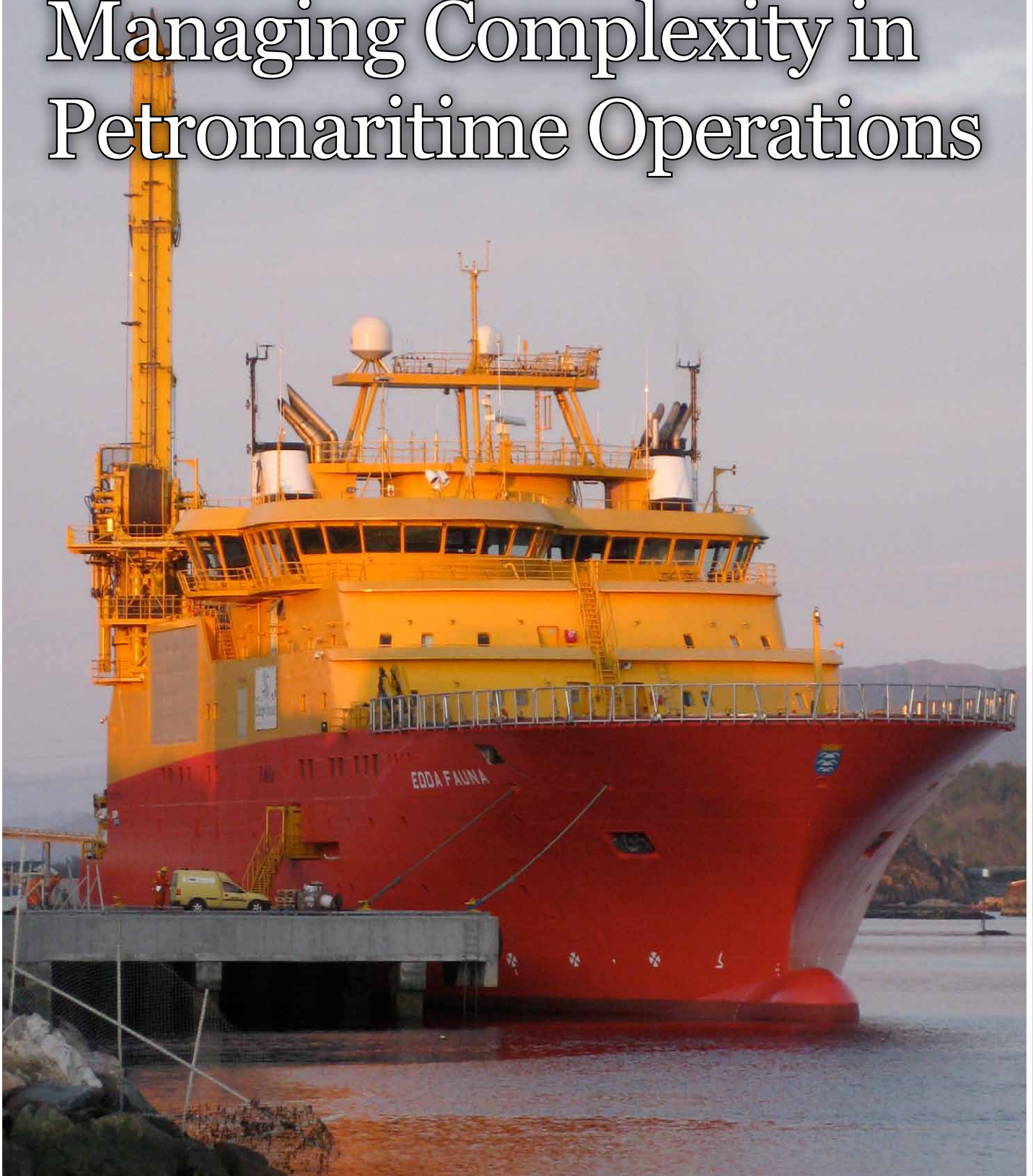


Managing Complexity in Petromaritime Operations



The project is in its third year and will be completed within 2012.

The Research Council of Norway has provided most of the financing, supplemented by seven business partners from the Petromaritime industry: Statoil, Gassco, Solstad Offshore, Østensjø Shipping, Eidesvik Offshore, Knutsen OAS, and Deep Ocean.

The research is being performed by 20 participating researchers from the following Norwegian institutions: Stord/Haugesund University College, Norwegian School of Economics, Sintef, Ife (Institute for Energy Technology), and Polytec. Five international researchers from Great Britain, the USA, and Austria are also part of the project. The project studies how complexity is managed in four main areas: in subsea operations, in the process of renewal of a gas processing plant, on vessel bridges, and as a component in building a company's reputation.

In this newsletter we will give you a taste of our research.



Leadership Redundancy in a Multiteam System

(Idar A. Johannessen, Phillip McArthur, and Jan R. Jonassen)

The paper focuses on the execution of collective leadership in a multi-team system that is engaged in high-risk operations, in an extreme environment. We develop hypotheses on strategies for coping with complexity.

