *GMII Plan*

Attribute-Based Access Control

With Leverage of ABAC, Spiral 3 will continue to expose data sources and allow the DS COI to:

- **Move beyond unrestricted sharing and ensure secure sharing of ANOA and SILO data to:**
  - **Law Enforcement**
  - **DHS (beyond USCG)**
  - **Coalition Partners**
- **Ensure greater level of control of data in accordance with information sharing laws, policies, and agreements.**
- **Federated: Publishers maintain attribute store for published data.**
- **Provide risk reduction for future PORs by proving out ABAC as an early user within NCES**

The DS COI is monitoring the CMA JCTD development of a Maritime Information Exchange Model. Our intent is to adopt best practices from the MIEM in the DS COI information exchange schema.

Risk Reduction / Mitigation

Leveraging and Investigating Emerging SOA Infrastructures

- DISA NCES
- DHS HSIN

Interagency data sharing and interoperability (need to share)

DoD Exercise Environments for MUA

- Coalition Warrior Interoperability Demonstration (CWID) – Joint
- Trident Warrior – Navy
- SeaHawk – Law Enforcement (Depts of Justice & Homeland Sec'y)

C&A in a Net-centric environment

Security and Access Policy (federal, non-federal, coalition)

Global Maritime Situational Awareness

Conclusion

Jay Spalding, U.S. Coast Guard

MDA DS COI Technical Lead

Jay.W.Spalding@uscg.mil

CAPT John J. Macaluso, U. S. Coast Guard

MDA DS COI Steering Committee

john.j.macaluso@uscg.mil



Graduate School of Business & Public Policy

NAVAL
POSTGRADUATE
SCHOOL

Innovation that Works

Turning Ideas Into Opportunities – The Movement To Open Innovation

F.I.R.S.T (Forum for Innovation Research & Teaching) -- GSBPP at NPS

Monterey, California
WWW.NPS.EDU

Objectives

- Focus on organizational side of innovation
- Stimulate a deeper understanding of a still emerging field
- Share ideas, insights, knowledge with each other and the audience
- Connect & network with other interested parties
- Compare/contrast innovation initiatives within and outside the military

Sponsorship

- **USCG**
- **GSBPP at the Naval Postgraduate School**
- **FIRST (Forum for Innovation Research, Service and Teaching)**

NAVAL POSTGRADUATE SCHOOL

Forum for Innovation Research, Strategy, & Teaching



FIRST: *outwitting, outmaneuvering and outperforming our enemies*

FIRST: *responding to global disasters*

FIRST: *leading innovation within the military*

Sponsored by the:
Graduate School of Business & Public Policy (GSBPP)
Office of Naval Research (ONR)
Executive Learning Officer (ELO)

Panel Members

- **Marc Ventresca - Professor, NPS**
- **Roxanne Zolin - Professor, NPS**
- **Paul Reed – IBM**
- **LCDR Gary. M. Thomas – USCG**
- **Neal Thornberry – Innovation Chair, GSBPP/CEE and Professor, Babson College**

Format

- Session 1 – Brief introductions followed by a moderated panel format

- Session 2 – Breakout tracks by area for a deeper dive

- **Greg Kelleher (IBM) Differentiating Ideas from Opportunities –** ***Track-1, Rm. 238***
- **Marc Ventresca and Roxanne Zolin (NPS) Creating a Culture of Innovation –** ***Track-2, Rm. 239***
- **Gary Thomas (USCG) The Innovators Within –** ***Track-3, Rm. 344***
- **Neal Thornberry (NPS/Babson) Sustaining Innovation – Building Opportunity Engines –** ***Track-4 Rm. 346/347***

Introductory Remarks

Creating a culture of innovation

- **Marc Ventresca**
  - **Strategy and innovation; services and knowledge-intensive industries; market creation and organizational innovation; (Ph.D. Stanford; faculty at Kellogg/ Northwestern, Oxford, now at NPS)**



- **Roxanne Zolin**
  - **Entrepreneurship and innovation; 'swift' trust in hastily-formed networks, 15 years experience as entrepreneur; (Ph.D., Stanford School of Engineering; faculty at NPS and Queensland Technology University)**



Creating a culture of innovation

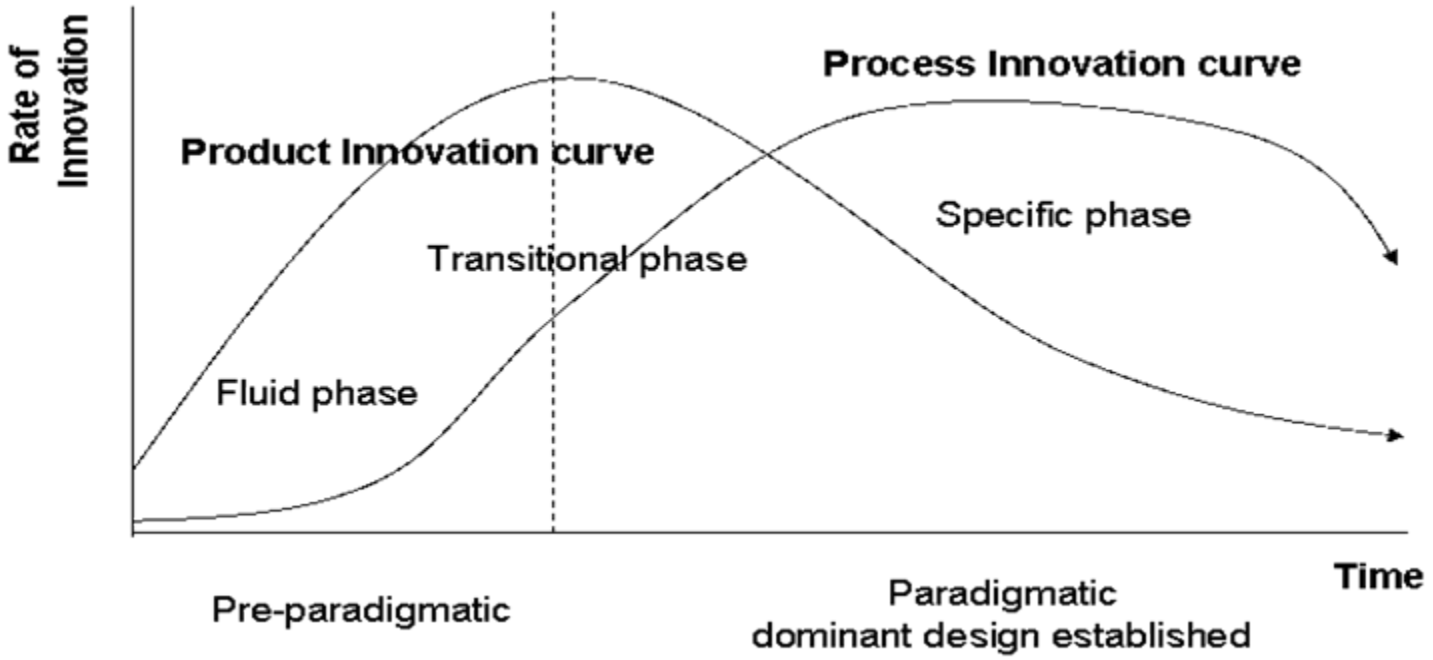
- **What is the organizational basis for innovation strategies in Google, Eli Lilly, and other firms and agencies?**





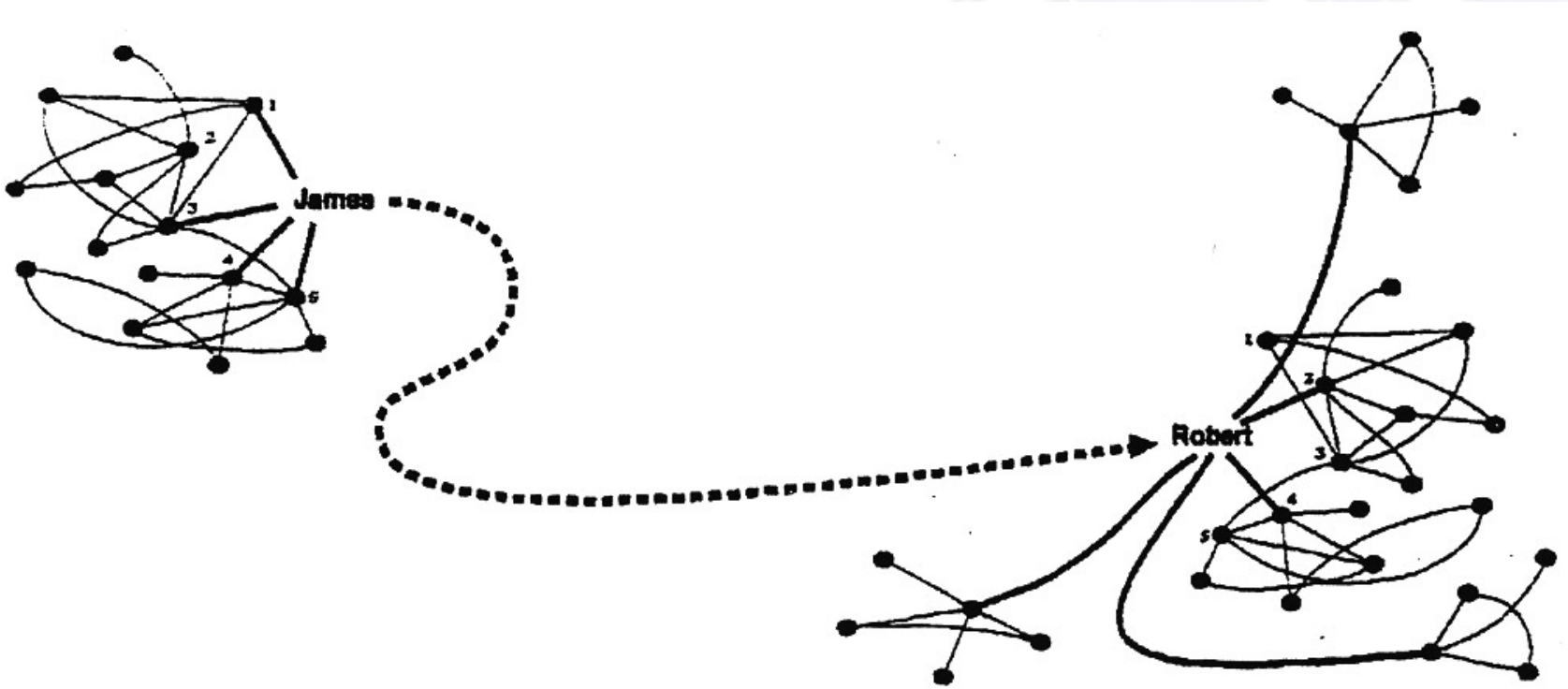
Creating a culture of innovation

What cultural and institutional factors drive innovation over time?



