MARITIME

Improving the Alert Management System on the Bridge of OSVs

A DNV GL Joint Industry Project

HFC meeting

Fenna van de Merwe, PhD

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2013-2014 Joint Industry Project - Major Accident Hazards in Offshore shipping

The purpose of the project is to combine knowledge and experiences to define focus areas which will impose an effect on the Major Accident Risk for offshore shipping

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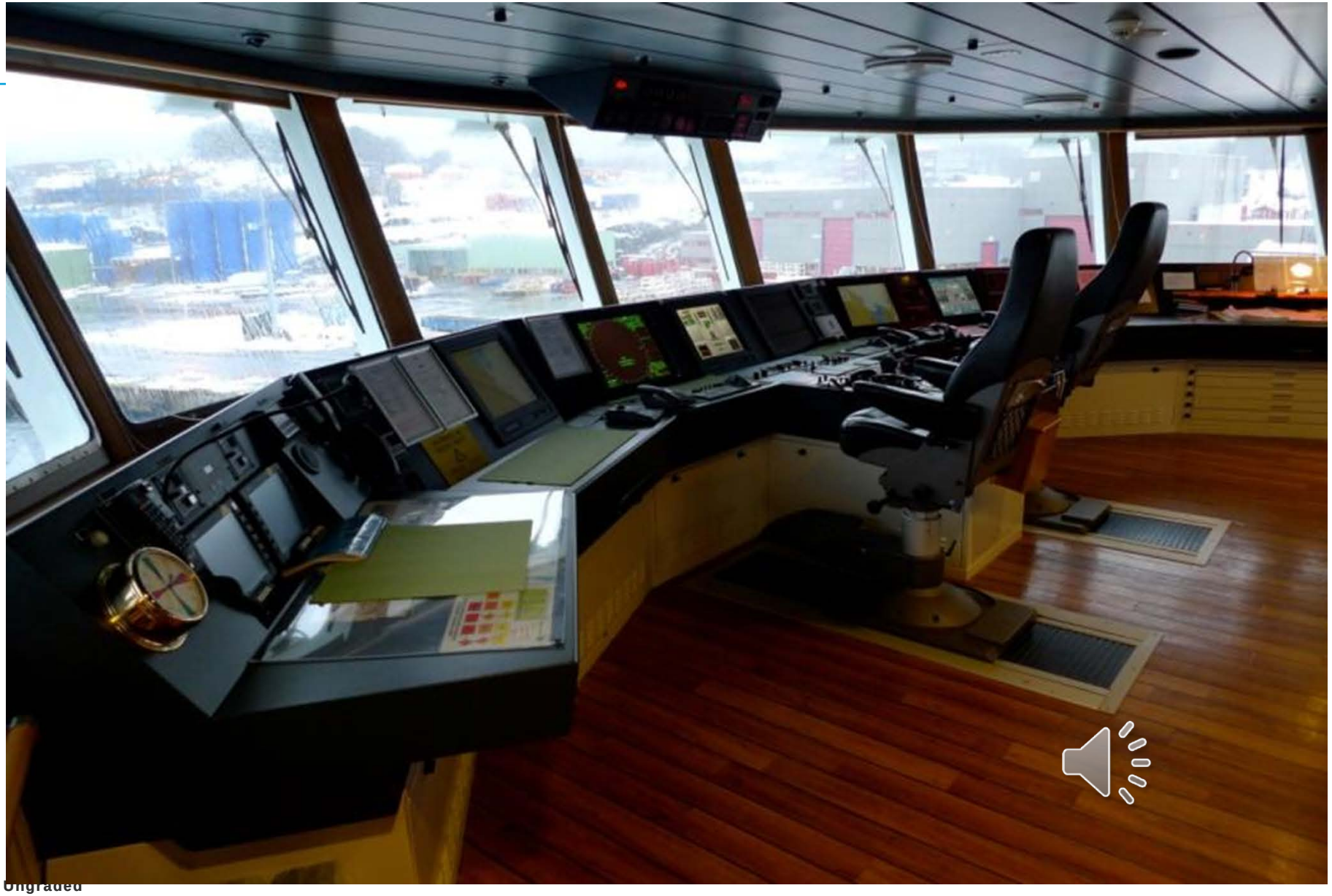

