



Risk Management through Prevention



CAPT John Mauger

Commanding Officer

November 9, 2016



Risk Management is in Maritime DNA



Edward Lloyd's Coffee Shop on Tower St



“The Blue Book says we've got to go out and it doesn't say a damn thing about having to come back.”

-Keeper Patrick Etheridge



Risk is the Foundation for Prevention

Prevention CONOP

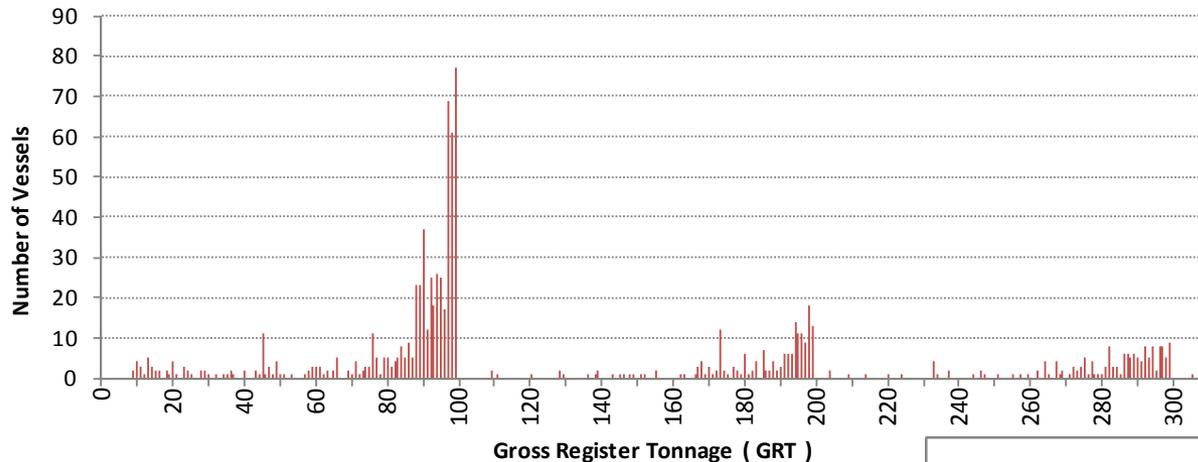




Prevention Risk Management-Applied

Existing regulations have multiple “risk” breakpoints; prescribe additional measures for increasing risk...

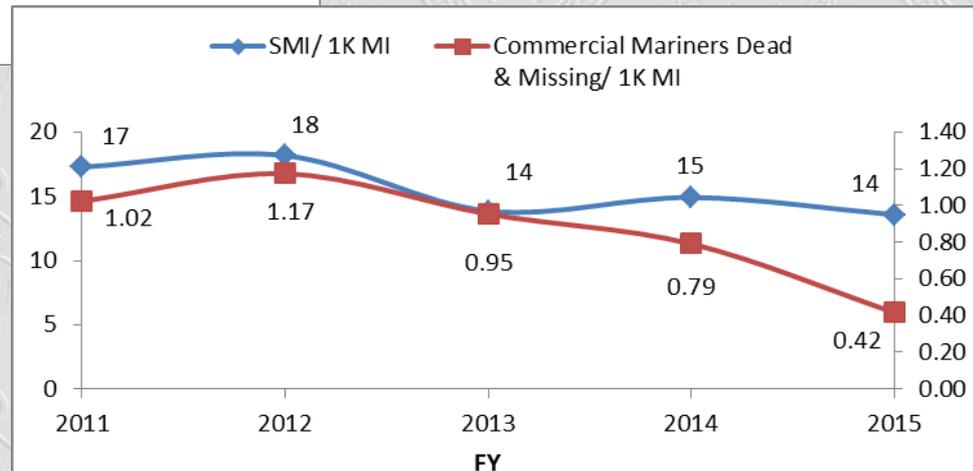
US Flag Offshore Supply Vessels in 1 GRT Intervals



Maritime Industry builds & operates to the risk profiles

Source: MSC Supplied Data

This layered approach has been effective at reducing casualties



Serious Marine Incidents and Commercial Mariner Dead and Missing per 1,000 Marine Inspections Source: CG-INV Supplied Data