Creating a culture of innovation

- **How to develop an innovation network?**
- **How to support innovation across the firm or agency?**



Lead Like an Entrepreneur

Tactics to expand your leadership capabilities by applying entrepreneurial skills in your organization



Entrepreneurship: The Other Side of Innovation

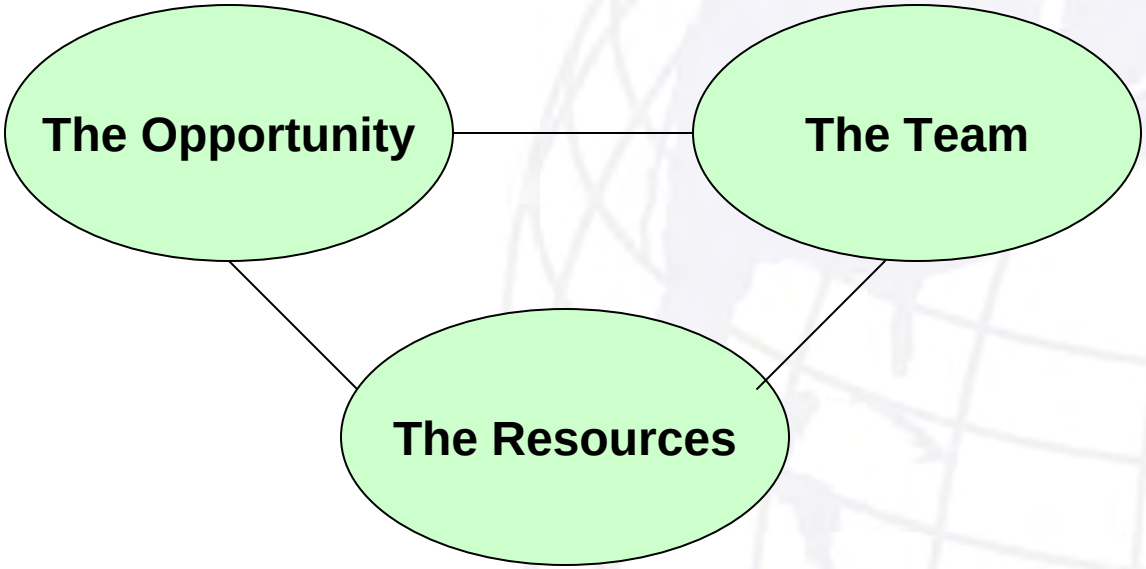
- "Entrepreneurship always involves innovation, but innovation does not always involve entrepreneurship"
- 15 years working with large organizations trying to rekindle/sustain both
- Identification & articulation of underlying principals
- The creation of Value

The Entrepreneurial Process

Ideas



The Balancing Act



NAVAL POSTGRADUATE SCHOOL

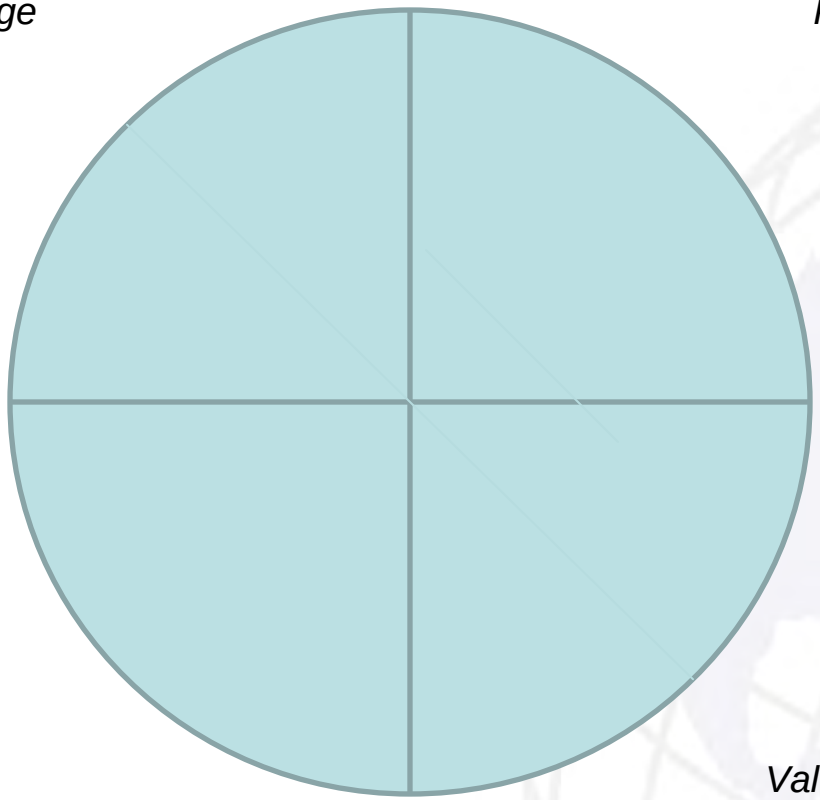
Focusing Entrepreneurial Energy

	Internal	External
Activist	***"Miners"*** (Value Chain)	***"Explorers"*** (Market)
Catalyst	***"Accelerators"*** (Unit)	***"Integrators"*** (Enterprise)

N.Thornberry Copyright 2006

N.Thornberry 2004

What kind of Innovation?



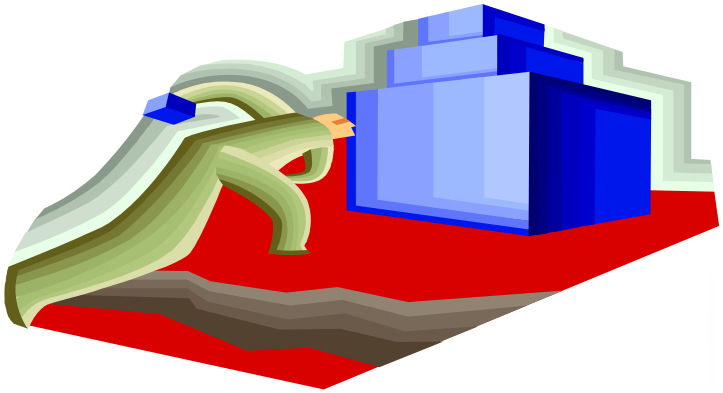
Adapted from Sawhney, Wolcott, Arroniz, SMR, 2006

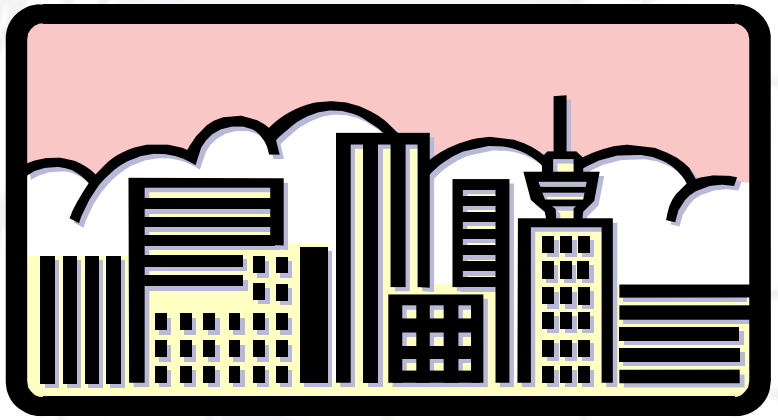
Place your Bets!

Entrepreneurial Leaders?

Entrepreneurial Engines (structures/processes)?

A combination?





Opportunity Engines

- IDG
- Siemens
- P&G
- Intel
- IBM



The McGraw-Hill Companies

BusinessWeek

APRIL 24, 2006

THE WORLD'S MOST INNOVATIVE COMPANIES

p. 62





WHO	HOW
APPLE	Innovator in chief
P&G	Share patents
SAMSUNG	Network of brainy scientists
IBM	Design strategy
BMW	Speed cycle time
STARBUCKS	Get into the customer's head
TOYOTA	Free time to experiment
GOOGLE	Embrace suppliers







- Average life expectancy of all firms, regardless of size, measured in Japan and much of Europe, is only 12.5 years.
- The average life span of a multinational organization - Fortune 500 or equivalent - is around 45 years.
- One third of the companies listed in the Fortune 500 in 1970 for example, had disappeared by 1983 - acquired, merged or broken to pieces.
- The first S&P index of 90 major US firms was created in the 1920s. The firms on that original list stayed there for an average of 65 years. By 1998, the average tenure of a firm on the expanded S&P 500 was 10 years.

Source: The Living Company, Arie de Geus

- 80% of venture capital funded start-ups fail within the 1st 2 years
- 90% of all firms are unable to sustain an above-average growth rate for more than a few years
- 75% of new products launched by established firms fail
- In 2006 Hyundai beat Toyota in JD Power's Quality Survey
- 2007 Forrester Report questions ROI of government sponsored innovation research as creating no sustainable value

