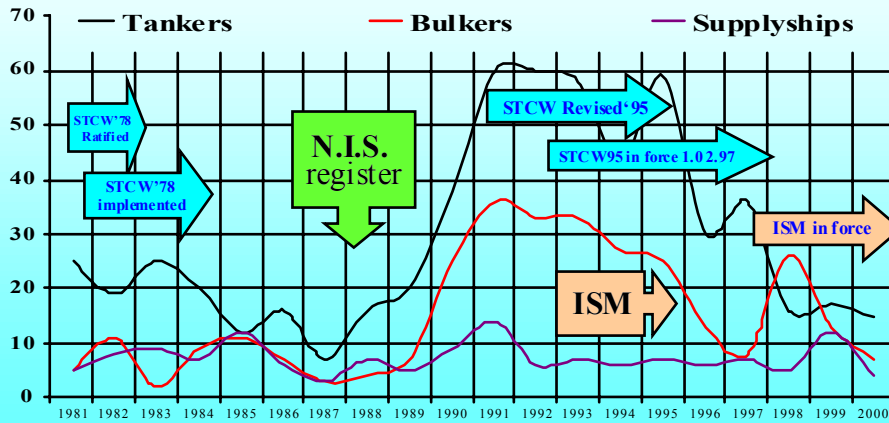




Navigation Technology

& Lessons from Casualties

" who won't learn from history - is
condemned to repeat it Churchill ?



Yearly "NMD" cases 1981-2001

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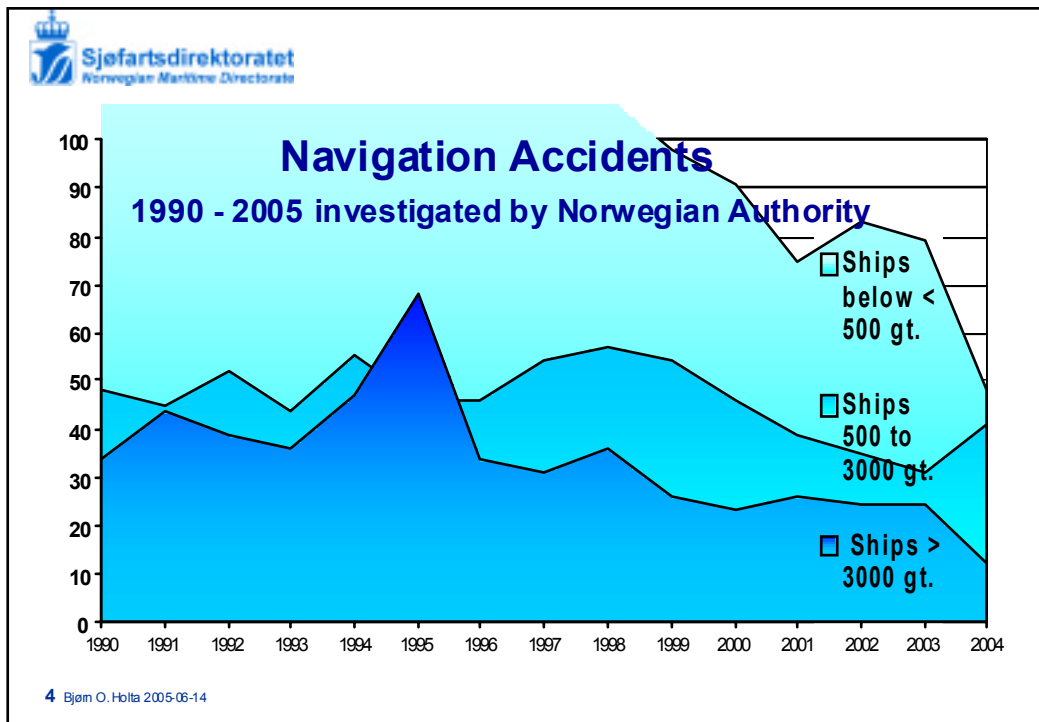
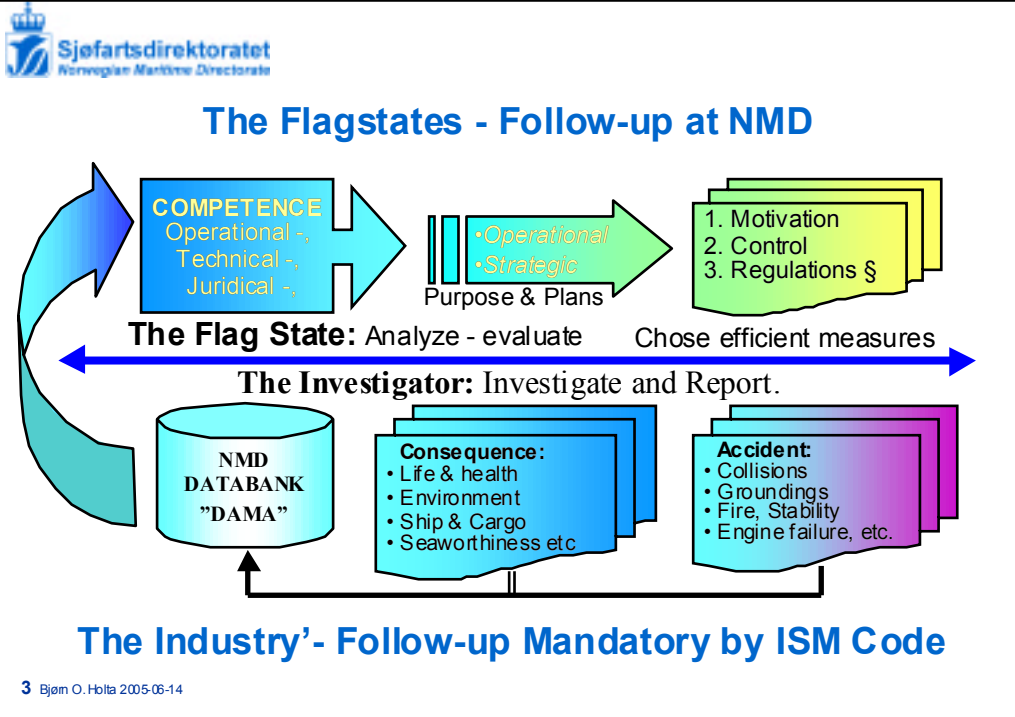