Prevention's Triple Challenge

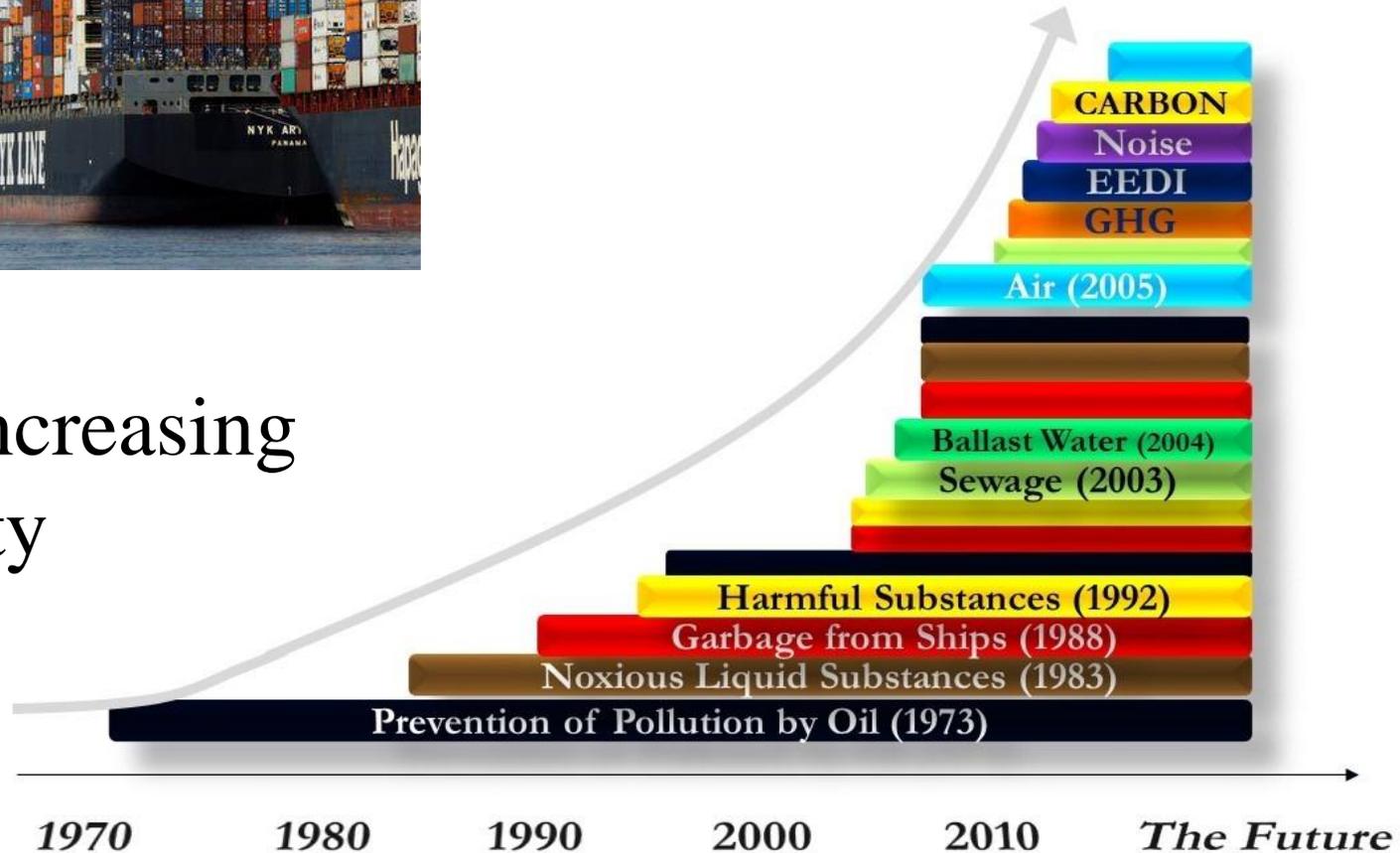


http://www.sacbee.com/opinion/california-forum/ciwp72/picture9924575/ALTERNATES/FREE_640/Port%20Labor.JPG



- ❑ Grow MTS Capacity
- ❑ Reduce Environmental Footprint

- ❑ Manage Increasing Complexity





How to Think About Maritime Risk?



