COMPACFLT S&T Focus and the CEROS 2004 PROGRAM: A Collaboration

Mr. Doug Backes
Naval Research Science Advisor to
Commander, United States Pacific Fleet
808-471-5806, douglas.backes@navy.mil

Renaissance Ilikai Waikiki Hotel
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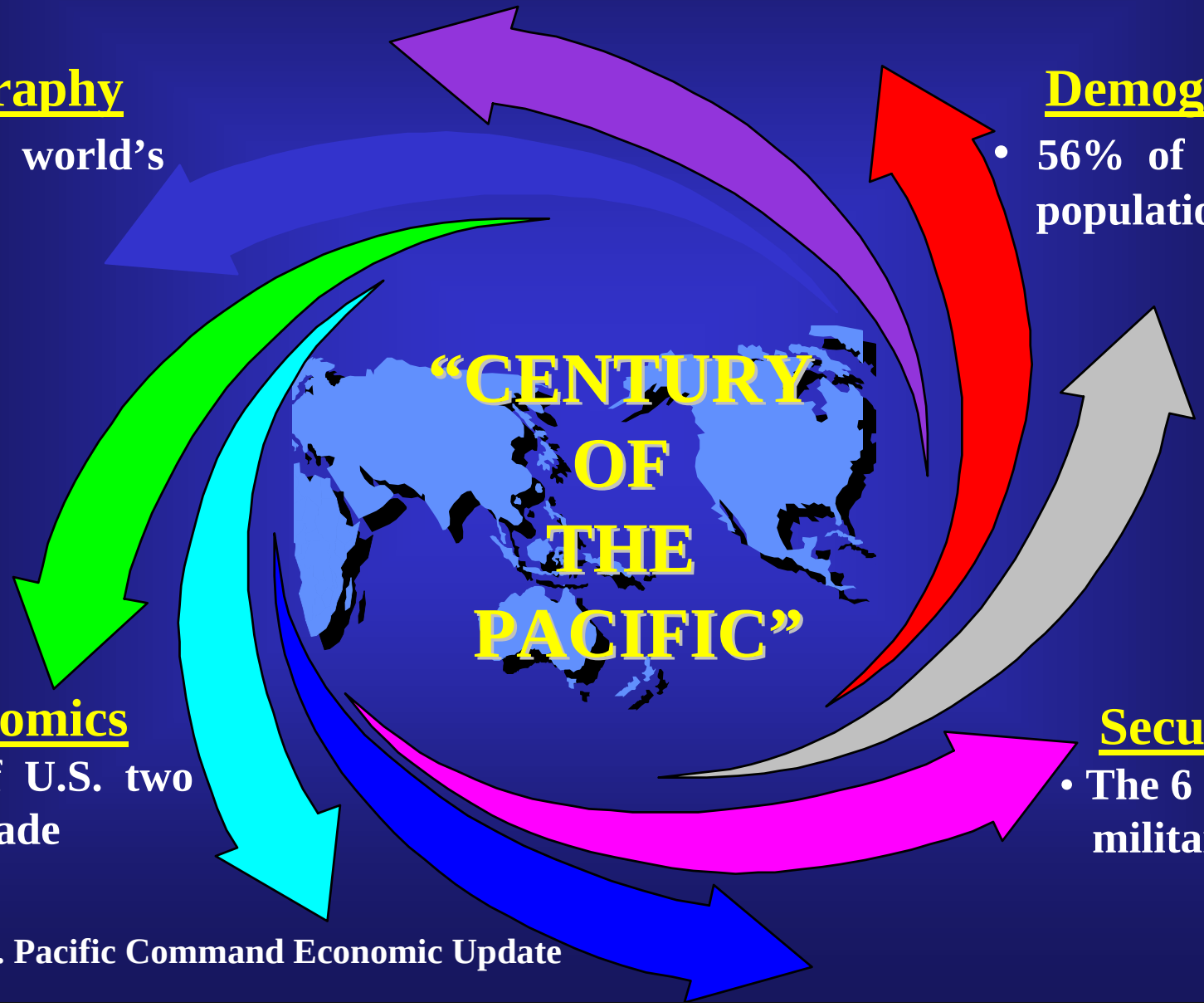
Why I am here