Source: Christensen, 2004



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In Search of the Dragon







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SCHOOL

Dragon Building

Innovation & Corporate Entrepreneurship
in Large Companies

Monterey, California
WWW.NPS.EDU

The Best of Both Worlds

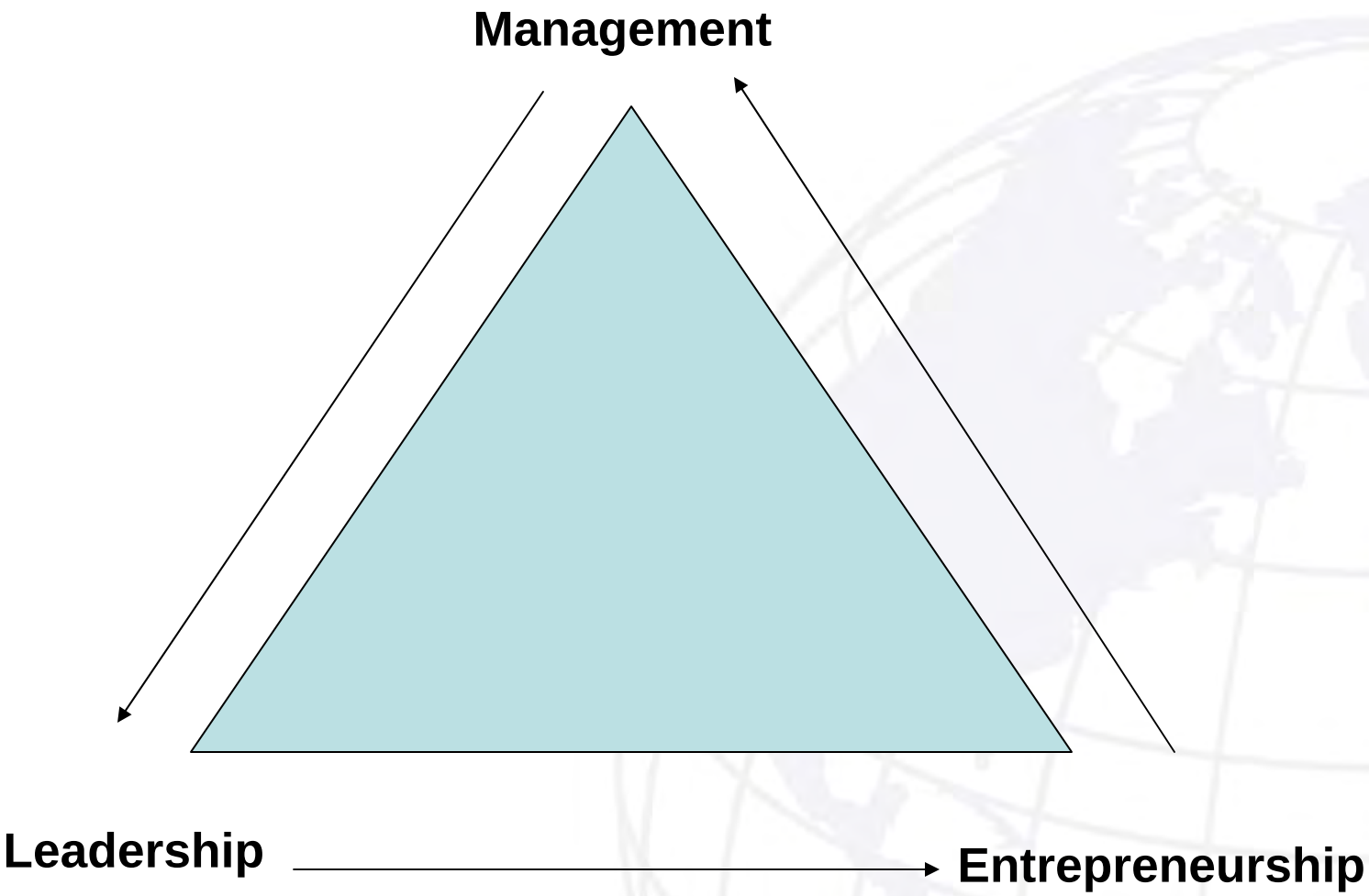
- Strategic planning
- Organizational structure
- Control of employee behaviors
- Strong/Powerful

- Opportunity focus
- Opportunity structure
- Release of employee creativity
- Agile

Dragon Serum

- Siemens
- Mott's (Cadbury Schweppes)
- France Telecom
- Sodexho
- DaimlerChrysler

A New View



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Focusing Entrepreneurial Energy

	Internal	External
Activist	***"Miners"*** (Value Chain)	***"Explorers"*** (Market)
Catalyst	***"Accelerators"*** (Unit)	***"Integrators"*** (Enterprise)

N.Thornberry Copyright 2006

N.Thornberry 2004



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Dragon Dens

Structuring Innovation & Entrepreneurship In Large Companies

Monterey, California
WWW.NPS.EDU

Structures/Processes/Programs

- Systematize Innovation and entrepreneurial action
- Bolt on/Integrated
- Counterbalance current organization & culture
- Corporate Venturing Arms
- Innovation centers
- “VP of Strategy & Innovation”
- Open Sourcing

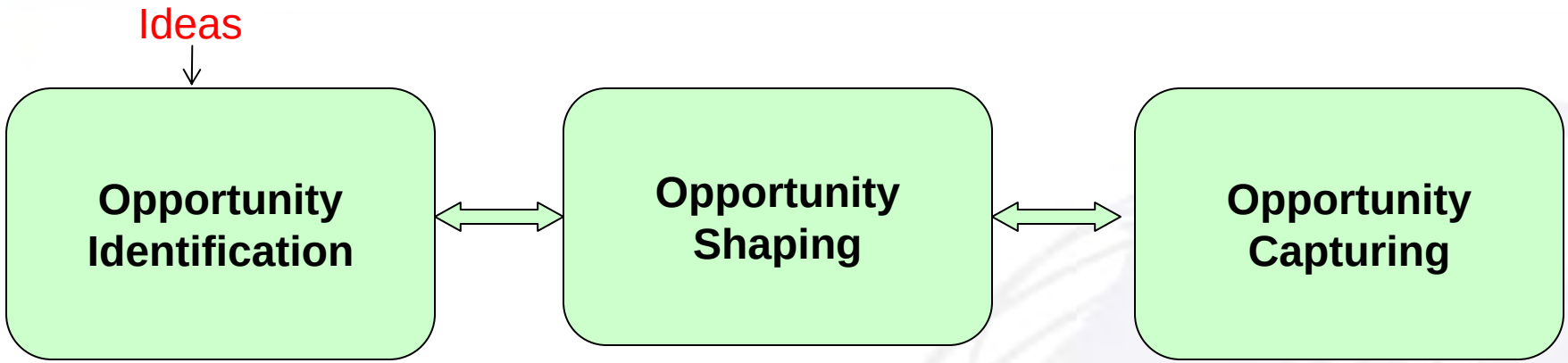
A Definition of Entrepreneurial Leadership

The Identification, Development & Capturing of *Opportunities* within an existing organization requires:

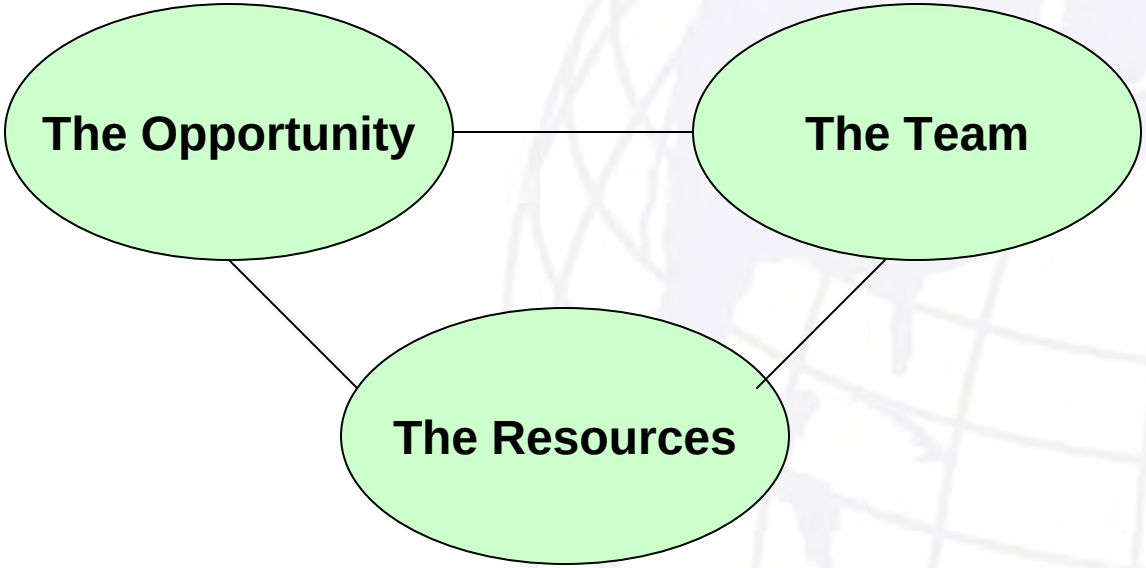
Innovative changes in the pattern of resource deployment for the:

- Creation of new capabilities
- Resulting in new possibilities for significantly better performance and
- Enhanced long term value of the firm to its owners and employees

The Entrepreneurial Process



The Balancing Act



Examples

- Intel
- Fortis
- Siemens
- IBM
- P&G

Fortis

- Stealth Entrepreneur
- Hidden Innovation fund
- Discovery
- Seed Capital
- Incubator Model

Siemens

- S3 General Managers Program
- Inject Entrepreneurial Serum
- 8 Months Entrepreneurship/Marketing/Finance
- BIPS (Business Improvement Projects)
- Measurable Results

- Enough Cost Cutting
- Focus on Innovation
- Analysis of Failures
- Development of Horizons Models
- Different Financial Requirements
- Different People
- Different Stages of Growth

EBO Failure Analysis

1. IBM management systems focus too much on short term results, not strategic business building
2. Preoccupation with current markets & existing offerings
3. Business model focused on profits & earnings not value creation
4. Financial requirements not appropriate for embryonic markets
5. IBM lacks skills in new business development

Horizons Model

- H 3 – Mature, well established businesses responsible for most of current profits
- H 2 - On the rise, rapid accelerating growth
- H 1 - Emerging, still developing, seeds of the companies future

Corporate New Ventures

Philosophy

- Forget the “Light bulb” phenomenon
- Best opportunities will come from leveraging our internal capabilities
- Structured approach to creativity
- Make it systematic and rigorous
- History will guide us: what worked, what didn’t & why
- Tremendous value in cross-organizational synergy

Structure & Mission

- Report directly to senior management
- Cross-organizational membership
- Entrepreneurial track record
- Tour of duty that could result in faster promotion
- Mission: to play a direct role in the development of at least on major new business per year
- Leave a knowledge trail for further new business development

CNV Environment

- All physically together
- Full-time job
- Open floor plan, no offices, “attic like”
- Couches, coffee machines, water coolers, trend magazines
- Away from the P&G coffee cart mentality
- Emphasis on maximizing each individual’s creativity
- Off-site laboratory, support staff, MBA interns

CNV Processes



Idea Generation

Thorough understanding of P&G capabilities

- Understanding of consumer needs, especially non-articulated needs
- Analysis over brainstorming
- Vision of P&G as a gold mine
- CNV to sift through tons of information in search of a few nuggets
- Designed and enhanced internet search engine through USC supercomputer

Idea Generation cont.