The Purpose of Casualty Investigation: Defence against accidents.

Own Research & Experience
 + Data from Casualty Information.
 = Improved Defences in Navigation

Experience transfer to
 Establish the - Risk Control Options
 Measure Safety – Quantify Values – Get Rewarded!

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New Technology => New Accident Possibilities



Challenges:

- INS & IBS: The “Man – Machine” dilemma.
- AIS – securing a reliable tool in collision avoidance
- Navigating from paper CHARTS to Electronic Systems and ECDIS.

Education: STCW(95) sets minimum – The Flag State Interprets:

Norway – Qualification Requirements and Certification Rights:

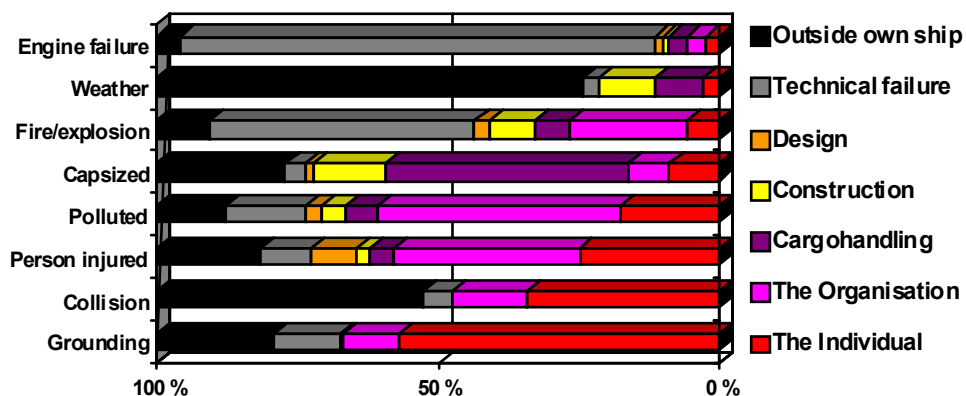
Chapter 11, § 11, “On board ships with ARPA, ECDIS, AIS and similar Navigation Equipment, the Navigator shall document professional education and training, and the limitations connected with the use of such equipment.”

