

Reaching Hard-to-Reach Users Using Online Media to Get a Glimpse of Work in Marine Contexts

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The wind was 75kts give or take and I was on watch at the time but had just been relieved by the other DP operator. Suddenly the wind shifted just enough to push the bow from the required heading. This is fairly common during these extreme conditions but at the time this happened a 15-meter wave hit the bow in such a way that the ship was pushed off significantly and we were pushed astern and sideways in a horrific swell causing the vessel to roll violently. Not a second was spared by myself or my colleague as he switched to manual control—we were moving very quickly towards the Normad Neptune. He regained our position and steadied up quickly as I paid out ... additional wire, gave distances to the vessels and reported our situation to the Tow Master. We spent the following two days on manual control, which is incredibly difficult in such atrocious weather, and once the weather improved we switched back to DP control.

—the Mariner, February 1, 2013 [1]

Offshore service vessels are unfamiliar to many designers. Sailing the seas can seem mystical; the life of mariners is one most of us do not know much about. We can probably all imagine that a ship is a chal-

lenging place to work and live, but it is not that well known that ships have become advanced technological environments. In such places, traditional seamanship is no longer sufficient to do a good job. Mariners also need to understand how the advanced technology works. Yet several studies report that understanding and using this technology is a difficult task, and that the design of the working environment and equipment does not support the mariners in a satisfactory manner [2].

In a design research project called the Ulstein Bridge Concept (UBC), we are designing the future ship's bridge of offshore service vessels. The bridge is the place from which the captain and the deck officers control the ship. Offshore service vessels are ships that support the oil industry, for example platform supply vessels, specially designed to bring cargo to and from offshore oil platforms, and anchor-handling tug supply vessels, mainly used to tow rigs to a location and anchor them up. The aim of the UBC project is to take a completely new look at the bridge environment of such vessels and redesign everything from the

room layout to furniture design, and from fundamental interaction techniques to detailed screen layouts.

To design for marine contexts like this, the designer needs to know the domain, understand the work carried out and the technology used, and appreciate the experiences of workers on the site. An obvious approach to gain such insights is fieldwork involving on-site observation and interviews with users [3]. However, doing fieldwork in these kinds of environments is a challenge. Sites are often situated in far-away places, and access to them can be stringently controlled and may require specific safety certificates that designers normally do not have.

New Avenues for Inquiry into the Maritime Workplace

Faced with these limitations, the designers and researchers in the UBC project have begun conceiving of new ways of getting the inside story on ship's bridge environments and the people working there. Online media, such as blogs, forums, and social networking sites, allow anyone with access to the Internet to write about their work. This has

created new spaces for researchers and designers to gain insight into the workplaces for which they design. One example of such spaces is mariner workblogs, which are Internet-based employee diaries containing accounts of the writer's experiences, observations, and opinions related to the work environment [4]. These accounts can offer an interesting avenue for learning about hard-to-reach environments like a ship's bridge. Designers interested in mariners' work experiences are now able to read years of archived material from these blogs, following work-related dramas as they unfold and tracing responses from readers through their comments.

Most research on workblogs has focused on how employees use them as a means of challenging workplace power structures and how they give employees a voice on workplace issues [4,5]. There is still little research on using workblogs as a tool of design inquiry. Here we discuss how mariner workblogs and online forums can offer a rich glimpse into the world of work on offshore service vessels, and how the insight gained from these sources can be of value in the design process. We draw on the long tradition within design of engaging with users to understand the contexts for which we design. But we also draw on more recent research fields, such as cyberethnography, which challenges the boundaries of fieldwork and looks at how the Web can be viewed as a field where one can do participant observation using text as the means of interaction [6].

Developing Domain Knowledge

Domain knowledge is one of the most important competences of a designer of systems for maritime workplaces [2,7]. A ship is a high-risk environment where an incident may

have disastrous consequences for human life, property, or the environment. Domain knowledge gives insight both on the greater systems in which the designs will function, and on the detailed parts of the systems one develops. This systemic understanding is important in forming the risk awareness needed when designing for such workspaces.

It is difficult to gain this domain knowledge and to envision what work and life on a ship are like without having been at sea. Through the workblogs, mariners express in publishable form insights on their domain and the operations in which they are involved. One such blog is Rigmover [8], authored by a mariner who works with moving and positioning drilling platforms. As an example, in a blog post titled "Rig move for dummies" (January 23, 2013), he provides a description of rig-moving operations starting with why rigs are moved, continuing with a description of the operation and the actors involved. He accompanies the text with close-up pictures that show the process of rig moving. This allows the reader to examine the operation in a concrete manner.

