

”Smarter Together” in Offshore Drilling – a Successful Action Research Project?

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Abstract

The paper presents a process used in the drilling operation of an oil production platform for safety and efficiency improvement. Personnel from three companies worked together in order to solve common interface challenges. The drilling rate efficiency increased and the number of injuries decreased after the implementation of the project.

1 Introduction

Imagine a soccer game where 15 teams play together, using 6 or 7 balls, several goals, and the football players and managers are working on shifts! This is how the reality in offshore petroleum drilling and production can be illustrated. The operating company and all the contracting companies are working closely together. The fact that the Norwegian offshore employees have a shift system working two weeks on, followed by three to four weeks off, which obviously gives a discontinuous working situation, is a complicating factor. After three or four weeks at home, work and procedures may be rather absent from ones mind. Several incidents and changes with consequences for ones work may have occurred during the time off. The shift system implies that several persons “share” each job, including management positions. Different persons have different priorities, which definitively influences the work. Replacement of employees also happens more often on an offshore platform than at an ordinary industrial enterprise, due to contractors using their people on several platforms. This implies a huge number of interfaces between companies, shifts, crews, divisions of labour, specialised professions, personnel working land - offshore etc.. This demonstrates that the offshore industry has demanding challenges [1, 2].

Thus, the platform has an extreme complexity in its organising, which is combined with a strong necessity of having control over platform safety. Even in any small organisation, organisational development is challenging. To launch a participatory process at such a platform seems impossible. Yet, as a joint effort between the participating companies at Snorre TLP (Tension Leg Platform), operated by the oil and gas company Norsk Hydro, and a group of researchers from the research institute SINTEF, a participatory process called “Smarter Together” was designed and run, with output that indicates good results with regards to drilling rate and safety. The other main actors were Prosafe Drilling Services and Baker Hughes Inteq. The project started late autumn 2001. Today Norsk Hydro has initiated Smarter Together processes at other platforms.

The objective of the paper is to present and discuss the approach, the accomplishment and the results of the “Smarter Together” project through the questions:

- 1) What aspects did the researchers put special weight on during the process? What did they consider especially important in order to succeed?
- 2) What are the results; a) What measurements have been developed? b) What measurable results has the project produced?

2 The Smarter Together Approach

The main steps of the process were:

1. Researchers collected data (interviews, documents, written material) about the platform, performed an analysis, and initiated a dialogue about the future work.
2. Search conferences established a common perspective between researchers and organisation about what challenges that were the most important to address. What possible measurements seemed appropriate?
3. Development of action plans that described the measures in detail. Responsible persons and deadlines were specified.
4. Implementation and following up the action plans. In order to ensure the implementation in busy offshore workdays, SINTEF took on a process role in following up on the different action plans.

The action research framework was chosen as strategy and tool for the work. This framework focuses collaboration between practitioners and researchers, and democratic social change through participation [3, 4]. The project team expected that this approach would focus the challenges that people on board found most important – and give the most effective measurements. The nature of cooperation between organisational members and the research team was important. The design produced a joint learning process: The research team designed arenas for learning and development, and challenged the organisation based on collected data and general insights from the industry (see [5]). Managers and workers on the platform, on the other hand, had the unique contextual understanding of both their own situation as well as realistic ideas for improvement. From the researchers’ position, diversity in professional knowledge and experience was very important in order to take on a role as active dialogue partners towards the organisation. The multi professional team consisted of expertise within drilling and production technology,

technical safety and reliability, human resource management, organisational development and knowledge psychology. Several of the researchers also knew the oil business well.

In the overall picture presented so far, “Smarter Together” differs very little from many other approaches to change projects. In the following, we will emphasize three features which combined produced the uniqueness in the approach: Firstly, the bottom-up design, even under conditions where the complexity of the challenges invites for an expert-driven top-down approach. Secondly, the focus on the actual working team, that was crosswise the companies structures and such “dividing lines” (i.e. the focus was on the communities of practice). And thirdly, the explicit search for arenas and processes which encourage trust, playfulness and confidence.

2.1 Bottom-up Participatory Perspective

Managers often see “change” as an essential means for the company to improve results. When it comes to the employees, they do not always feel the same enthusiasm connected to this theme. They may recognise the concept as introduction of undesirable adaptations, like e.g. workforce reductions. However, employees too want changes and improvements. Only, they want to join the creative processes of their own organisation. Arnold, Cooper and Robinson [6] tell that 80% of company measurements fail because of lacking involvement of the employees. Participatory approaches are used both to ensure support and ownership from the workforce, but also to activate the knowledge resources held by the workforce based on their on-hands everyday experience. However, the organisational complexity at the platform makes participatory approaches a challenge; several companies working together, shift organisation, and work crews changing regularly. Is participation possible? The Smarter Together project showed indeed this to be possible, through a particular design of search conferences. Employees were the main contributors and owners of measurements. Thus the “Smarter Together” process enabled the oil workers to express their experiences and opinions.

2.2 Building on Communities of Practice

The goal was to avoid quality loss across the many interfaces. The main approach was to invite people to inquire into their situation, find areas for improvement and develop appropriate improvement measures (new roles, routines, tools etc.). A crucial question was to identify the right grouping of participants. The researcher team identified those people who actually worked together and were dependent on each other at everyday work. Thus, the participants were those who formed working communities at the platform, regardless of which company payroll they were on. These groups were thus able to discuss experiences, challenges and solutions, and also to produce new conditions for an actual and improved practice.