TECHNICAL: IMO Performance Standard – Flag State/Class Confirms.

Close cooperation with the industry is necessary.

Minimum!

- The fields of Importance to You - Take a look at the Fields of Failure

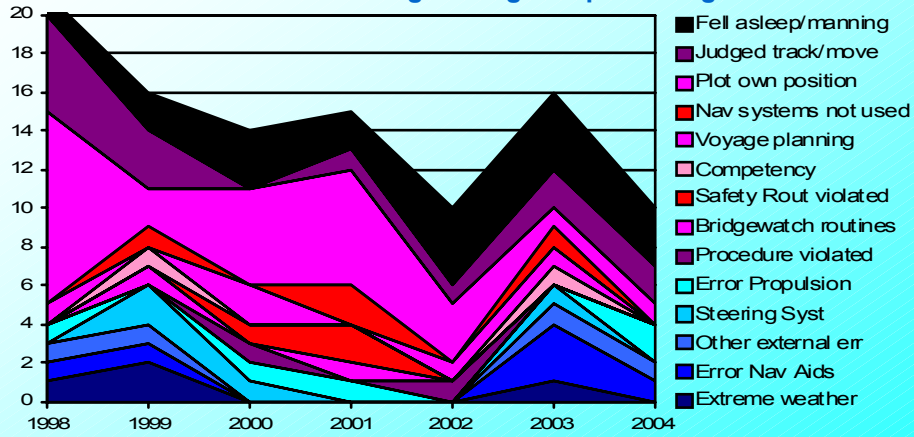


Use Casulty Information from your Flagstate to your benefit.



Sjøfartsdirektoratet
Norwegian Maritime Directorate

Looking at the Coast of Norway – Annual Groundings - Cargo Ships > 500 gt



Any effect of Electronic Charts & VTS ?
Spot Challenges Ahead?

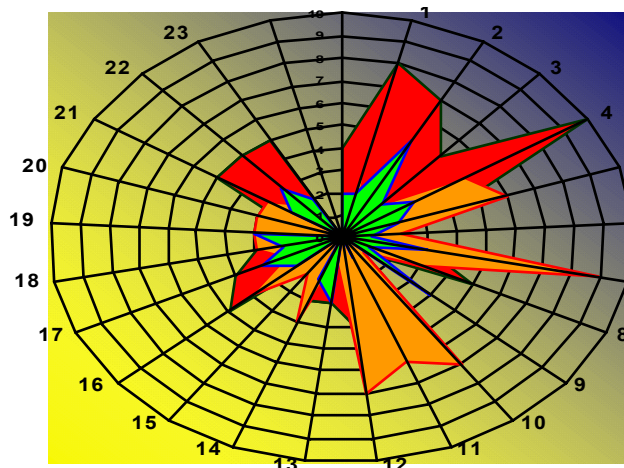
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Sjøfartsdirektoratet
Norwegian Maritime Directorate