- Box lunches with external thought leaders
- Targeted convention and trade-show attendance
- Team members selected ideas for which they had some passion and personal interest
- Examined the function of technology, not its specific brand application
- Examined trends and look for intersections

Idea Evaluation

- “The key to innovation is not picking the winners, but weeding out the losers” (Craig Wynett CNV Manager)
- 3 Basic Questions:
  1. Is there a basic consumer need?
  2. Does P&G have a technology(s) that can satisfy this need?
  3. Can we create a profitable business model than can capture this opportunity?
- Analysis of successful/failed new product development activities

CNV Challenges

- Handed off 5 new projects the first year
- Sector responsibility for capturing opportunities which they did not create
- Conflict regarding who should lead the search for new products
- Stretched resources due to requests for help
- CNV could become the bureaucracy it hoped to outwit
- Internal enemies

P&G Now





P&G Transition

- CNV to Global BD to Licensing & CNV
- P&G still invests $2Billion per year in research but has Corporate Innovation Fund cut in half
- “Spaghetti against the Wall”
- Laffley: “More discipline”
- GBD: Swiffer, Thermacare, Olay
- Open to sell any one of its 27,000 patents
- Money given directly back to business unit who created it for future investments

P & G: Connect & Develop

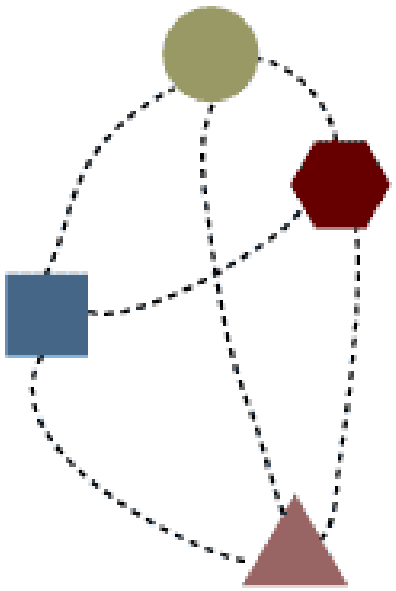
- 360 Degree Innovation - Internal
- Connect internally & externally
- Crest White Strips – R&D new film, bleach, fabric, oral care
- Olay daily facials – detergents, bounce, tissues & towels
- Intranet “Ask me”
- 21 R&D communities of practice
- Global cross business unit technology council

P & G (continued)

- 360 degree external
- 55 cross business unit “technology entrepreneurs”
- Search for ideas & solutions
- Heavy internet use
- 2002 (20%), 2005 (35%) target (50%)
- 20% decrease in internal R&D investment

A new model of Innovation

Innovation Network



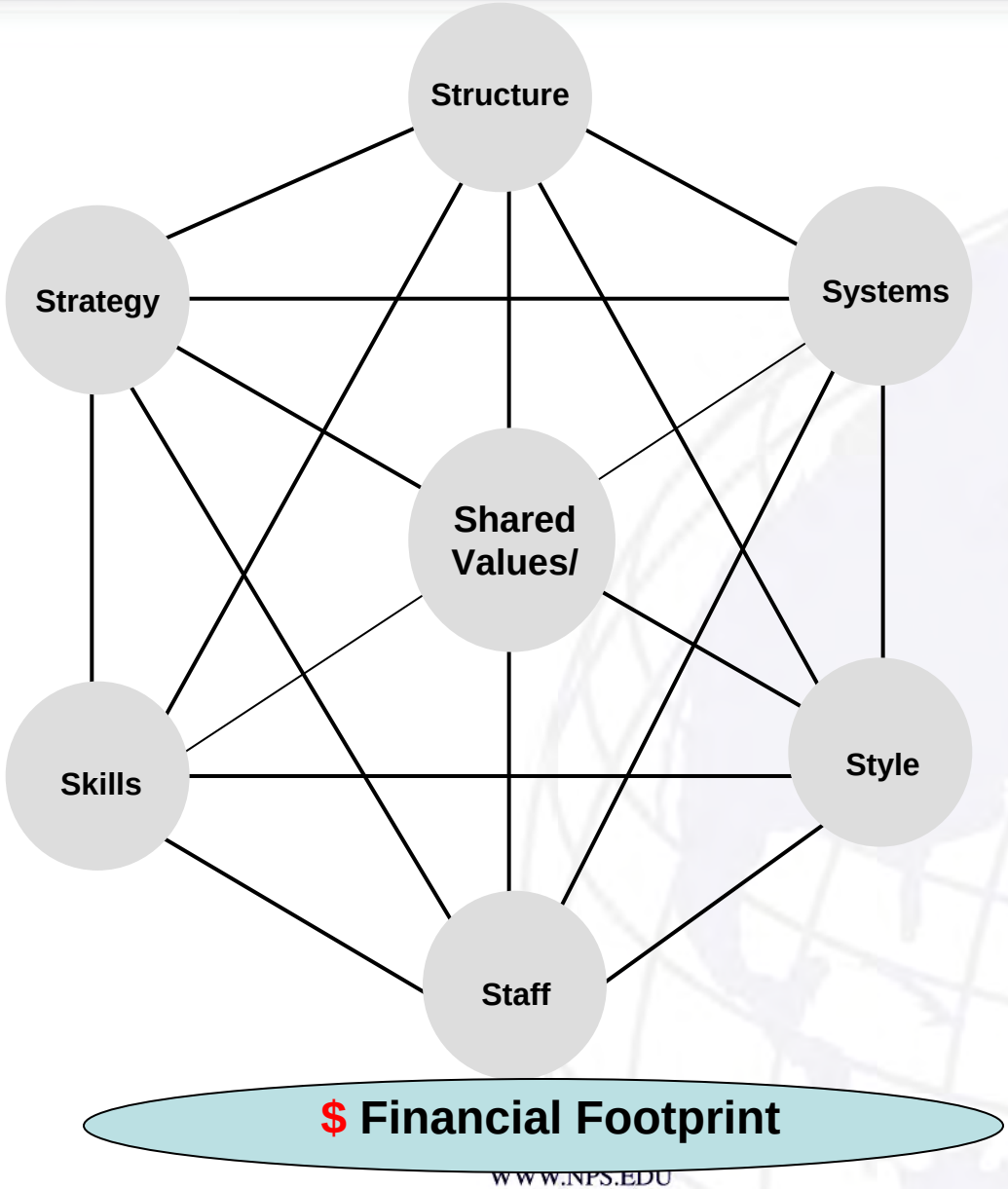
Business model	Specialization
Inventor	Intellectual powerhouses that conduct basic science research and/or design products and services that result in patentable inventions. **Example:** MIT, IDEO, SRI, GE Global Research, KAIST, Celera, Oxford, Microsoft Research, HP Labs, CNRS, Persistent, IIT
Transformer	Multifunction production and marketing services that convert inputs from Inventors and other Transformers into valuable business innovations for either internal or external customers. **Example:** Dell, Pfizer, BP, Merrill Lynch, SAIC, IBM, Infosys
Financier	Funding source for Innovation Network service providers — especially Inventors and startup Transformers. Financiers will seek to own intellectual property rights for inventions. **Example:** Cargill Ventures, Silicon Valley Bank, Garnett & Helfrich Capital, InterActiveCorp, ICICI Bank, Vulcan, IP2IPO
Broker	Market makers that find and connect Innovation Network service providers — buying and selling or enabling service delivery both within and among companies. **Example:** Knowledge Campus, yet2.com, PLX Systems, Big Idea Group, InnoCentive, Evalueserve, ISTC, Intellectual Ventures, P&G's Technology Entrepreneurs, DCMA, METI, TIE

Source: Forrester Research, Inc.

Trends

- Grafting VC models not appropriate
- Internal stakeholders must be involved from the outset
- Ecosystem focus
- Innovation from anywhere
- Networking paradigm
- Designated structures/designated roles
- Commercialization of innovation

The 7-S + 1 Framework





“Emotionally committed employees form teams that deliver exceptional outcomes.”

~ Curt W. Coffman and Gabriel Gonzalez-Molina
Follow This Path:How the World's Greatest Organizations Drive Growth by Unleashing Human Potential



WHY = 23%

Langer was right



Manifesto: 29 to 67 with 35 Manager to Reporter



“People want to be part of something larger than themselves. They want to be part of something they’re really proud of, that they’ll fight for, sacrifice for , trust.”

—Howard Schultz, Starbucks

GAO
Accountability • Integrity • Reliability

UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

21st Century Transformation Challenges and Opportunities



The Honorable David M. Walker
Comptroller General of the United States

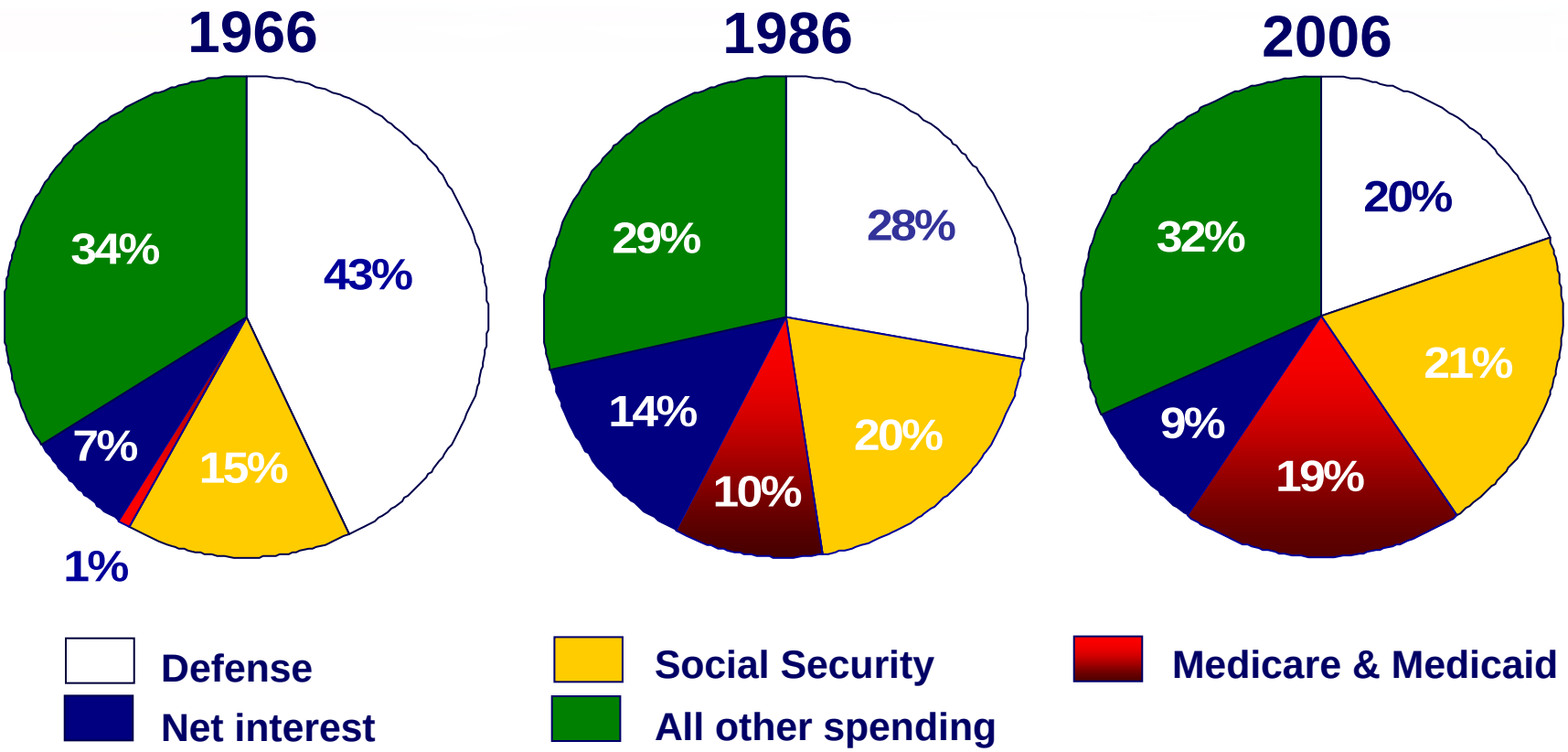
The Coast Guard Innovation Expo
New Orleans, LA
October 30, 2007