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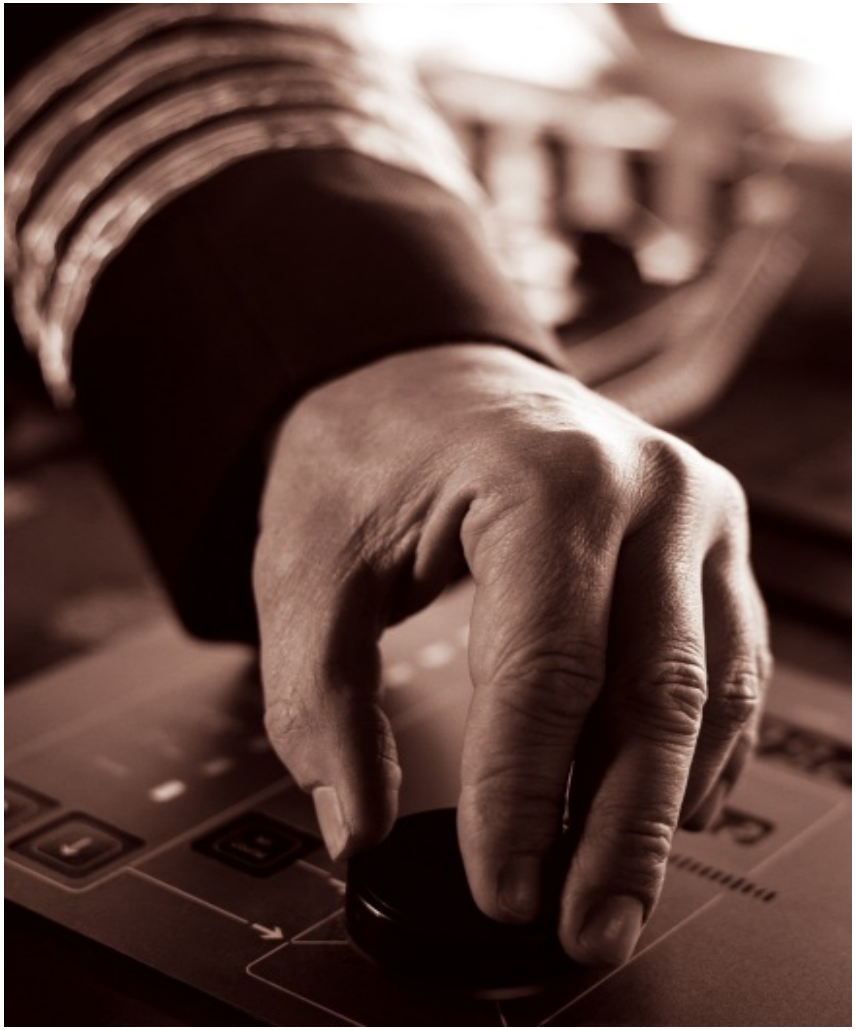
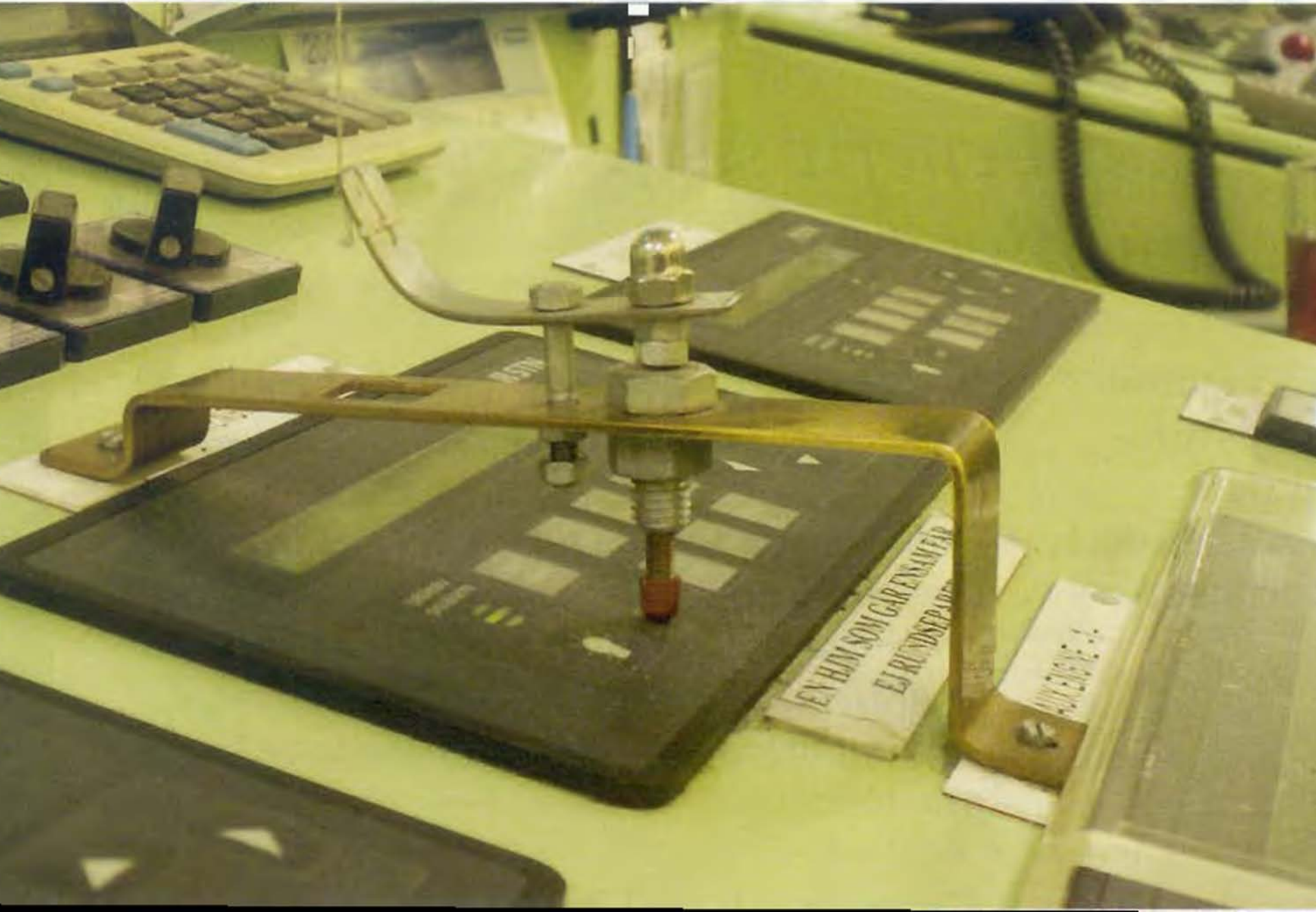
Decision support?