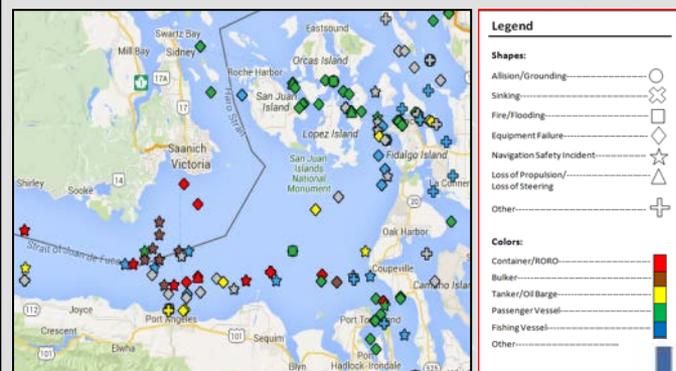
❑ Strategic -

- Disruptive forces which undermine our fundamental approach to risk management



❑ Operational -

- Seeking balance among risks across the maritime domain



Data Tools to Identify Safety and Environmental Risks to the Marine Transportation System
<http://trjournalonline.trb.org/doi/10.3141/2549-12>



❑ Tactical -

- Improving on-scene risk assessment and risk control measures





Strategic Risks – Disruptive Models

❑ Altering the Layered Approach

- On October 20, 2016 Otto and Budweiser completed the world's first shipment by self-driving truck. The driver was out of the driver seat during the entire 120 mile stretch of highway driving.

<https://www.youtube.com/watch?v=Qb0Kzb3haK8>



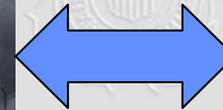
❑ Rapid Rate of Innovation/Change



Over regulation stifles innovation?



Regulatory structure exists but lags industry changes



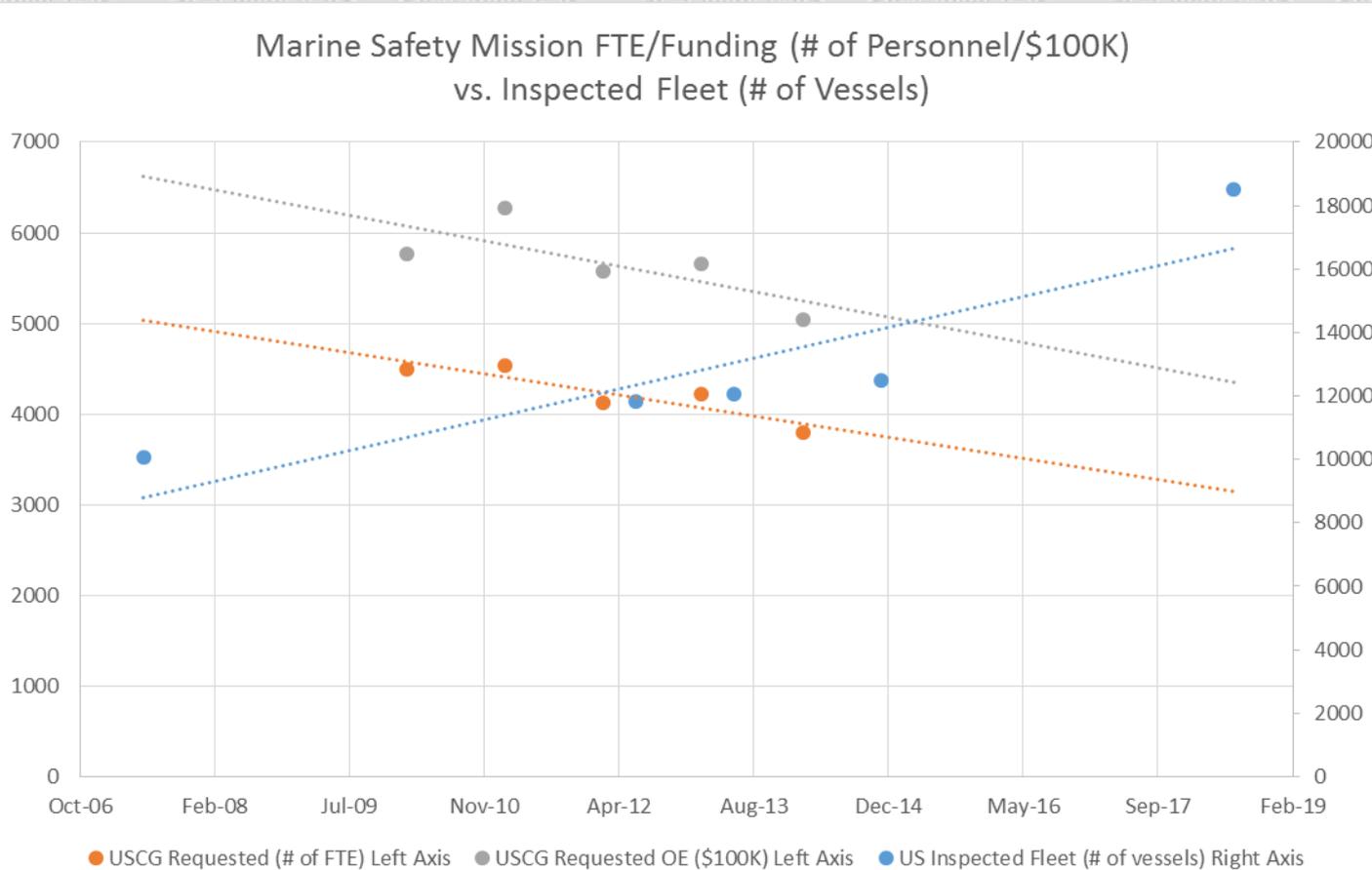
Market forces 'self regulate'