The Case for Change

The federal government is on a "burning platform," and the status quo way of doing business is unacceptable for a variety of reasons, including:

- Past fiscal trends and significant long-range challenges
- Selected trends and challenges having no boundaries
- Additional resource demands due to Iraq, Afghanistan, incremental homeland security needs, and recent natural disasters in the United States
- Numerous government performance/accountability and high risk challenges
- Outdated federal organizational structures, policies, and practices
- Rising public expectations for demonstrable results and enhanced responsiveness

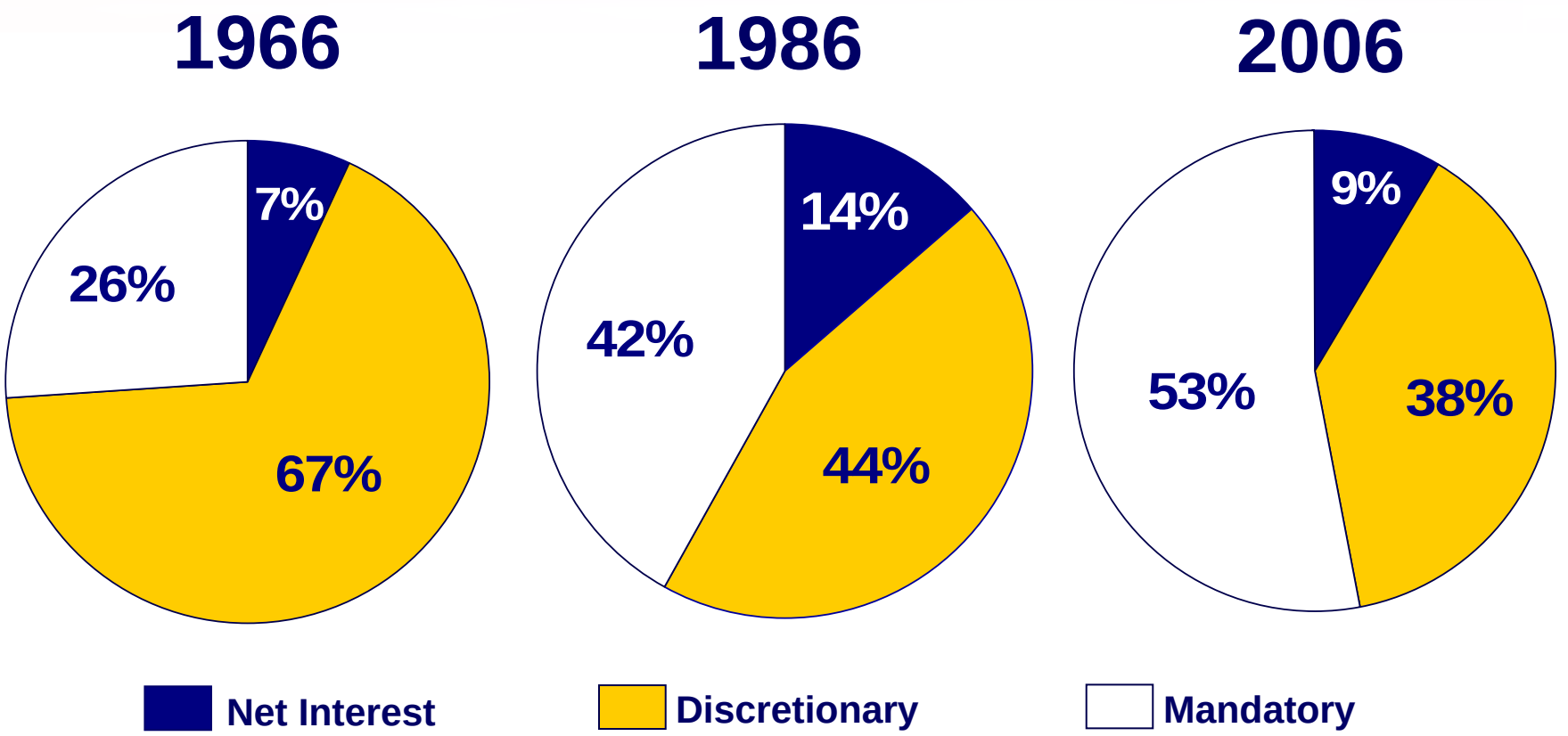
Composition of Federal Spending



Source: Office of Management and Budget and the Department of the Treasury.

Note: Numbers may not add to 100 percent due to rounding.

Federal Spending for Mandatory and Discretionary Programs



Source: Office of Management and Budget.

Fiscal Year 2005 and 2006 Deficits and Net Operating Costs

	Fiscal Year 2005	Fiscal Year 2006
	($ Billion)	
On-Budget Deficit	(494)	(434)
Unified Deficit[a]	(318)	(248)
Net Operating Cost[b]	(760)	(450)

Sources: Office of Management and Budget and Department of the Treasury.

[a]Includes $173 billion in Social Security surpluses for fiscal year 2005 and $185 billion for fiscal year 2006; $2 billion in Postal Service surpluses for fiscal year 2005 and $1 billion for fiscal year 2006.

[b]Fiscal year 2005 and 2006 net operating cost figures reflect significant but opposite changes in certain actuarial costs. For example, changes in interest rates and other assumptions used to estimate future veterans' compensation benefits increased net operating cost by $228 billion in 2005 and reduced net operating cost by $167 billion in 2006. Therefore, the net operating costs for fiscal years 2005 and 2006, exclusive of the effect of these actuarial cost fluctuations, were ($532) billion and ($617) billion, respectively.

Major Fiscal Exposures
($ trillions)

	2000	2006	% Increase
• **Explicit liabilities**	**$6.9**	**$10.4**	**52**
• Publicly held debt			
• Military & civilian pensions & retiree health			
• Other			
• **Commitments & contingencies**	**0.5**	**1.3**	**140**
• E.g., PBGC, undelivered orders			
• **Implicit exposures**	**13.0**	**38.8**	**197**
• Future Social Security benefits	3.8	6.4	
• Future Medicare Part A benefits	2.7	11.3	
• Future Medicare Part B benefits	6.5	13.1	
• Future Medicare Part D benefits	--	7.9	
Total	**$20.4**	**$50.5**	**147**

Source: 2000 and 2006 Financial Report of the United States Government.

Note: Totals and percent increases may not add due to rounding. Estimates for Social Security and Medicare are at present value as of January 1 of each year and all other data are as of September 30.

How Big is Our Growing Fiscal Burden?

This fiscal burden can be translated and compared as follows:

Total –major fiscal exposures	**$50.5 trillion**
Total household net worth[1]	**$53.3 trillion**
Burden/Net worth ratio	**95 percent**
Burden[2]	
Per person	**$170,000**
Per full-time worker	**$400,000**
Per household	**$440,000**
Income	
Median household income[3]	**$46,326**
Disposable personal income per capita[4]	**$31,519**

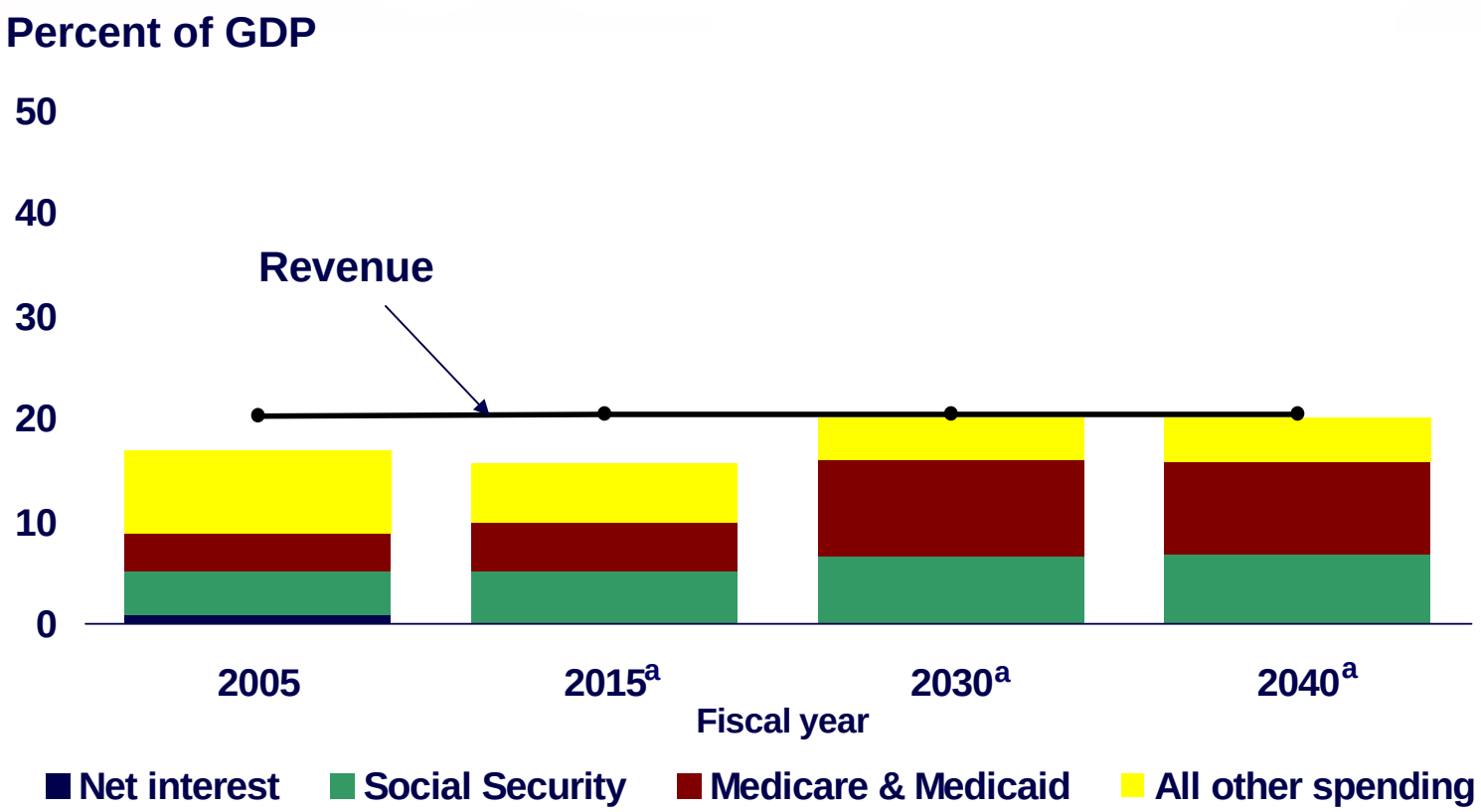
Source: GAO analysis.