The alert management system
is **least** effective
when it is needed most



Agenda

- Issues with the alert management system
- Project background
- Principles of human centred design
- Project outcomes
- Closing remarks

What challenges can be identified?

Rules and regulations

What is good enough?

Resources

Holistic approach

Follow-up activities

Human-centred design

Warranty

Joint Industry Project 2015-2016

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Objective

*To understand the **complexity** of issues related to alert system design*

*To identify relevant **stakeholders** for improving alert system design*

*To work together with these stakeholders to define and implement **measures** that can **improve** alert system design*

To increase alert functionality on the bridge

Human centred design for a proactive approach to safety

A more proactive approach to safety

Broaden the focus of an alert management system from:

A system for logging

all significant system events

A system that provides correct information at the right time and is a form for decision support to the navigator

A more proactive approach to safety

Broaden the focus of an alert management system from:

A system for logging

all significant system events

A system that alerts a navigator about the vessel's condition (…) which require timely action or assessment

EEMUA guide

What we are capable of contra what we prefer

Experimental setting:

30 per minute

Preference:

15 per minute

Field:

<15 per minute

Ref Hollywell & Marshall, 1994

Supporting human perception to optimize human performance

Available time

Stress/stressors

Complexity

Experience/training

Work Processes

Fitness for duty

Ergonomics / HMI

Procedures

(Ref Whaley et al., 2011)

Control of Performance Shaping Factors (PSFs) requires a Usable design which is generated through a Human Centred Design process

Human Centred Design

Human centred design is adopted by **ISO** and

IMO in the development of its e-navigation infrastructure

Usability

(Ref ISO 9241-210:2010)

*The extent to which a product can be used by specified users to achieve specified goals with **effectiveness, efficiency and satisfaction** in a specified context of use.*

Human Centred Design (HCD)

(Ref ISO 9241-210:2010)

An approach to interactive systems development that aims to make systems usable and useful by focusing on the users, their needs and requirements, and by applying human factors/ergonomics, and usability knowledge and techniques.