Searching for Patterns in Collision Cases

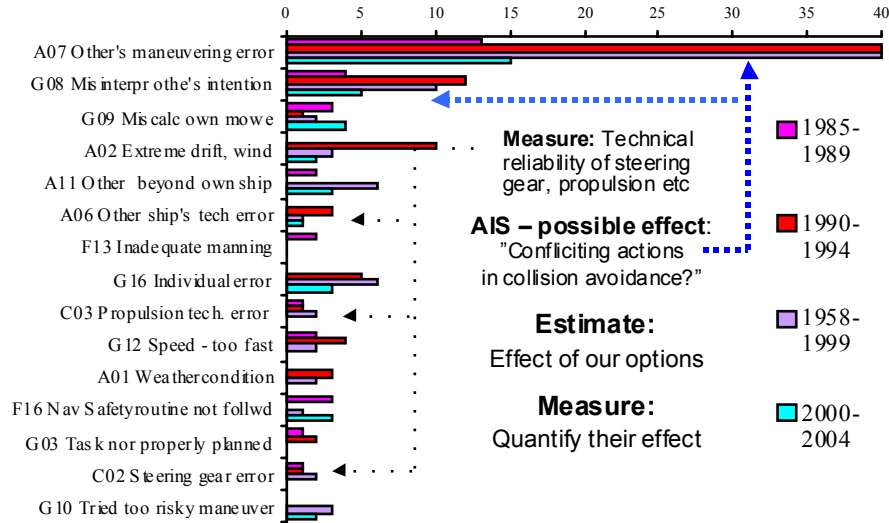
- 1985-1989: Towards Shipping Crisis 32 collided
- 1990-1994 Market took off - NIS appeared: 99 collided
- 1995-1999: Professional Standards Revised STCW (95): 81 collided
- 2000-2004 Safety Systems & ISM made compulsory: 48 collided



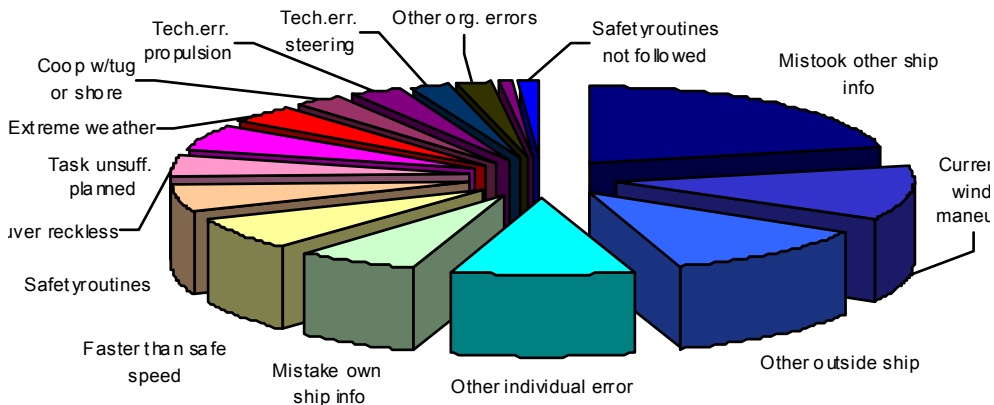
1-man watch abandoned – Supporting outlook compulsory after sunset.

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Looking for the "Risk Control Options"



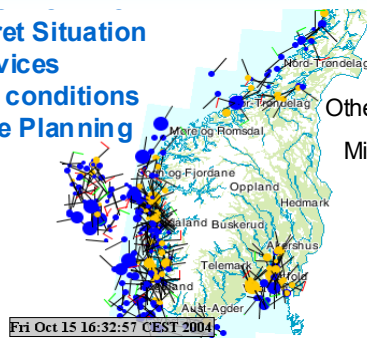
Digital info to the Analogue World of Navigation -



INS/IBS: Task oriented Presentation of Navigational Situations
Safeguards against Information Overloads

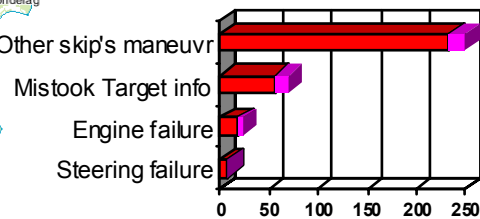
– Automatic Identification System – Towards Full Transparency – on the Road Ahead

Interpret Situation
VTServices
Traffic conditions
Voyage Planning



Play-back of COLREG incidents

■ 1. Collision ■ 19. Near Accident



Incident Analysis & Evaluations

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The New Accident Information Provider - VDR Property of Shipowner – Confidentiality by Flag State

DATABANKS –
built on Codes & Taxonomy.

Which taxonomy ?
IMO, MAIB, CASMET, DAMA
Searching for the evasive
Human Element.

"Somewhere taxonomy has to
stop – and real life take over"

Electronic "play-back"-file
clicked into the databank.