Notes: (1) Federal Reserve Board, Flow of Funds Accounts, Table B.100, 2006:Q2 (Sept. 19, 2006); (2) Burdens are calculated using estimated total U.S. population as of 9/30/06, from the U.S. Census Bureau; full-time workers reported by the Bureau of Economic Analysis, in NIPA table 6.5D (Aug. 2, 2006); and households reported by the U.S. Census Bureau, in Income, Poverty, and Health Insurance Coverage in the United States: 2005 (Aug. 2006); (3) U.S. Census Bureau, Income, Poverty, and Health Insurance Coverage in the United States: 2005 (Aug. 2006); and (4) Bureau of Economic Analysis, Personal Income and Outlays: October 2006, table 2, (Nov. 30, 2006).

Potential Fiscal Outcomes

Under Baseline Extended (January 2001)

Revenues and Composition of Spending as a Share of GDP

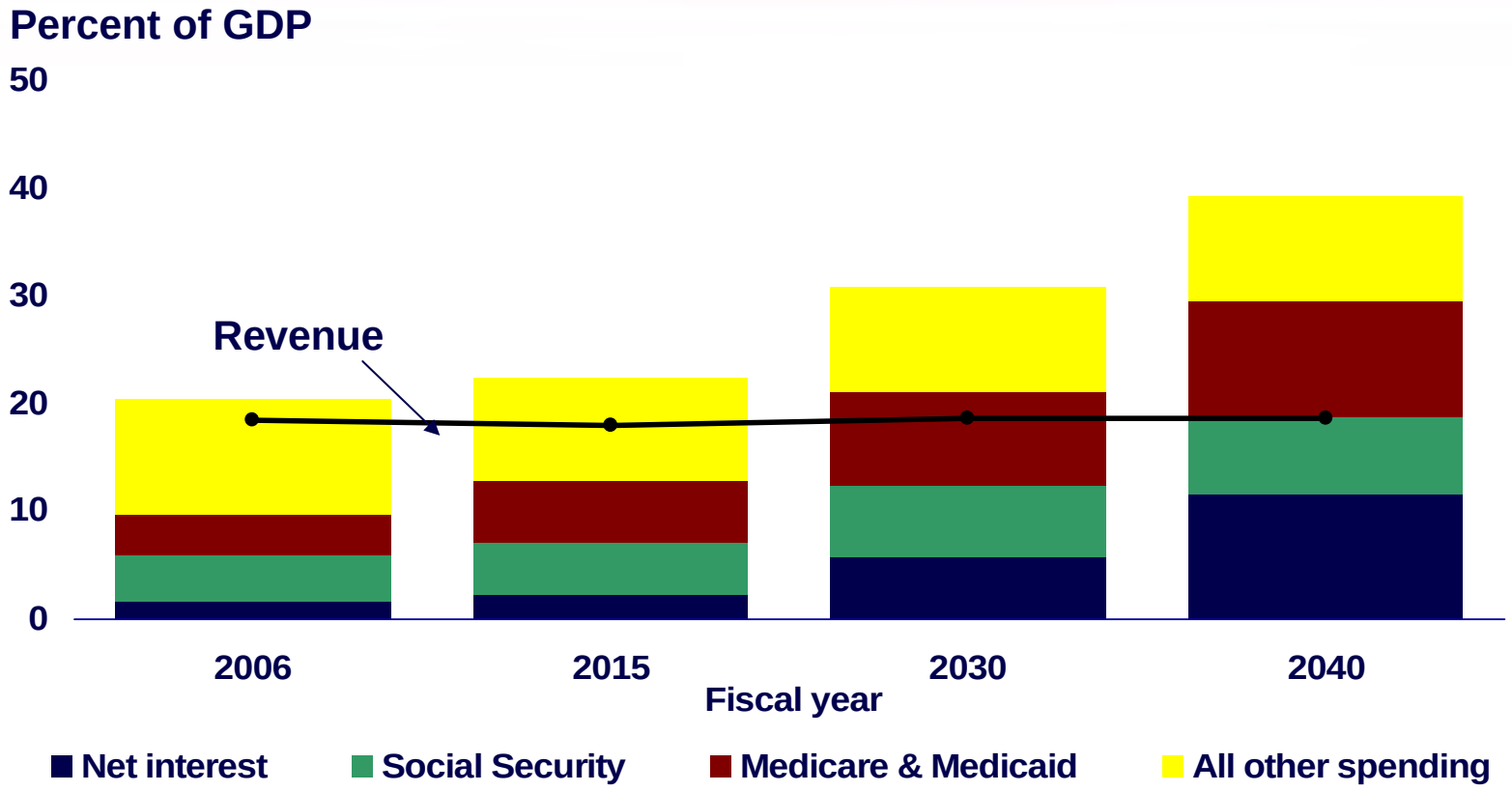


Source: GAO's January 2001 analysis.
[a]All other spending is net of offsetting interest receipts.

Potential Fiscal Outcomes

Under Alternative Simulation

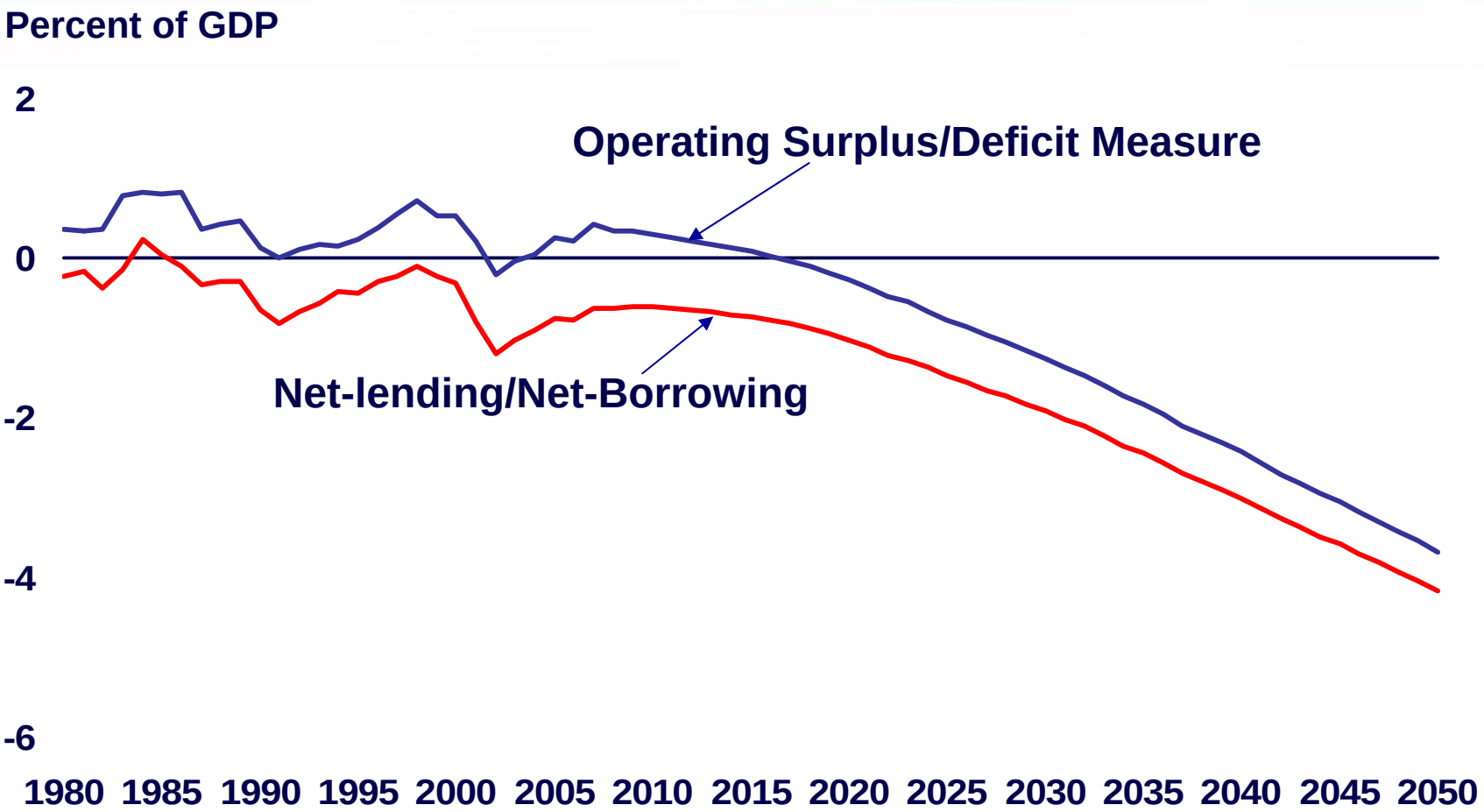
Revenues and Composition of Spending as a Share of GDP



Source: GAO's August 2007 analysis.