Strategic Risks – Federal Budget



- ❑ Strategic - Disruptive forces which undermine fundamentals
- Pressure on federal budgets will squeeze US Govt discretionary spending; same forces affect USCG



Budgetary data taken from USCG Congressional Budget Submissions FY11-FY15 and reflect resource requests for operating budgets and personnel (Full Time Equivalents) allocated to Marine Safety Mission. Prior to FY11 the Coast Guard used a different activity model. After FY15, the Coast Guard stopped reporting according to the mission activity model and instead adopted a new mission oriented program which blends marine safety, Aids to Navigation, Ice Operations and other activities under the Maritime Prevention mission oriented program. *FEB11 and FEB12 are the reported revised enacted figures. FEB14 is the requested FTE and OE. JUL 18 Vessel numbers are projected based on entry into force of Sub M



What Do These Models Tell Us?



❑ Strategic Level:

- ❑ Disruption is possible...need to remain vigilant and try to shape disruptive forces, while also rethinking how we manage risk

❑ Operational & Tactical level:

- ❑ Facing increasingly complex problems;
- ❑ Need to relook at existing risk models to leverage new technology



New Tools for Managing Complexity



*“The impact of the **increased complexity** in the maritime world makes the Coast Guard’s Marine Safety responsibilities more critical, and **more difficult**, than they were ten years ago... The Coast Guard needs to recognize these changes and **develop appropriate strategies and capability** to conduct the Marine Safety mission while at the same time facilitating commerce.” -*

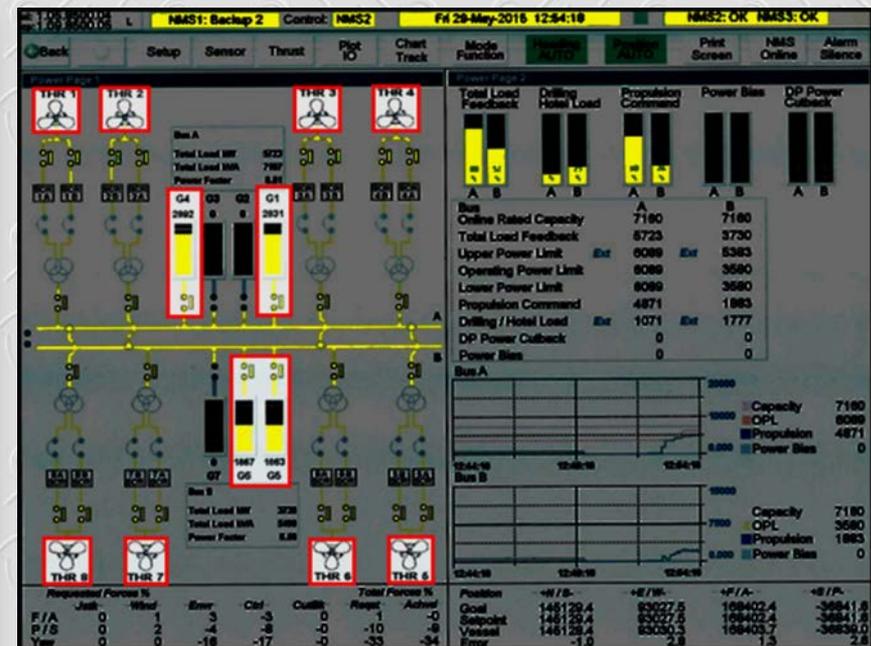
VADM Card USCG(ret.), 2007 Report



New Tools for Managing Complexity



- ❑ Accessing, analyzing & acting on increasingly diverse sources of information to automate, accelerate and improve decision-making.
- ❑ Example: Dynamic Positioning, Power Management