We find similar accounts of operations in other blogs, for example the shipping company Maersk Line's Officers Blog [9]. In a post published July 18, 2012, a Maersk officer provides an in-depth description of how he and his colleagues aboard an anchor-handling tug supply vessel spent two weeks towing a jack-up rig from Esbjerg in Denmark to the Gorm Field in the North Sea. A few months later, on September 12, the same officer tells us that he is on his way to Africa:

"Lots of things have changed in the past 2 weeks, in my last blog I was preparing to spend another winter in the North Sea, but it looks like we may be spending it some-

where slightly warmer. The Maersk Puncher has been chartered to support an oil rig in Equatorial Guinea for over half a year ... So, at the moment, our vessel is busy ordering spare parts and stocking up on plenty of stores, as well as trying to fix any outstanding problems we have with the vessel so that it is in prime condition to start the charter."

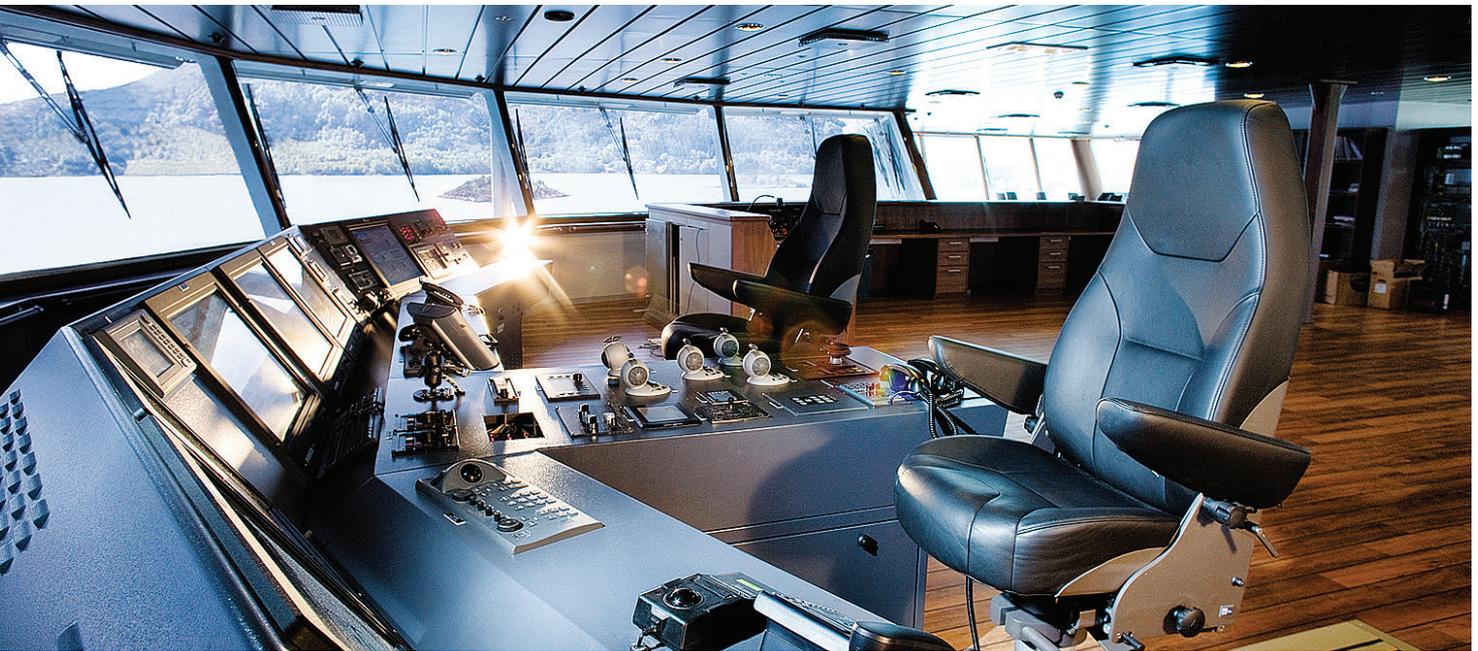
Here we see an example of the unpredictable life at sea. Preparing for going to a different part of the world, the ship is in a completely different mode of operation and the functions of the bridge and the tasks of the deck officers change.

In the UBC project, we find these blog posts help us get a better understanding of the domain for which we design. Through reading such posts, one can get an understanding of the purpose of the operations carried out, the potential versatility of life as a mariner, and the vast variety of operations that must be considered.