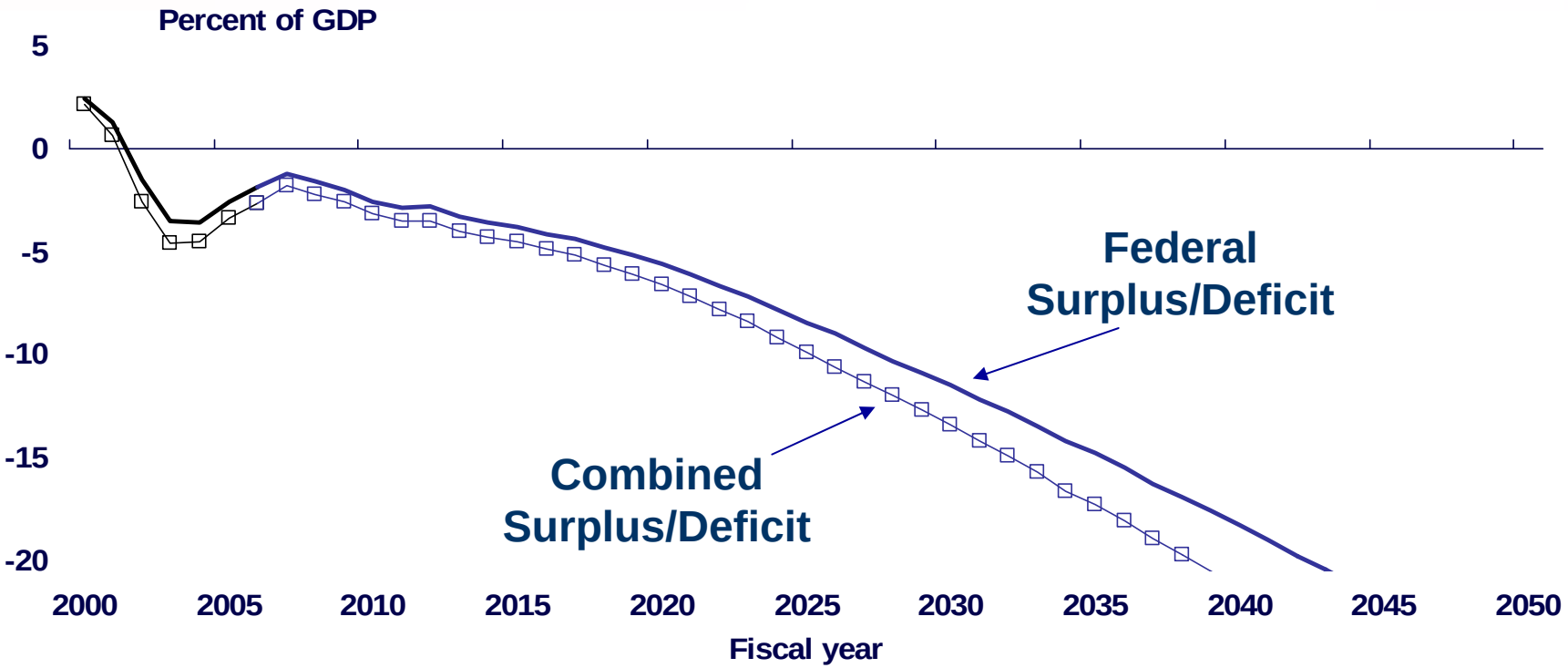
Notes: AMT exemption amount is retained at the 2006 level through 2017 and expiring tax provisions are extended. After 2017, revenue as a share of GDP returns to its historical level of18.3 percent of GDP plus expected revenues from deferred taxes, i.e. taxes on withdrawals from retirement accounts. Medicare spending is based on the Trustees April 2007 projections adjusted for the Centers for Medicare and Medicaid Services alternative assumption that physician payments are not reduced as specified under current law.

State and Local Governments Face Increasing Fiscal Challenges



Sources: Historical data from National Income and Product Accounts. Historical data from 1980 – 2006, GAO projections from 2007 – 2050 using many CBO projections and assumptions, particularly for next 10 years.

State and Local Fiscal Challenges Add to the Federal Government's Fiscal Challenge



Source: Historical data from National Income and Product Accounts, GAO Analysis

Note: Historical data from 2000 – 2006, projections from 2007 – 2050; state and local balance measure is similar to the federal unified budget measure. Federal Simulation Assumptions: Discretionary spending grows with GDP after 2007. AMT exemption amount is retained at the 2006 level through 2017 and expiring tax provisions are extended. After 2017, revenue as a share of GDP returns to its historical level of 18.3 percent of GDP plus expected revenues from deferred taxes, i.e. taxes on withdrawals from retirement accounts. Medicare spending is based on the Trustees' April 2007 projections adjusted for the Centers for Medicare and Medicaid Services' alternative assumption that physician payments are not reduced as specified under current law.

Current Fiscal Policy Is Unsustainable

- **The "Status Quo" is Not an Option**
  - We face large and growing structural deficits largely due to known demographic trends and rising health care costs.
  - GAO's simulations show that balancing the budget in 2040 could require actions as large as
    - Cutting total federal spending by 60 percent or
    - Raising federal taxes to 2 times today's level
- **Faster Economic Growth Can Help, but It Cannot Solve the Problem**
  - Closing the current long-term fiscal gap based on reasonable assumptions would require real average annual economic growth in the double digit range every year for the next 75 years.
  - During the 1990s, the economy grew at an average 3.2 percent per year.
  - As a result, we cannot simply grow our way out of this problem. Tough choices will be required.

The Way Forward: A Three-Pronged Approach

1. **Improve Financial Reporting, Public Education, and Performance Metrics**

2. **Strengthen Budget and Legislative Processes and Controls**

3. **Fundamentally Reexamine & Transform for the 21st Century (i.e., entitlement programs, other spending, and tax policy)**

Solutions Require Active Involvement from both the Executive and Legislative Branches

Key National Indicators

- **WHAT**: A portfolio of economic, social, and environmental outcome-based measures that could be used to help assess the nation's and other governmental jurisdictions' position and progress
- **WHO**: Many countries and several states, regions, and localities have already undertaken related initiatives (e.g., Australia, New Zealand, Canada, United Kingdom, Oregon, Silicon Valley (California) and Boston)
- **WHY**: Development of such a portfolio of indicators could have a number of possible benefits, including
  - Serving as a framework for related strategic planning efforts
  - Enhancing performance and accountability reporting
  - Informing public policy decisions, including much needed baseline reviews of existing government policies, programs, functions, and activities
  - Facilitating public education and debate as well as an informed electorate
- **WAY FORWARD**: Consortium of key players housed by the National Academies domestically and related efforts by the OECD and others internationally

Key National Indicators:
Where the United States Ranks

The United States may be the only superpower, but compared to most other OECD countries on selected key economic, social, and environmental indicators, on average, the U.S. ranks

16 OUT OF 28

OECD Categories for Key Indicators (2006 OECD Factbook)			
• Population/Migration	• Energy	• Environment	• Quality of Life
• Macroeconomic Trends	• Labor Market	• Education	• Economic Globalization
• Prices	• Science & Tech.	• Public Finance	

Source: 2006 OECD Factbook.



Serving the Congress and the Nation
GAO's Strategic Plan Framework

Mission

GAO exists to support the Congress in meeting its constitutional responsibilities and to help improve the performance and ensure the accountability of the federal government for the benefit of the American people.

Themes

- Changing Security Threats
- Sustainability Concerns
- Economic Growth & Competitiveness
- Global Interdependency
- Societal Change
- Quality of Life
- Science & Technology

Goals & Objectives

Provide Timely, Quality Service to the Congress and the Federal Government to . . .

. . . Address Current and Emerging Challenges to the Well-being and Financial Security of the American People *related to* . . .

- Health care needs
- Lifelong learning
- Work benefits and protections
- Financial security
- Effective system of justice
- Viable communities
- Natural resources use and environmental protection
- Physical infrastructure

. . . Respond to Changing Security Threats and the Challenges of Global Interdependence *involving* . . .

- Homeland security
- Military capabilities and readiness
- Advancement of U.S. interests
- Global market forces

Help Transform the Federal Government's Role and How It Does Business to Meet 21st Century Challenges *by assessing* . . .

- Roles in achieving federal objectives
- Government transformation
- Key management challenges and program risks
- Fiscal position and financing of the government

Maximize the Value of GAO by Being a Model Federal Agency and a World-Class Professional Services Organization *in the areas of* . . .

- Client and customer satisfaction
- Strategic leadership
- Institutional knowledge and experience
- Process improvement
- Employer of choice

Core Values

Accountability | **Integrity** | **Reliability**

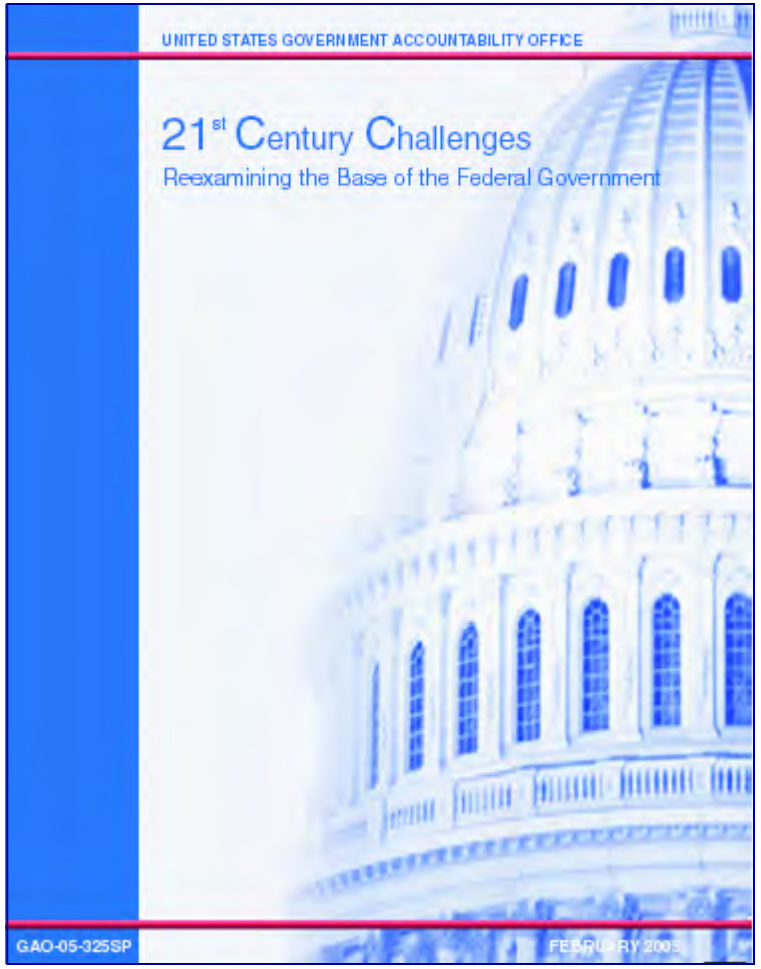
Source: GAO.

