First Annual Partners' Meeting Presentation E2E Program

Arctic Domain Awareness Center (ADAC)
A DHS Center of Excellence

ARCTIC DOMAIN AWARENESS CENTER
A DEPARTMENT OF HOMELAND SECURITY CENTER OF EXCELLENCE
at UAA UNIVERSITY of ALASKA ANCHORAGE

Don Spalinger, LuAnn Piccard, Charlie Stuart, George Kamberov
PI, E2E (Theme 3); Program Manager; PM, Stakeholder Advocacy)
CAS, Biological Sciences; SOE, Project Management)
University of Alaska Anchorage

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Overview

- Our E2E effort is to build, test, and deliver an Integrated, Intelligent System of Systems (IISoS) for Arctic Domain Awareness to **Enable the Decision Maker**.

- Our overarching E2E goal is to:
  - Demonstrate and evaluate unmanned systems, sensors, and CBONS data acquisition in the arctic domain.
  - Fuse this data, and other relevant data streams into IISoS
  - Provide DHS stakeholders tools for visualization, evaluation, and action.

E2E Program

- Overview:
  - Year 1 Objectives/Milestones:
    - Codify the IISoS Performance Criteria, including:
      - Convene a Strategic Planning Committee to evaluate the Center's progress
      - Stand up a prototype of the IISoS Command Center
      - Demonstrate capabilities of the IISoS in an IONS (Crystal Serenity Cruise Ship Incident at sea)
      - Provide Project Management oversight for Themes 1 and 2 Research

E2E Program

- Phase I Progress:
  - Codify the IISoS Performance Criteria, including:
    - Convene Strategic Planning Committee
    - Stand up a prototype of the IISoS Command Center
    - Demonstrate capabilities of the IISoS in an IONS (Crystal Serenity Cruise Ship Incident)
    - Provide Project Management oversight for Themes 1 and 2 Research
  - We have completed all of the above milestones except (1).
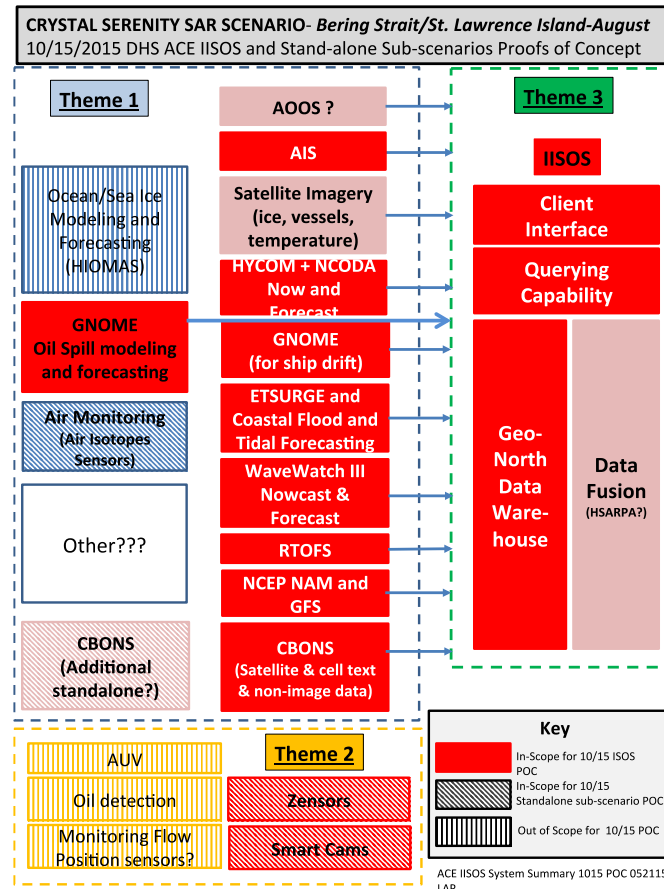
▶ Standing up the IISoS:

  ◦ Members of the Strategic Management Team and GeoNorth have made significant progress on the development of the IISoS, including defining its first operational exercise, and fusing data from relevant sources to provide projections of ship drift.

E2E Program

- ▸ Project Management (LuAnn Piccard)
  - ◦ Planning and Oversight of ADAC Activities
  - ◦ Example – the "Red Chart"

CRYSTAL SERENITY SAR SCENARIO- *Bering Strait/St. Lawrence Island-August* 10/15/2015 DHS ACE IISOS and Stand-alone Sub-scenarios Proofs of Concept

Theme 1

AOOS ?

Theme 3

AIS

IISOS

Ocean/Sea Ice Modeling and Forecasting (HIOMAS)

Satellite Imagery (ice, vessels, temperature)

Client Interface

HYCOM + NCODA Now and Forecast

Querying Capability

GNOME Oil Spill modeling and forecasting

GNOME (for ship drift)

ETSURGE and Coastal Flood and Tidal Forecasting

Air Monitoring (Air Isotopes Sensors)

WaveWatch III Nowcast & Forecast

Geo-North Data Ware-house

Data Fusion (HSARPA?)

Other???

RTOFS

NCEP NAM and GFS

CBONS (Additional standalone?)

CBONS (Satellite & cell text & non-image data)

Theme 2

AUV

Oil detection

Zensors

Monitoring Flow Position sensors?

Smart Cams

Key

In-Scope for 10/15 ISOS POC

In-Scope for 10/15 Standalone sub-scenario POC

Out of Scope for 10/15 POC

ACE IISOS System Summary 1015 POC 052115 LAP

E2E Program

- Technology Evaluation and Transition
  - Developed draft plan for evaluation of research performance and technology transfer process
    - Addresses:
      - Effectiveness and Relevance to Stakeholder's needs and interests
      - Technology Readiness Level
      - Cost Effectiveness for DHS Enterprise

E2E Program

- Milestones- Year 1:
  - Meet with USCG and RDC to determine system requirements
  - Complete the specifications for data formats and interfaces
  - HSARPA data fusion – integrate into our IISoS
  - USCG D17 has access to output from our IISoS
  - Issue an RFP for projects to replace system components that were not viable.
- Metrics – Year 1
  - Number of projects integrated into the IISoS: 2-3 expected
  - Number of projects that reach their specific target TRL

- Metrics met:
  - Projects integrated into IISoS:
    - CBONS
    - Oil spill (and ship drift) modeling
  - Projects reaching specific TRL Levels
    - Isotopic geochemistry of air, water, and ice project
      - Established monitoring station at the Port of Anchorage
      - Instrument (and scientists) will be sailing on the Healy in July
    - Progress on sensor projects

▸ Gaps and Lessons Learned

　◦ 1. Identification and engagement with key stakeholders not satisfactorily met to date

　　• Lesson learned: process requires development of working relationships with USCG personnel locally, at D17, and at the RDC. Locating the right people is rather difficult, in part because of the USCG hierarchy, and in part because of shifting personnel landscape.

▶ Other Progress

◦ E2E Career Development Thrust

• Developing a pipeline for undergraduate and graduate student recruitment, mentorship and training in ADAC research and development of career paths into the DHS Enterprise