New Tools for Managing Complexity



- ❑ Highly Specialized AND Readily Adaptable
 - ❑ Ex: Subchapter D, I, L, O Offshore Support Vessel





New Tools for Managing Complexity



- ❑ Complexity driven by
 - ❑ More sensors; increased automation; accelerated decision-making
 - ❑ Both highly specialized AND readily adaptable
 - ❑ Engagement with larger/more diverse stakeholders

- ❑ **NEED** Dynamic Risk Mgmt tools which enable:
 - ❑ Integration of diverse types of information
 - ❑ Operation at the speed of light
 - ❑ Seamless connections between Design, Operations, Maintenance and Training
 - ❑ Facilitation of stakeholder engagement & risk comms



New Approaches for Existing Problems



“Application of modern information systems and auditing techniques should be employed to enhance effectiveness and efficiency...”

TRB Letter Report on the ‘Impact of United States Coast Guard Regulations on the United States Flag Registry’ 2016



New Approaches for Existing Problems

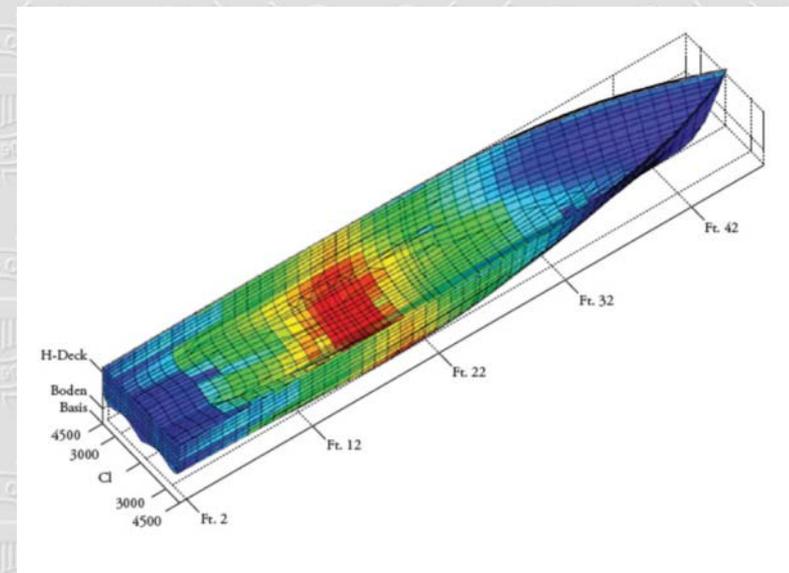


- ❑ How can we further optimize existing risk based models?
- ❑ Improve understanding of risk drivers
- ❑ Provide more risk control options

Port State Control Safety and Environmental Protection Compliance Targeting Matrix

I	II	III	IV	V
SHIP MANAGEMENT	FLAG STATE	RECOGNIZED ORGANIZATIONS	VESSEL HISTORY	SHIP PARTICULARS (SEE NOTE)
5 POINTS Listed Owner, Operator, or Charterer	7 POINTS Flag State has a detention ratio 2 or more times the overall average for all flag states.	PRIORITY I Detention ratio equal to or greater than 2%.	PRIORITY II First time to U.S. or no port State control exam in the previous 12 months.	4 POINTS General Cargo Ship Ro-Ro Cargo Ship Vehicle Carrier Passenger Ship involved in "day trips" or ferry service
2 POINTS Flag State has a detention ratio between the overall average and up to 2 times the overall average for all flag states	5 POINTS Detention ratio less than 2% but greater than or equal to 1%.	5 POINTS Detention ratio less than 2% but greater than or equal to 1%.	5 POINTS EACH Detention, denial of entry, or suspension in the previous 12 months	2 POINTS Bulk Carrier Refrigerated Cargo
	3 POINTS Detention ratio less than 1% but greater than .5%.	3 POINTS Detention ratio less than 1% but greater than .5%.	1 POINT EACH COIP restricted the operations of the vessel for safety related issues in the previous 12 months (including LODs)	1 POINT Oil or Chemical Tanker
	NO POINTS Detention ratio less than .5%.	NO POINTS Detention ratio less than .5%.	1 POINT EACH Reportable marine casualty in the previous 12 months	SHIP AGE (see Bulwark Beams)
			1 POINT EACH Marine violation in the previous 12 months	0-4 years - subtract 1 5-9 years - subtract 2 10-14 years - add 0 15-19 years - add 3 20-24 years - add 5 25+ years - add 7