- *Objective: Stimulate thinking about how information from PACFLT and technology focus contained in CEROS might contribute to CEROS bidders better supporting PACFLT Operations*

21st CENTURY



Geography

- 1/2 the world's surface

Demographics

- 56% of world's population

Economics

- 33% of U.S. two way trade

Security

- The 6 largest militaries

Source: U.S. Pacific Command Economic Update

PACFLT Mission

- **To provide interoperable, trained and combat ready naval forces to USPACOM and other U.S. unified commanders.**

- **Support Pacific Command Theater Engagement Strategy during peace, crisis or war.**

- **CPF is a designated Joint Force Commander**

Role for Science Advisors

- Innovation is the art of the possible:
  - Know what is *technically possible*.
    - Help the commanders stay grounded.
    - Use the resources—principally the other experts—of the Naval Research Enterprise.
  - Know what is *realistically available*.
    - Be broadly familiar with the work going on throughout the Naval Research Enterprise.
  - Know what is *realistically acceptable*.
- ***Stay alert for opportunities.***

The Hope: S&T Innovations

- Long in preparation (even when they appear to arrive overnight). *Looking for your experience*
- Requirements rarely specified in advance. *But I can discuss focus and concerns*
- Important uses rarely anticipated by researchers. *I will look for unexpected fits.*
- Innovation occurs when someone can match a need to a solution (and usually this is someone who's neither the inventor nor the user). *My job! I believe its also part of CEROS function*

Know What You Want To Accomplish?

- MILITARY REVIEW FOR RELEVANCE AND IMPORTANCE TO COMMAND S&T NEEDS
- KEYS TO SUCCESS: TECHNICAL COMPETENCE + VALUE FACTORS
    - o "NO JOB CAN BE DONE WELL IF YOU DON'T KNOW WHAT YOU WANT TO ACHIEVE"

I will try to be attentive as to what you think are some of the Navy needs you can meet.

PACFLT SA - CEROS Interaction

Interactive Function of CEROS

FOCUS ON MARITIME MILITARY TECHNOLOGY AND PRODUCT DEVELOPMENT

- COMMAND INPUT TO TECH TOPICS + EXAMPLES POSTED ON WEBSITE
- S&T ADVISORS + STAFF EVALUATE ABSTRACTS FOR RELEVANCE AND IMPORTANCE
- INTERACTION WITH DARPA
- EXPERTISE IN MARKETING AND BUSINESS DEVELOPMENT

Unmanned Aerial Vehicles: UAV

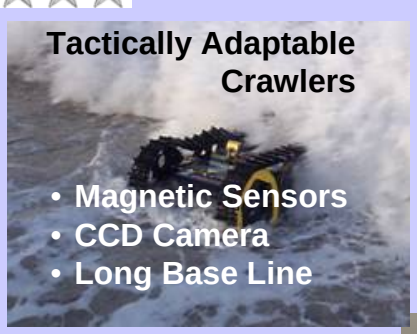
Silver Fox:

Navy SBIR delivers 8 systems to Navy Special Operations in 60 days. 18 systems currently deployed to CENTCOM.