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Principles for human centred design in alert management design

Project outcomes

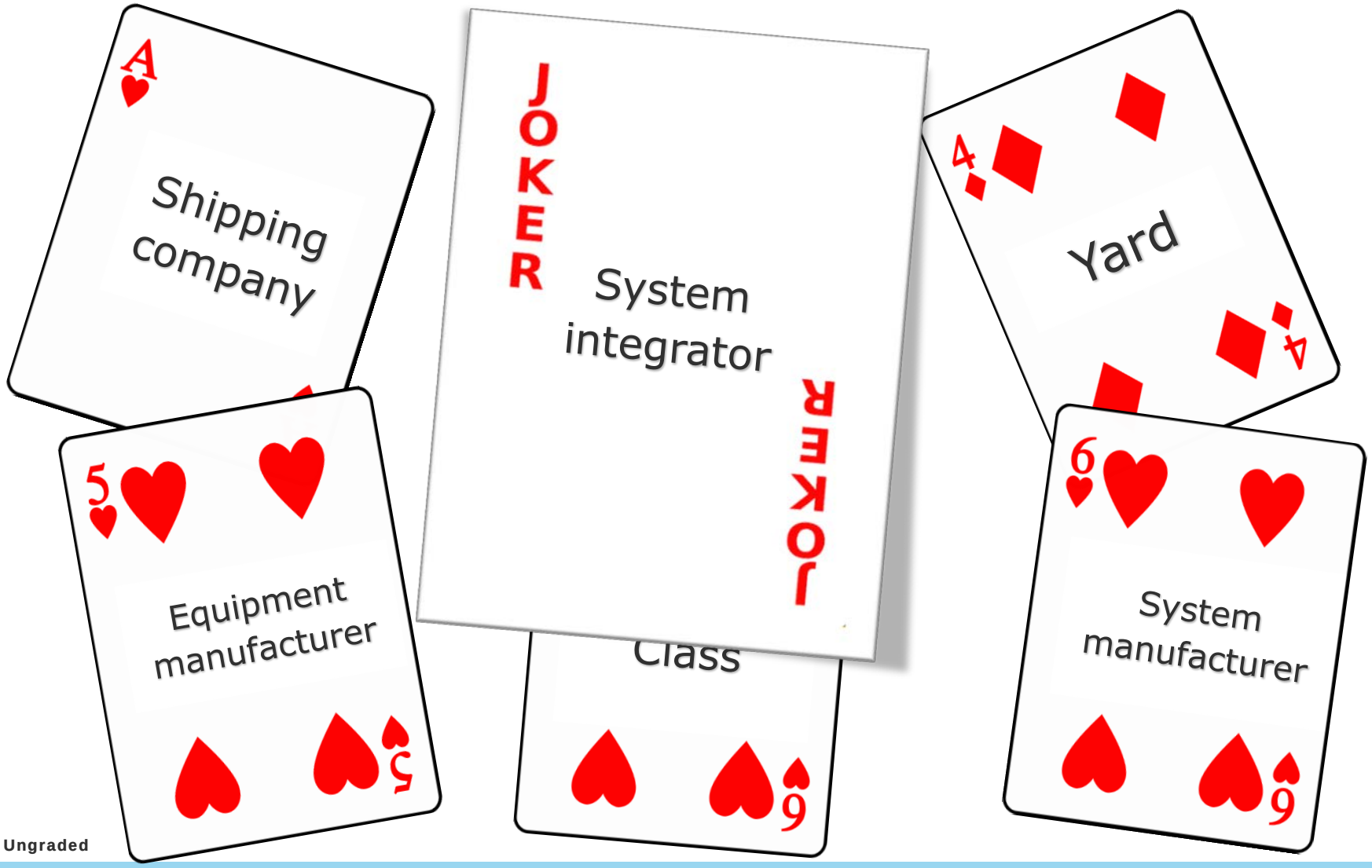
3 work streams

Work stream 1: Responsibility and authority of the system integrator

Work stream 2: Reduction of number of alerts

Work stream 3: Presentation of alerts

Work stream 1:
Various stakeholders, various roles and responsibilities



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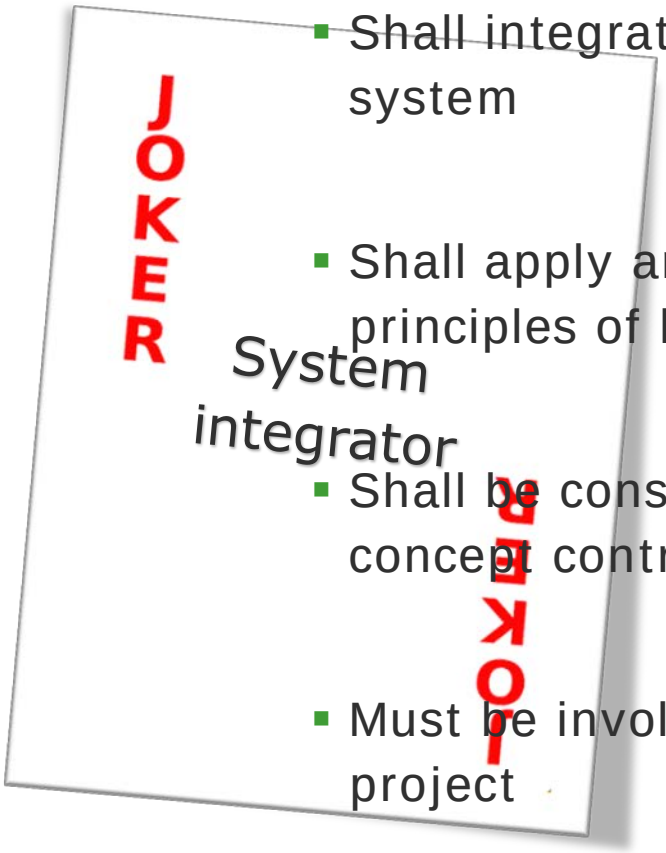
The system integrator in the centre

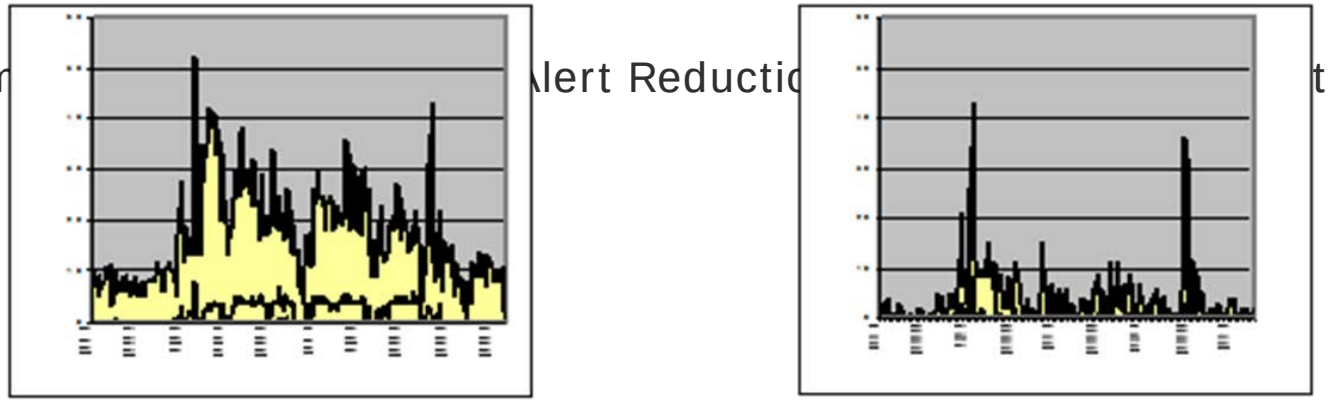


- Shall integrate all components of the system
- Shall apply and advocate the principles of human centred design
- Shall be consulted in case the BAM concept contradicts other interests
- Must be involved from the start of the project
- Shall be a driver for reducing the number of alerts

Work stream 2:
Reducing the number of alerts

1. Argue alerts in, not out

3. Implem lert Reductic t (ARMU)”



Original alarm rate versus alarm rate after removal of nuisance alarms

Ref. Norwegian Petroleum Directorate, 2002

Work stream 3:
Improving the presentation of alerts

Checklist for assessing the human-centred design of alert presentation

- A checklist that includes:

1. Statement
2. Reference
3. Industry of origin
4. Compliance Yes/No/Not applicable

Ref CRIOP as used in the Norwegian petroleum industry (Sintef, 2011)

Key takeaways from the work streams

- Accepting Human Centred Design principles as the **mindset** for design
- We must aim for an alert management system that goes **beyond "compliance"** in current rules and regulations
- We must **challenge rules and regulations** when practice and experience indicate suboptimal effects on crew performance
- A **system integrator** is central throughout the entire building process *as well as* during operations
- Fewer and more effective alerts are achievable but require **a holistic perspective** to the design process and alert system effects on operations.