Total Targeting Score
(Sum of Columns I-V) determines vessels priority (PI, PII, or NPV)



Deploy Finite Element Analysis "like" tools for risk identification and control



How Can the Marine Board Help?



Strategic Risk:

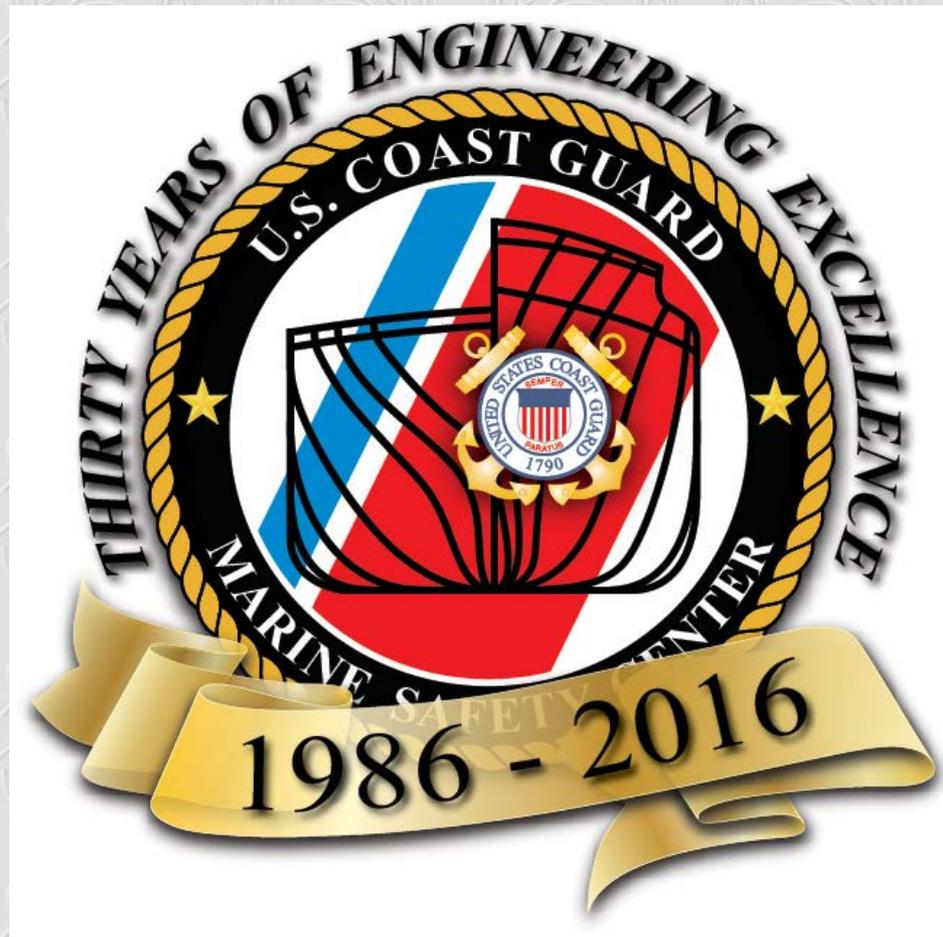
- Advise on disruptive forces & strategies to manage.
- Educate maritime stakeholders.

Operational and Tactical Risks:

- Advise on tools, methods, and best practices for:
 - (1) data mining/analysis to optimize current methods;
 - (2) dealing w/ increasing complexity (i.e. software integrity);
 - (3) risk communication to diverse audiences.
- Integration across areas of study: best practices in Key Performance Indicators (KPIs) and leading indicators for Safety Management/Safety Culture.
- Partnership/funding opportunities for further study (FFRDC)



Questions?



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