26 Aug 2004: Business prospective; Fastest growing sector of DOD procurement.

Today! Looking to use them pervasively within the marine environment

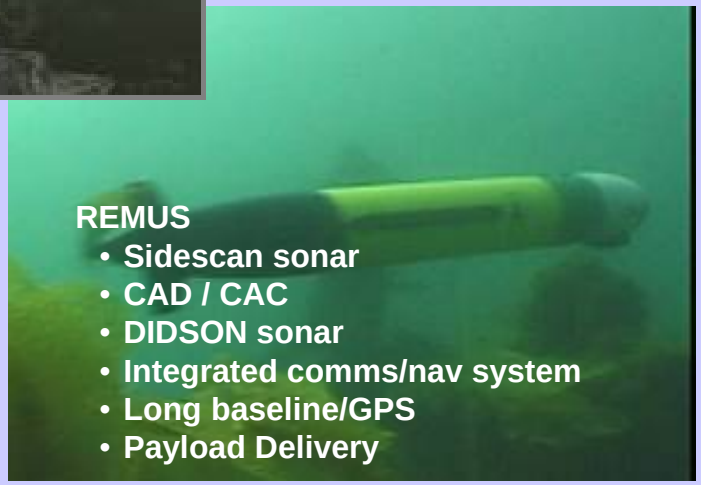
Autonomous Undersea Vehicles



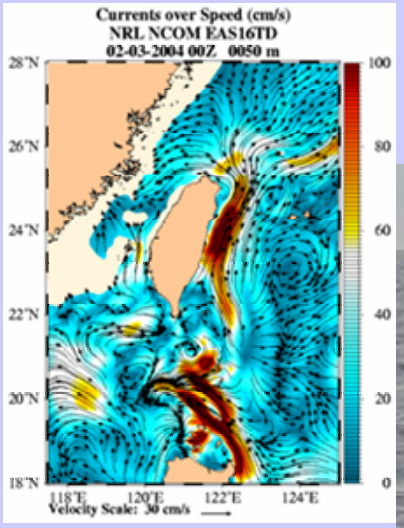
Naval D&I enabled these OMCM FNC products

Looking for use in waterside security, maintenance and shallow water mobile sensors

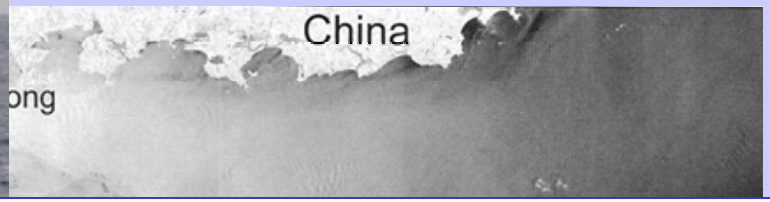
Deployable, affordable, adaptable systems were D&I tools