Project deliverables

Safer, more effective and more cost reduced operations on the bridge of OSVs based on:

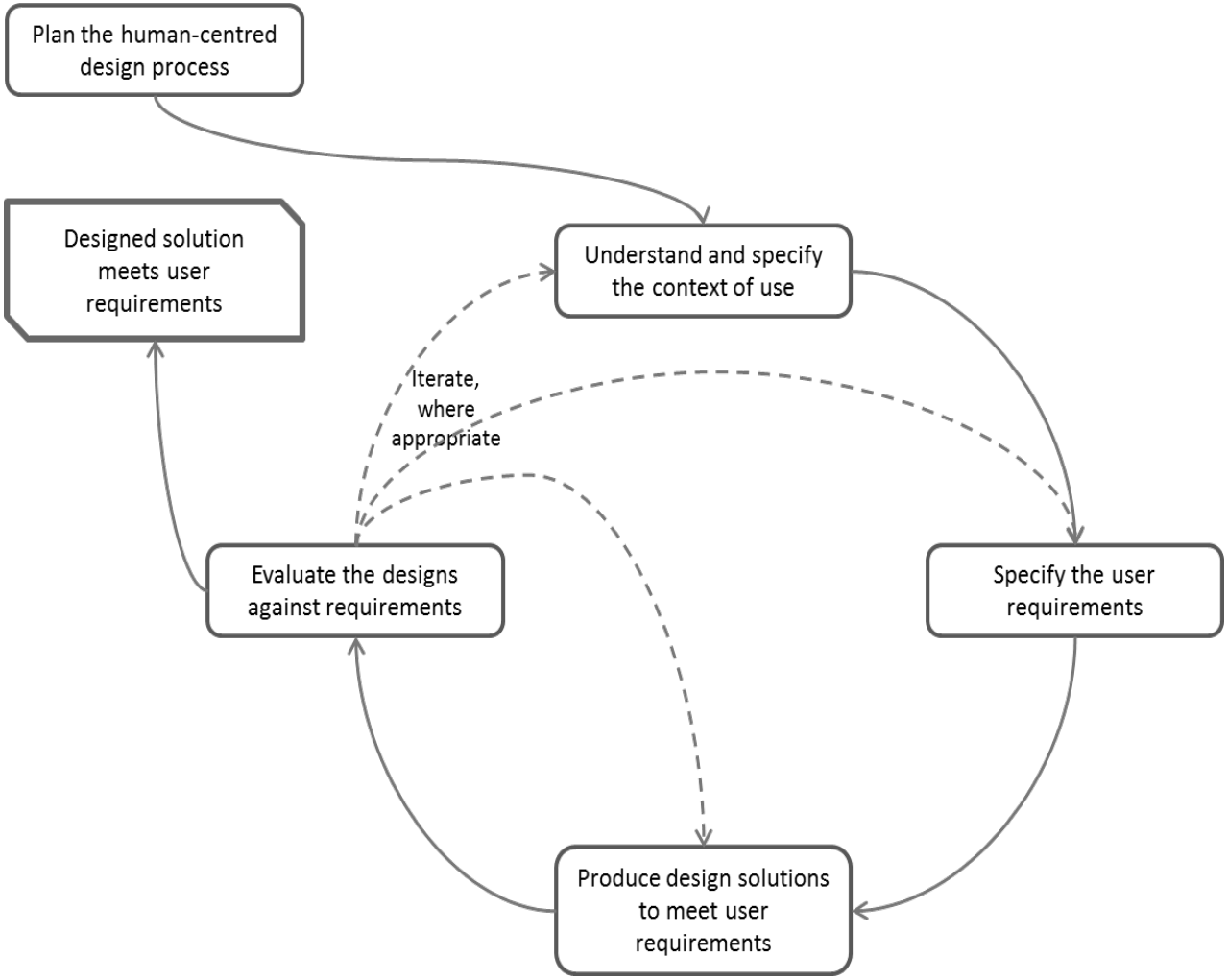
a) A **guideline** that includes:
- A description of responsibility and authority of a **system integrator**
- An approach to **reducing the number** of alerts
- A checklist listing best practice information about how to **present alerts**
- A description of the principles for **human centred design**
- A **glossary** defining terms related to alert system management
- A **reference list** with requirements, standards and best practices from maritime and other industries

b) Sharing experiences during the project meetings and workshops

c) Improved **communication and collaboration** between authorities and key stakeholders as well as amongst the stakeholders

d) Combined efforts that define the requirements to future alert management systems and contribute to higher safety levels and improved operations

What's next?



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Ref ISO 9241-210:2010

Changing world, changing requirements, Addressing HF in an automated society

Thank you for your attention

Fenna van de Merwe, PhD
Fenna.van.de.merwe@dnvgl.com
+47 938 86868

www.dnvgl.com

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