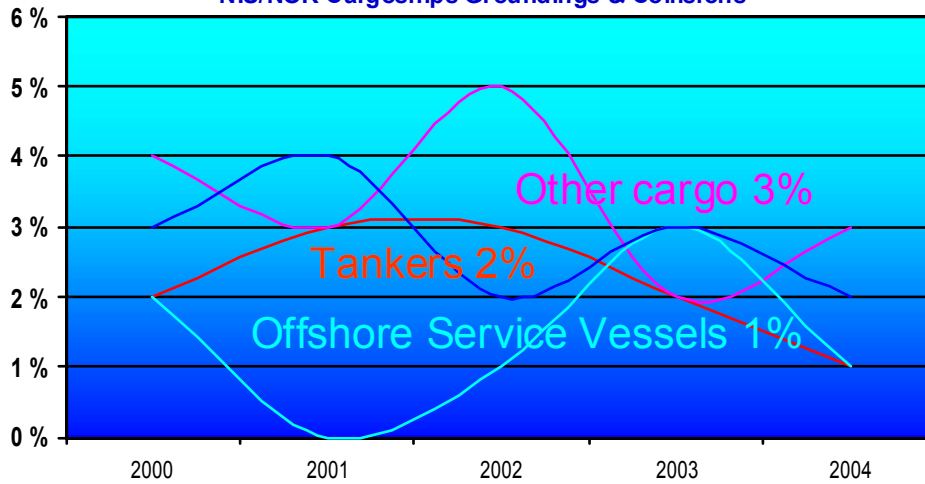


Like AIS – VDR will be utilized beyond original intended

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Measure Performance: Frequency

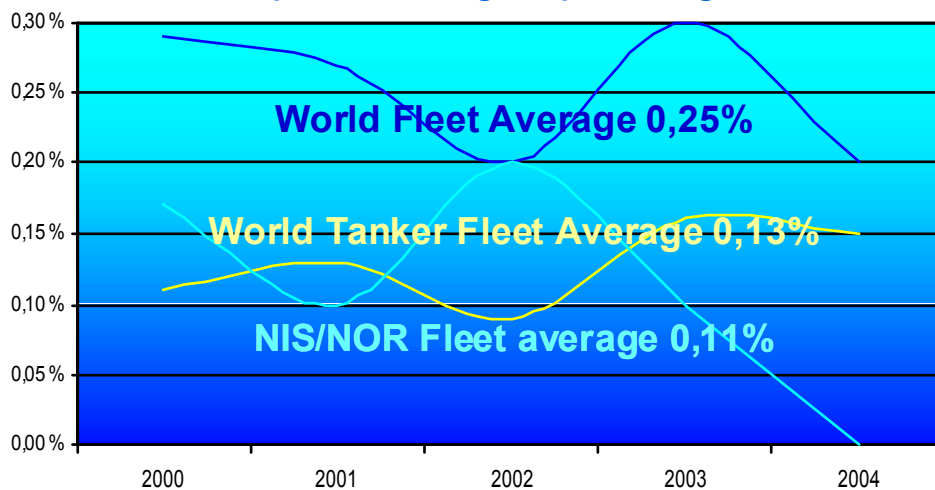
NIS/NOR Cargoships Groundings & Collisions



13 Bjørn O. Holta 2005-06-14 Cargoships (i.e. not passenger or fishing) ships >500 gt. or national tonnage.

Rate Performance:

Ratio of Ships Lost - Cargoships > 500 gt. MARBASE



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Utilize Casualty Data from your Flag State Administration

<p>TRANSPARENCY of:</p> <ul style="list-style-type: none"> • Ships' • Engines' • Equipment' <p>PERFORMANCE</p>	<p>FOCUS shifting fm Technical to Operations</p> <p>NEW values in shipping Performance Indicators</p> <p>STATISTICS</p>	<p>ENVIRONMENT and SAFETY</p> <p>Concern of Environmental Impact</p>
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From your Flag State Administration: (Casualty Records, Analysis, Statistics)
+ (Generally accepted Algorithms as in IMO's MarPol Annex 6 on NOx)
=> Parameters for your own Performance in Shipping

To prove your Excellence.