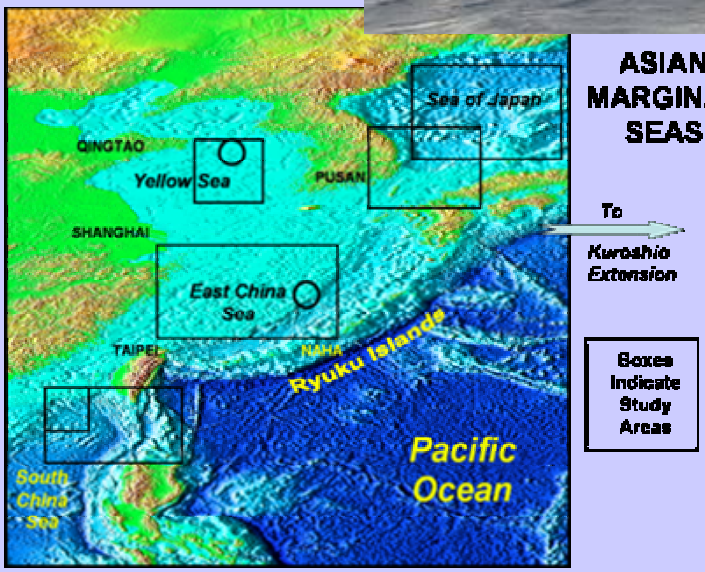
WESTPAC Oceanography



Basic research produces & validates high resolution & numerical ocean models…



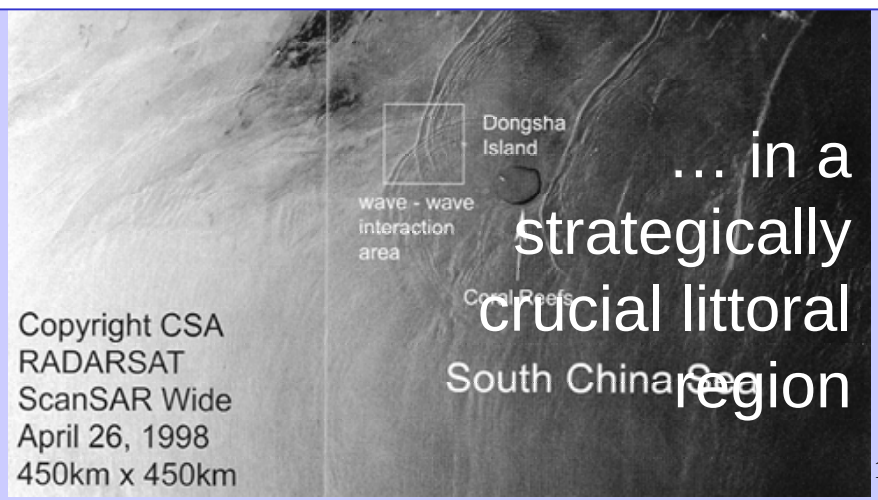
Looking for technology to adapt sensors and weapons to environment as well as to measure it.



ASIAN MARGINAL SEAS

To *Kuroshio Extension*

Boxes Indicate Study Areas



… in a strategically crucial littoral region

Visualization-Based Training

Shore Schoolhouse Training Apprentice—used at the Advanced and Officer Courses in Air, Surface, and Submarine Communities.

ASW Module, USS Enterprise

IMAT products now deployed in all submarines and battle groups

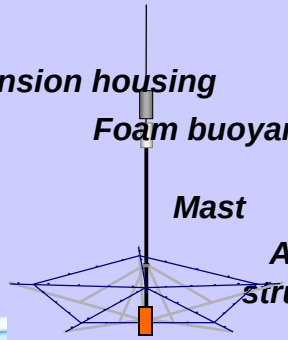
Basic cognitive science yields new tactical training tools for ASW operators—Interactive Multisensor Analysis Training products

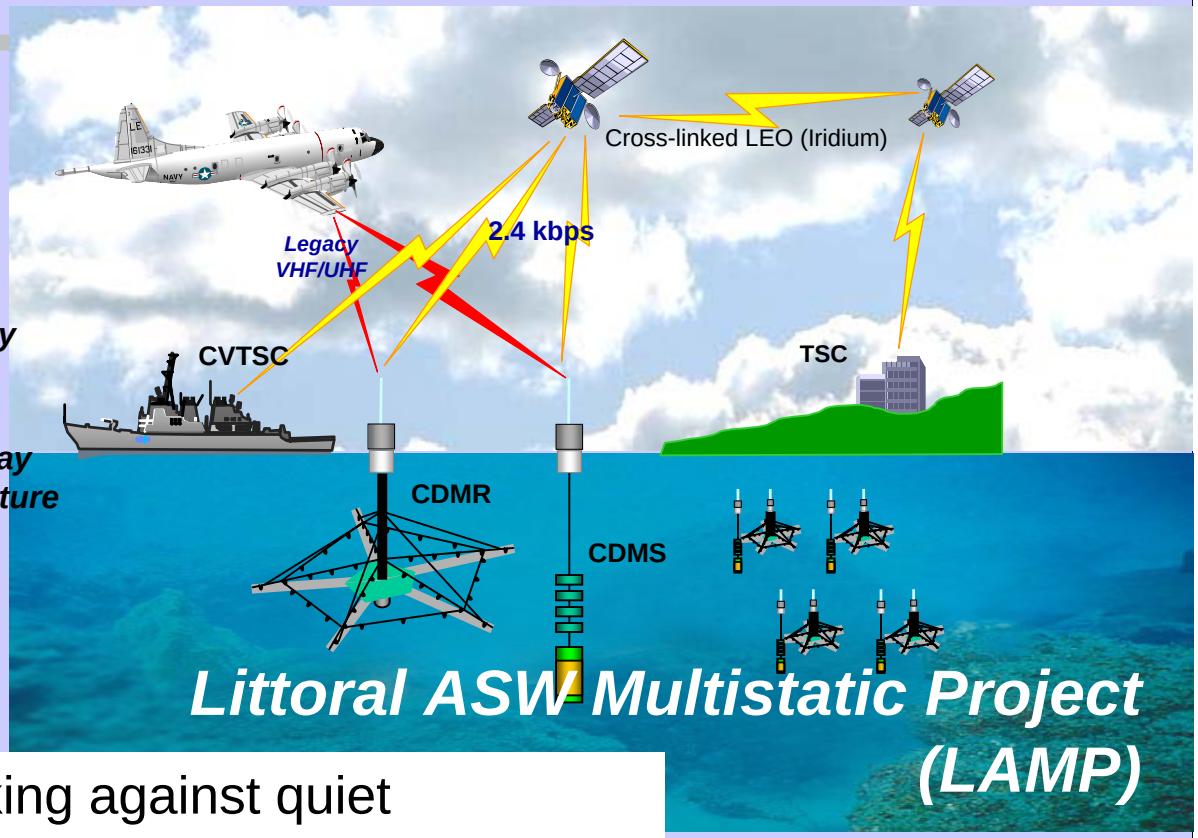
New Technology needed for expanded USW visualizations for fused situation awareness