2.3 Trust, Playfulness and Confidence

The atmosphere is very important, and is often too little acknowledged. To discuss experiences and direct the energy towards solutions and improvements, trust is essential. In order to innovate, people should feel free to play with ideas. In order to engage in debates without fear of consequences, people need confidence in the process. The researchers put weight on achieving an atmosphere of trust and confidence, where people were not afraid to be honest and compromise one self. The researchers also made sure that every one was heard in the process. The agenda for the common working days switched between large group discussions, small working groups, professional lectures, and breaks with positive elements like e.g. scenic views. The researchers were also flexible to make program changes, when suitable. Two of the researchers also have special talent for music and song. By playing up well-known songs for solo numbers or sing-along, both during as well as after the work, the atmosphere loosened. The search conferences were located at the Norwegian Coastal Express. This kept the group gathered also after the end of the working days and contributed to the relaxed social atmosphere. By using the Coastal Express, the seminars also became a memorable happening for the participants.

3 Results and Discussion

3.1 Measurements Developed

The participants worked out a lot of improvement measurements. Some of them could easily be implemented at once. Others had to be prepared in detail by dedicated action groups. The measurements basically belonged to the groups:

- Redesigning organisation: work content, roles and responsibilities
- Knowledge and competence development, defining competence requirements
- Technology and structure

Examples of measurements worked out are new job descriptions for the offshore managers, improved planning processes, simplified and improved reporting of data and web-based training and information. The company also started arranging departure seminar for the workers, when going offshore for the next working period.

The measurements developed aim at the areas that the participants meant were the most important to improve. According to the “order of feedback”-ranking of measurements, these are actions that have a potential of giving positive long-term effects when implemented in the organisation [7]. These are also measurements that typically would be less focused through other arenas for working out improvement measures (like for instance incident investigation or safety inspections) [8]. Measurements like these do not need huge investments, often only more attention and more effort from those involved. That is investments that will truly pay back.

3.2 Safety and Productivity

The reports of Norsk Hydro indicate improvement from 2001 to 2002. Figure 1a) shows the cumulative number of injuries as a function of time (quarterly), as the total for all companies involved in the drilling operation. The number of working

hours was unchanged in this period. We observe that after “Smarter Together” there is a drop in the slope which indicates a lower frequency of injuries (significance level $p = 7\%$). The company also achieved better drilling rates. Figure 1b) shows the drill rate as a function of time, for all wells that were drilled top - down during the years 1999 - 2002. In the plot we have shown the regression line (solid) and the 95% upper prediction limit (dotted line). The average drill rate after “Smarter Together” is higher than before at significance level $p = 8\%$.

Safety and efficiency was in the “Smarter Together” process handled as integrated parts of working practice, and not as specific areas apart from the totality.

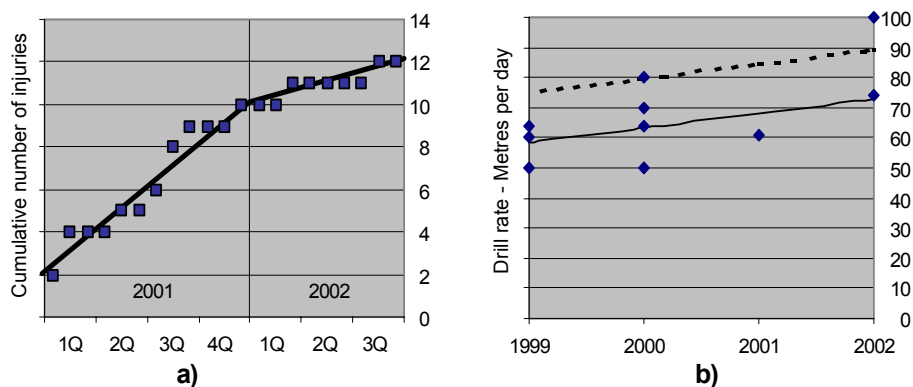


Figure 1 Cumulative number of injuries (a) and drill metres per day (b)

Thus the company records tell about better drill rates and reduced number of injuries. It is difficult to say whether this is the result of the “Smarter Together” project only. However, there were no other special efforts going on or actions taken to improve during this period. Neither were there any other special occurrences or incidents that should alter their work. This leads us to believe that the positive development has at least something to do with the “Smarter Together” project. The “Hawthorne-effect” [9] might explain the improvement, i.e. the attention itself may be the main cause. If so, the effect would vanish rather soon. This has not been evaluated; Since January 2003 another company is operating the platform. This is why the results are presented only to the year of 2002 – after that they are not available.

4 Conclusions

The original long term researching plans have been somewhat changed due to a new operating company from 2003. Still, the project has given some findings to report. In the very complex organisation the focus on bringing all “stakeholders” together in order to avoid “quality loss across multiple interfaces” was an important key. The bottom-up perspective promoted involvement of the employees. The managers too demonstrated their commitment, through active participation and by accepting use of necessary time and resources (included implementation of measures).

The researcher team was carefully made up to fill a broad spectre of professional knowledge, and were also chosen because of personal qualities. They were humble to the experiences of the professional oil workers, and they were able to utilise their personal qualities in creating a positive and trustful atmosphere. However, they were also helped by the special arena for the search conference, the Coastal Express.

The company reports show positive development within drilling rate and injuries. The participants mean to have found long-term solutions to their challenges. It is not unambiguously documented that the “Smarter Together” project is the cause of these improvements, or that these improvements will last. Still, those who work at the platform believe in the results, and that the project is at least one cause to be honoured. Another piece of information that indicates positive experience with the process, is that Norsk Hydro has introduced the “Smarter Together” concept at more platforms.

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