The research site is a vessel conducting inspection, maintenance, and repair (IMR) operations on the subsea infrastructure on the Norwegian continental shelf. IMR trips provide a unique opportunity to study the management of complexity given the number of organizations involved, the high degree of interdependence and coordination the work requires, and the instability and severity of the environment (the Norwegian Continental Shelf). One would predict that, under these conditions, conflict and errors would be frequent. Yet, this is not the case; the frenzy of activity that constitutes an IMR operation typically goes well, which raises two key questions: why and how?

The organizational model for IMR operations has emerged over time, but, to our knowledge, has not been studied in depth.

A key question for the organizations involved in IMR operations has been what the optimal leadership model should be. Is a collective model the most effective? Should more authority be vested in one individual? To answer these questions, we need to understand the complexity challenges of IMR operations and the leadership functions that are necessary to meet these challenges. On an IMR vessel, we find that relationship dynamics within component teams and between members of the component teams do have an impact on the functioning of the multi-team system. However, the Shift Supervisor, who coordinates the actions of the interdependent teams, does not have the capacity to manage breakdowns in the relationship process of the MTS. If team members and team leaders are in conflict or struggle to take adequate care of their leadership duties, the Shift Supervisor as the coordinating leader experiences a dilemma. If he intervenes, that may take his attention away from coordinating a highly complex and interdependent task. If he does not intervene, he runs the risk of letting errors multiply that may jeopardize the operation.

Our research suggests that during the action phase of an IMR operation other leaders step in to address breakdowns or malfunctions in the relationship processes, either within or between the component teams. We also see examples of redundant leaders taking care to cultivate a climate of predictability and psychological safety.

Since the paper was written, new data collection has been ongoing on several vessels from a number of companies. Based on this data we will further test the hypotheses in the APMS paper and present the findings in new articles. We also seek to create an evaluation of how well the current leadership arrangements on IMR vessels are working.

Using Management Technology in Petromaritime Operations

(Lene Jørgensen, Silvia Jordan, and Hermann Mitterhofer)

Within the petroleum and petromaritime industry, daily activities are marked by complex operations and projects where multiple organizations and groups of people are involved. External and internal regulations, guidelines, procedures, and internal control and management systems are intended to support handling the complexity and to ensure that goals are achieved and that the work is performed with high quality in a safe and efficient manner. Tools such as risk matrices, progress reports, templates, and forms are called "management technology." It is interesting to study how such tools function in practice.

It is claimed that such tools, in addition to reporting status and

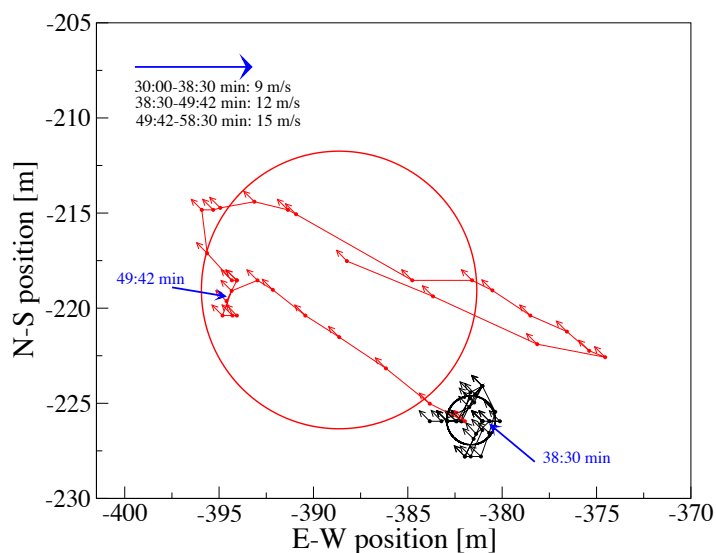
facts, are involved in establishing practices. An ongoing doctoral thesis is looking at risk matrices as tools and how these are used within organizations and in inter-organizational cooperative projects. The results of this thesis will contribute to research [research on inter-organizational relationships and research on management technologies], contribute to practical field work (participating organizations can increase their knowledge about how the tools work, which in turn can contribute to improved project development and cooperation between partners), and contribute to the knowledge of how these management tools affect us, which can be used in teaching various courses at the university college. Doctoral student Lene Jørgensen is about half way through her studies and plans to complete the doctoral program in the fall of 2013.