Multistatic Sonar for Littoral Targets

MARS Processor

In-buoy signal processing

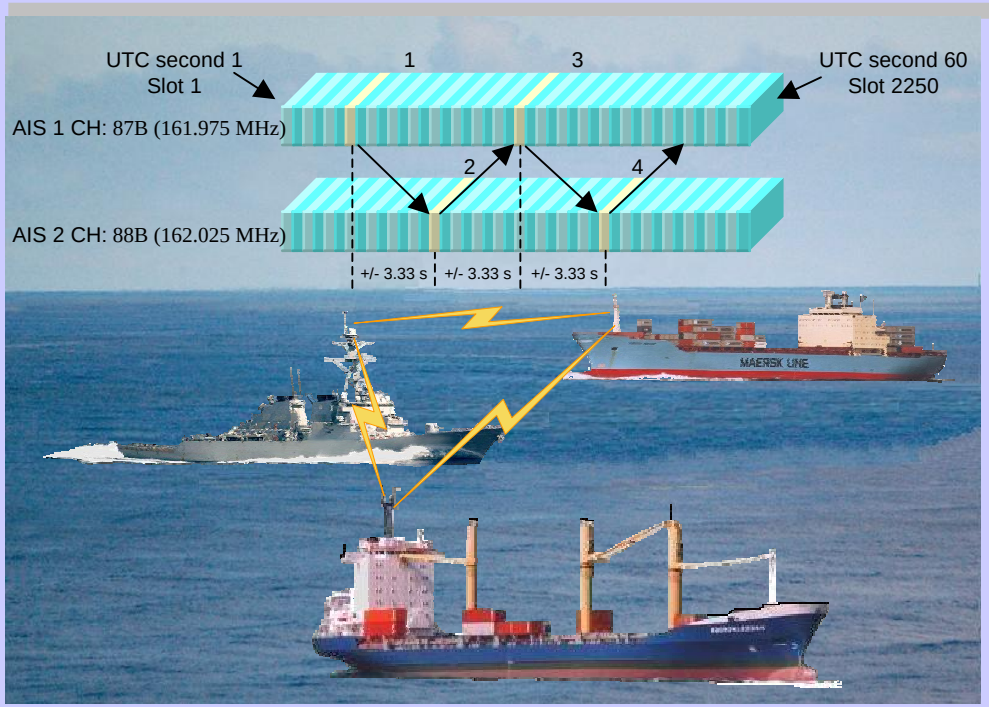




Network-centric ASW for working against quiet submarines in littoral clutter successfully demonstrated.

S&T Support needed: MMM & ESA impact mitigation automation. My number #1 S&T deficiency for the future of this VITAL ASW supporting technology. Understand the animals, their vulnerabilities, their distribution, the law and automatically mitigate problems.