Selected Sustainability Challenges

- Fiscal Deficits and Debt Burdens
- Health Care Quality, Access, and Costs
- Defense and Homeland Security Strategies
- Social Insurance Commitments
- Tax Gaps and Policies
- Energy, Environment, and Resource Protection
- Immigration Policies
- Infrastructure Needs

21st Century Challenges Report

- Provides background, framework, and questions to assist in reexamining the base
- Covers entitlements & other mandatory spending, discretionary spending, and tax policies and programs
- Based on GAO's work for the Congress
- Issued February 16, 2005



Twelve Reexamination Areas

MISSION AREAS

- Defense
- Education & Employment
- Financial Regulation & Housing
- Health Care
- Homeland Security
- International Affairs
- Natural Resources, Energy & Environment
- Retirement & Disability
- Science & Technology
- Transportation

CROSSCUTTING AREAS

- Improving Governance
- Reexamining the Tax System

Illustrative 21st Century Questions: Homeland Security

Homeland security & defense questions relate to:

- **Homeland Security Risk:** What is an acceptable level of risk to guide strategies and funding?
- **Critical Infrastructure:** Are existing incentives and initiatives sufficient to support private sector protection of critical infrastructure they own?
- **Information Sharing:** How can intelligence and information on threats be shared with other levels of government and other stakeholders?

GAO's High-Risk List 2007

Addressing Challenges in Broad-based Transformations	Year Designated
• Strategic Human Capital Management[a]	2001
• Managing Federal Real Property[a]	2003
• **Protecting the Federal Government's Information Systems and the Nations' Critical Infrastructures**	**1997**
• **Implementing and Transforming the Department of Homeland Security**	**2003**
• **Establishing Appropriate and Effective Information-Sharing Mechanisms to Improve Homeland Security**	**2005**
• **DOD Approach to Business Transformation[a]**	2005
◦ DOD Business Systems Modernization	1995
◦ DOD Personnel Security Clearance Program	2005
◦ DOD Support Infrastructure Management	1997
◦ DOD Financial Management	1995
◦ DOD Supply Chain Management	1990
◦ DOD Weapon Systems Acquisition	1990
• FAA Air Traffic Control Modernization	1995
• Financing the Nation's Transportation System[a] **(New)**	2007
• Ensuring the Effective Protection of Technologies Critical to U.S. National Security Interests[a] **(New)**	2007
• Transforming Federal Oversight of Food Safety[a] **(New)**	2007
Managing Federal Contracting More Effectively	
• DOD Contract Management	1992
• DOE Contract Management	1990
• NASA Contract Management	1990
• **Management of Interagency Contracting**	2005
Assessing the Efficiency and Effectiveness of Tax Law Administration	
• Enforcement of Tax Laws[a]	1990
• IRS Business Systems Modernization	1995
Modernizing and Safeguarding Insurance and Benefit Programs	
• Modernizing Federal Disability Programs[a]	2003
• Pension Benefit Guaranty Corporation Single-Employer Pension Insurance Program	2003
• Medicare Program[a]	1990
• Medicaid Program[a]	2003
• National Flood Insurance Program[a]	2006

Source: GAO.

[a] Legislation is likely to be necessary, as a supplement to actions by the executive branch, in order to effectively address this high-risk area.

Definition of Waste

Waste involves the taxpayers as a whole not receiving reasonable value for money in connection with any government funded activities due to an inappropriate act or omission by players with control over or access to government resources (e.g., executive, judicial, or legislative branch employees, contractors, grantees, or other recipients)

Importantly, waste represents a transgression that is less than fraud and abuse and most waste does not involve a violation of law. Rather, waste relates primarily to mismanagement, inappropriate actions, or inadequate oversight

Examples of Waste

Illustrative examples of underlying causes of waste in the acquisitions and contracting area could include:

- Unreasonable, unrealistic, inadequate, or frequently changing requirements
- Failure to use competitive bidding in appropriate circumstances
- Failure to engage in selected pre-contracting activities for contingent events (e.g., hurricanes, military conflicts)
- Congressional directions (e.g., earmarks), and agency spending actions where the action would not otherwise be taken based on an objective value and risk assessment and considering available resources

Systemic Acquisition Challenges

1. Service budgets are allocated largely according to top line historical percentages rather than comprehensive strategic assessments and current and likely resource limitations

2. Capabilities and requirements are based primarily on individual service wants versus collective national needs (i.e. based on current and expected future threats) that are both affordable and sustainable over time

3. Defense consistently over-promises and under-delivers in connection with major weapons, information, and other systems (i.e. capabilities, costs, quantities, schedule)

4. Defense often employs a “plug and pray approach” when costs escalate (i.e. divide total funding dollars by cost per copy, plug the number that can be purchased, then pray that Congress will provide more funding to buy more quantities)

5. Congress sometimes forces the department to buy items (e.g. weapons systems) and provide services (e.g. additional health care for non-actives) that the department does not want and we cannot afford

Systemic Acquisition Challenges (cont'd)

6. DOD tries to develop high risk technologies after programs start instead of setting up funding, organizations, and processes to conduct high risk technology development activities in low cost environments (i.e. technology development is not separated from product development). Program decisions to move into design and production are made without adequate standards or knowledge

7. Program requirements are often set at unrealistic levels, then changed frequently as recognition sets in that they cannot be achieved. As a result, too much time passes, threats may change, and/or members of the user and acquisition communities may simply change their mind. The resulting program instability causes cost escalation, schedule delays, fewer quantities and reduced contractor accountability

8. Contracts, especially service contracts, often do not have definitive or realistic requirements at the outset in order to control costs and facilitate accountability

9. Contracts typically do not accurately reflect the complexity of projects nor appropriately allocate risk between the contractors and the taxpayers (e.g. cost plus, cancellation charges)

Systemic Acquisition Challenges (cont'd)

10. Key program staff rotate too frequently thus promoting myopia and reducing accountability (i.e. tours based on time versus key milestones). Additionally, the revolving door between industry and the Department presents potential conflicts of interest

11. The acquisition workforce faces serious challenges (e.g. size, skills, knowledge, succession planning)

12. Incentive and award fees are often paid based on contractor attitudes and efforts versus positive results (i.e. cost, quality, schedule)

13. Inadequate oversight is being conducted by both the Defense Department and the Congress which results in little to no accountability for recurring and systemic problems

14. Some individual program and funding decisions made within the Department and by the Congress serve to undercut sound policies

15. Lack of a professional, term-based CMO at DOD serves to slow progress on defense transformation and reduce the chance of success in the acquisitions/contracting and other key business areas

Challenges Faced by the Coast Guard

- Increasing demands upon all resources to conduct more maritime security missions.
- Need to continue legacy missions such a fisheries protection, law enforcement, search and rescue, marine safety, and polar ice breaking.
- Need to maintain aging fleet of ships and aircraft while at the same time move forward with plans to replace them through Deepwater acquisition program.





Coast Guard Deepwater Acquisition Challenges

- Coast Guard's Deepwater modernization program experienced problems in:
  - program management, including ineffective management and oversight teams, inadequate staffing, and ill-defined roles and responsibilities
  - contractor accountability and linking contractor performance to awards; and
  - control of costs through competition



Coast Guard Deepwater Acquisition Actions (cont'd)

- Coast Guard has announced and begun to implement actions to address these challenges, including:
  - taking over leadership of program management from the contractor
  - hiring acquisition staff and developing human capital improvements
  - revising award criteria to include incentives for performance; and
  - conducting business case analyses to ensure competition for future asset acquisitions



DHS Acquisition Management Challenges

DHS has struggled to provide adequate support and oversight of its acquisition function. It remains important that it:

- integrate the acquisition functions of component organizations more effectively across the department
- develop clear and transparent acquisitions policies and procedures, along with an acquisitions workforce trained to implement and monitor them; and
- evaluate and work to mitigate risks associated with contracts for services that support inherently governmental functions

DHS Progress Report: Acquisition Management

- DHS reported acquiring $15.6 billion in goods and services in FY 2006,
- DHS has made modest progress in achieving the following acquisition management performance expectations
  - Organizing acquisition functions to meet agency needs.
  - Developing clear and transparent policies and processes.
  - Developing an acquisition workforce to implement and monitor acquisitions.
- Improved assessment and oversight needed to manage risks of contractors performing tasks closely supporting governmental functions.

Trans FORMATION

Webster's definition

An act, process, or instance of change in structure appearance, or character

A conversion, revolution, makeover, alteration, or renovation

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Four Key Transformation Dimensions

Key Actions	Primary Responsibility	Secondary Responsibility
1. To make prudent budget & long-term fiscal decisions	The President and the Congress	Agency leadership (both political and career)
2. To enable key transformation efforts while providing protection from abuse of authority	The Congress and the President	Agency leadership (both political and career)
3. To lead key transformation efforts with existing authorities and within existing resource levels	Agency leadership (both political and career)	OMB and other selected government-wide agencies
4. To evaluate reform efforts and conduct continuous improvement initiatives	Agency leadership (both political and career)	Congress, OMB and selected government-wide agencies

Effective Management of Services Requires Both Strategic and Transactional Efforts

Strategic Level

Effective service acquisition requires the leadership, processes, and information necessary for mitigating risks, leveraging buying power, and managing outcomes

Transactional Level

Individual service transactions must focus on buying the right thing, the right way, while getting the desired outcomes

Source: GAO (analysis).

A comprehensive approach would use the strategic and transactional factors in a complementary manner to tailor management activity to ensure preferred outcomes

The Objective of Transformation for the Coast Guard

From the Commandant:

- Making the force structure more responsive to mission execution.
- Making support system more responsive to the operators.
- Making Coast Guard more responsive to the nation.



Commandant Directed Coast Guard Next Steps

- Take immediate steps to reorganize operational forces
- Improve service and support systems
- Better align with departmental and interagency partners
- Make logistics and financial systems more efficient and accountable



Three Key Illnesses

- ***Myopia***
- ***Tunnel Vision***
- ***Self-Centeredness***

Four National Deficits

- ***Budget***
- ***Balance of Payments***
- ***Savings***
- ***Leadership***

Five Leadership Attributes Needed for These Challenging and Changing Times

- ***Courage***
- ***Integrity***
- ***Creativity***
- ***Stewardship***
- ***Partnership***

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Accountability • Integrity • Reliability

UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

21st Century Transformation Challenges and Opportunities



The Honorable David M. Walker
Comptroller General of the United States

The Coast Guard Innovation Expo
New Orleans, LA
October 30, 2007

On the Web

Web site: www.gao.gov/cghome.htm

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