Manual Maneuvering Versus Dynamic Positioning

(Vidar Frette, Gisle Kleppe and Kim Christensen)

How much better is dynamic positioning (DP) in keeping a vessel in a fixed position as compared with manual maneuvering? Some indications come from simulator exercises, presently being studied in the project. In one particular exercise, an IMR-vessel is to be kept in position close to three platforms during an ROV operation. At a certain time, the DP reference systems are turned off by the instructor, unexpectedly for the crew. In many cases, the crew switches to manual operation for the remaining part of the maneuvering. An example is shown in the figure. Here the position of the vessel is shown at a series of times, in black while under DP and in red without DP. Arrows indicate hull direction. Times where the wind speed was increased are indicated. The black circle gives the typical area where the vessel moves while under DP, and the red circle the typical area without DP. The diameter of the red circle is about 6 times larger than that of the black circle. This gives a quantifiable measure for how much better the position is maintained when using DP.

Figure:



From green vision to green operational practice

(Åge Gjørseter, Chunyan Xie, and Kjell Grønhaug)

This study investigates how a company tries to implement a “green” vision into “green” operational practices. We focus on the role of middle-level managers in implementing changes in daily operations. The case company intends to realize its vision through “green” activities on board offshore vessels to make operations of the vessels climate neutral. Consequently, realizing the visions can have several effects: reduced pollution, cost savings, and an improved reputation. The middle-level management on board plays a vital role in the strategizing processes to implement the vision. In this project the performance indicators show large variances among the vessels in their efforts to perform “green” activities. Why do some vessels succeed in implementing green operational practices while others do not? This is an interesting question worth further investigation. Empirically, we conducted semi-structured interviews with middle-level managers on board offshore vessels, supplemented by secondary data. This study extends our knowledge about the important role played by middle-level managers in implementing a “green” vision into daily, carbon neutral operational practices in the carbon-producing oil and gas industry.

Plans for 2012

Our research team will focus on processing and analyzing data that we have collected and write articles, reports and book chapters and create presentations based on this. We plan to

- Write a new article that will take the analysis of leadership redundancy on IMR vessels further, including more empirical data
- Write an evaluation study of the leadership function in IMR operations
- Write a contribution on mindfulness and organization to a new Handbook
- Write an article on the risk matrixes, which will focus on the origin and development of this widely implemented tool.
- Write articles based on our empirical studies of risk management practices
- Offer presentations of our findings for our partner companies.
- Explore the impact of corporate reputation and corporate identity in the recruitment process of offshore companies and investigate how people react to corporate actions.
- Focus on how dynamical positioning (DP), as an automation system, is used and perceived by the operators – and compare this with other industries.

Submitted articles, Petromaritime Research Team, HSH 2009 - 2011

Details	To conference	To Journal	Published
Jordan, S & Jørgensen, L., Mitterhofer, H.: Sense-making and discourse analyses in inter-organizational research: Current debates and a methodological outline for studying the role of mediating instruments.		Scandinavian Journal of Management 2010 Aug. 2010 June 2011 December 2011	
Jordan, S & Jørgensen, L., Mitterhofer, H.: Normalizing figures: Performance and performativity of risk matrices in inter-organizational project collaborations.	EGOS 2011, July		
Jordan, S & Jørgensen, L., Mitterhofer, H.: Mediating figures: risk mapping in inter-organizational project control.		Management accounting Research 31.10.2011	
Xie, C., Haugland, S., Hillestad, T.: Innovative corporate social responsibility: The founder's role in creating a trustworthy corporate brand through “green innovation.”			Journal of Product & Brand Management 2010
Xie, C., Grønhaug, K.: Identity, reputation, and organizational performance: Conceptual issues and an empirical illustration.	The 7th International Conference of the AM's Brand, Identity and Corporate Reputation Special Interest Group, Oxford, UK, 5 -7, April, 2011	Journal of Brand Management, 2011	
Chunyan Xie, Sven A. Haugland: The formation of reputations in business markets.	The 7th International Conference of the AM's Brand, Identity and Corporate Reputation Special Interest Group, Oxford, UK, 5 -7, April, 2011		
Xie, C., Haugland, S.: The Impact of Business Relationships on Corporate Reputation and Trustworthiness.	The 40th EMAC Conference, Ljubljana, Slovenia, 24-27, May, 2011		The 40th EMAC Proceeding, 2011
Åge Gjørseter, Xie Chunyan, and Kjell Grønhaug: From green vision to green operational practice: A strategy-as-practice perspective.	The 21st NFF (Nordic Academy of Management) conference, Stockholm, Sweden, 20-24, Aug, 2011.		
Atoosa Thunem: Understanding and Describing Complexity in Safety and Event Analysis of Socio-Technical Systems: The Voyage and Findings.		Reliability Engineering & System Safety journal for publication on March 8, 2010 March 20, 2010	
Atoosa Thunem: A Survey of Organization Studies Relevant to Safety and Dependability.			ESREL'09, ISBN 978-0-415-55509-8, pp. 755-760, September 7-10, 2009, Prague, Czech Republic.
Johannessen, I. A. McArthur, P. & Jonassen, J. R.: Leadership Redundancy in a Multi-team System.	Paper presented at the APMS Conference 2011, September 26. To be published in the conference proceedings by Springer.		