



The ATOMOS Project

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Presentation Overview

- Brief background of ATOMOS over the last 10 years:
 - Who?
 - Why?
 - What?
- Practical application on Ice-breaker FREJ;
- A few findings and recommendations.


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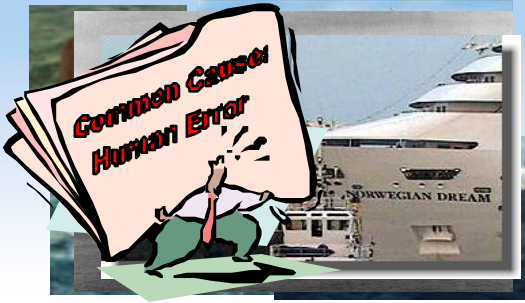
Who?





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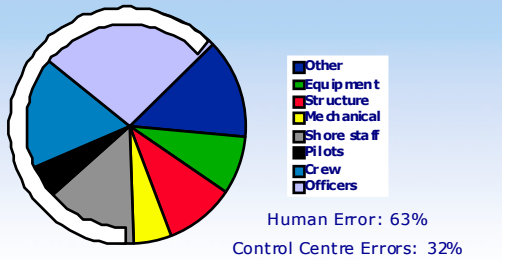

Why?



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Why?



Human Error: 63%
Control Centre Errors: 32%

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Why?



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ATOMOS – 10 Years of research

- The ATOMOS project (Advanced Technology to Optimize Man-power Onboard Ships) ran under the 2nd FP (1992-1994);
- ATOMOS was primarily focused on the development of advanced technology to reduce crew expenses in a safe way;
- Under ATOMOS, Integrated Ship Control (ISC) took on a new meaning, in the sense that the project developed a framework, and quite a bit of the technology, required for total integration of information.

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ATOMOS – 10 Years of research

- ATOMOS II (Advanced Technology to Optimize Maritime Operational Safety - Integration and Interface) ran under 4th FP (1996 – 1998);
- ATOMOS II was in many ways the successor to the original ATOMOS project, but with a very noteworthy difference: It was realized that ISC systems to the greatest possible extent should be formally and verifiably designed to cater for the User, in terms of Requirements and Capabilities.

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ATOMOS - 10 Years of research

- ATOMOS II main results:
 - Preparation of a Conceptual Standard for Ship Control Centre Design – 'ATOMOS 1.7'
 - Preparation of 'General principles for the development and use of Programmable Electronic Systems (PES) in marine applications' – ISO 17894;
 - Research leading towards a Standard for Integrated Ship Control Systems (later to be utilized under the DISC and DISC II projects);
 - Independent risk assessment and cost/benefit assessment demonstrating the great advantages of UCD

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ATOMOS IV Objectives: To convince industry...

- The development of a methodology for retrofit of the European Fleet with state-of-the-art ISC systems, providing
 - Improved reliability and safety of operation;
 - Introduction of more human-centred and usable systems;
- The application and validation of ATOMOS processes and tools to a full-scale demonstration retrofit, including
 - Human-centred design
 - Risk-based development
 - Principles-based assessment
 - Computer-based training

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What? – For dummies...

- ATOMOS is not a fixed solution;
- ATOMOS is not a pre-specified number of pre-specified electronic units;
- ATOMOS is not even a predefined set of functions;
- ATOMOS is primarily a methodology that will provide YOU with the best solution for your needs.

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ATOMOS Ship Control Centre Design Standard



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ATOMOS usability results

	← Conventional			neutral	Atomos →		
Travel	0	3	5	10.1	32	2	1
Communicate	0	0	0	23	5	1	0
Maintain platform	0	0	0	59	1	0	0
Travel	0%	2%	3%	70%	22%	1%	1%
Communicate	0%	0%	0%	79%	17%	3%	0%
Maintain platform	0%	0%	0%	98%	2%	0%	0%
Total				3%	79%	18%	

'In general, the evaluation of the ATOMOS bridge has a positive outcome. An important outcome is that the FREJ captain and crew had experienced the ATOMOS bridge as very positive. After the presentation of the preliminary results, they remarked that the results reflect their opinion.'

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ATOMOS Summary of Results

- A regulatory requirement to improve SCC's (SOLAS Ch. V Reg. 15);
- A viable methodology available;
- The supportive know-how available, and being utilised by companies on the forefront;
- The supportive technology available, continuously improving and maturing;
- A demonstrator still available for trials – but hurry!
- No economic penalty – and certainly over the lifetime of your ship;
- i.e. no more excuses...but also no surprises: IT IS UP TO YOU!



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This OK?



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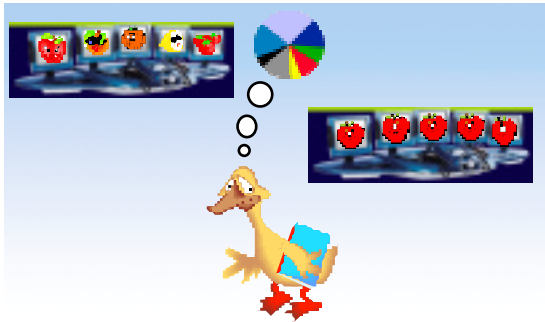
...or this OK?



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It is up to you...



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How to proceed?

- Embrace that bridge design is all about function, and not at all about electronics;
- Embrace that Owner's Procedures, Crew Training & Education and Ship Equipment are very closely related, and should not be dealt with separately;
- Get hold of ATOMOS 'Conceptual Standard for SCC Design' at www.atomos.org;
- Get hold of ISO 17894 on dependable SW;
- On that background, formulate and get your requirements right – and go do it..



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Thank you.

- Please contact Erik Styhr Petersen at esp@lyngsoe.com



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Why? New SOLAS Ch. V Reg. 15 (part 2)

- Zooming in...:
 - 'facilitating the tasks...in making full appraisal of the situation...in navigating...safely under all operational conditions';
 - '...effective and safe bridge resource management';
 - 'enabling...convenient...access...to essential information...in a clear and unambiguous manner';
 - 'minimising the risk of human error and detecting such error if it occurs...in time for...appropriate action.'



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