Non DOD Technology: AIS Object Information



Vessel Type	Status	Report Interval
Static Information	None	3 minutes
Class A Ship	At Anchor	10 seconds
Class A Ship	0-14 knots	10 seconds
Class A Ship	0-14 knots and changing course	3.333 seconds
Class A Ship	14-23 knots	6 seconds
Class A Ship	14-23 knots and changing course	2 seconds
Class A Ship	>23 knots	2 seconds
Class A Ship	>23 knots and changing course	2 seconds

Navigational status
- Position
- COG
- SOG
- Heading
- Rate of Turn (ROT)

Voyage static information
- MMSI
- IMO number
- Call sign / name
- Length and beam
- Type of ship

Voyage dynamic information
- Draft
- Cargo type
- Destination (Option)
- ETA (Option)
- Route plan (Option)

Messaging
- Safety related broadcast message
- Addressed binary
- Addressed text
- Broadcast binary
- Broadcast text
- Regional application message

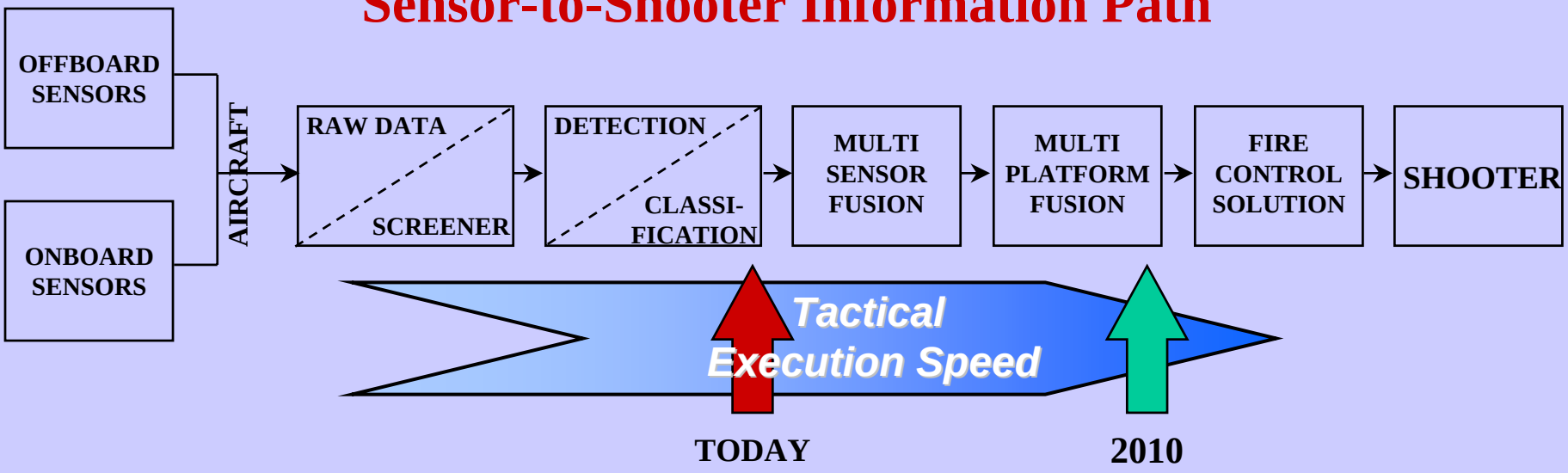
US Navy Use of AIS Information

- Maritime Domain Awareness, Antiterrorism & Force Protection
- Understanding the structure of the haystack
- Acquire positively ID'd ship's data
- At-sea traffic deconfliction / prediction
- . . .

Direct US interest in AIS must be measured as to provide service to shipping communities as well as military efficiency.

Automation Matters

Sensor-to-Shooter Information Path



- **Move Operator Toward The Shooter**
- **Minimize the Number of Operations**
- **Provide the Operator**

More Information & Less Data

***** Pervasive need in all mission areas on the path to improved performance *****

Investment in Naval S&T

(Why do we do what we do, and how do we know we're doing well?)

- Purpose of S&T:
  - Increased capabilities
  - Cost savings
- Motivation for investment
  - Transformational concept of operation
  - Technology opportunity
  - Capability gap
- Value proposition:

$$\frac{\text{\$ value of output product x probability of success}}{\text{\$ invested}}$$

- Reduced time-to-market (fielding)

The Navy thanks you for your interest in providing value S&T for your United Stated Pacific Fleet.

Questions?

Thanks for inviting me to collaborate with you today.