Familiarization with an Unfamiliar Working Environment

In the workblogs the mariners also write about their working environment and the tools they use. In a blog called the Mariner [1], authored by a second officer onboard an anchor-handling tug supply vessel, there are a number of posts aimed at cadets (officers in training) and those considering a maritime career. In these posts the Mariner describes the tasks and responsibilities of the deck officer in detail. In a post from January 24, 2013, he describes what is expected while on deck watch:

"Learn one thing, look out of the windows, and then look again. Reliance on technology has no place at sea, everything on the bridge is an aid, you are the one who makes decisions. When asked, 'What's that ship doing?' your first instinct should be to pick up a pair of binoculars, look



► The bridge of an offshore service vessel (photograph by Ulstein Group).

through them and figure it out with your brain. Then you can look into the radar and add to the mess of fingerprints all over the screens.”

Other blogs we have read give details on the technical equipment controlled from the bridge, for example thrusters (part of the ship's propulsion system) and winches.

These descriptions, although not aimed at designers, enhance our comprehension of the bridge environment and can inform our designs directly. The fact that looking out of the windows, for example, is more important than looking at the screens can affect where one positions the screens in a bridge design. Understanding how the thrusters work is paramount when designing levers that control the thrusters. We must know how the physical systems are affected by the user actions we design.

Getting to Know the Person Beyond Use

Figure 1 shows a picture of Rigmover's dog (published January 11, 2013). The picture shows that Rigmover shares not only his professional life on his blog, but also

aspects of his personal life. As we read through Rigmover's different blog posts, our preconceptions of the traditional seaman are challenged. Through a personal narrative style, he shares his passion for photography, cars, travel, and family life. When he describes how he in one year missed his son's birthday, his 20th wedding anniversary, Christmas day, Boxing Day, his own birthday, New Year's Eve, and New Year's day (December 29, 2012), we feel for him. From the Rigmover's next comment, “The worst thing was, the weather was so bad we didn't do anything,” we learn that it is important the mariners feel their stay onboard is worthwhile and that they do something productive with their time.

In the UBC project, having a diverse understanding of the people for whom we design is important because our motivation is not only to design an effective and efficient working environment that supports safe operations; we also strive for designing an innovative bridge that the mariners can be proud of and look forward to coming back to after a period onshore. Knowing and

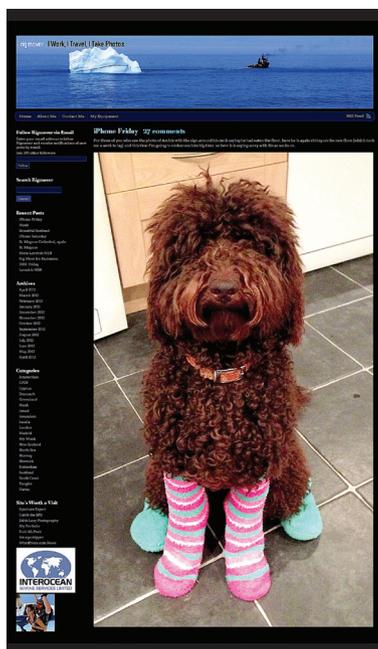
understanding the people we design for is vital in achieving this. As June Fulton Suri puts it, “It is much easier to get excited about designing for people once we know them and understand their situation” [10].

Gaining intimate knowledge of mariners can serve as a catalyst in our idea-generation process. In fact, we have found out that online content produced by mariners sometimes constitutes a source of direct inspiration. One example is a poem that was posted by smudgerthesailor on the gCaptain Forum:

*Give me a boat that works mate
Where the electrics don't spark out
And a big batt
that doesn't go flat
And leaves us all in doubt ...*

*Give me a boat without paperwork mate
Most of which I don't really need
They go on for miles
my library of files
And it's not what I normally read [11]*

In user studies, for example, during field studies, it is common practice to ask the users to describe their ideal workplace. Through posts



such as the one by smudgerthesailor, one can get an eloquent idea of what this ideal workspace could be like. The poem can serve as a verbal vision that designers can translate into new designs. When we read the poem, we might ask ourselves: How can we design systems that do not leave the users "all in doubt"? And what would "a boat without paper-work" look and feel like?

Possibilities Yet to Be Explored

The maritime domain can be difficult to grasp, and gaining access to users and context of use is a common challenge when designing for environments like a ship's bridge. In the UBC project we use several sources for understanding the mariners and the complex environment of the bridge. In addition to reading mariners' online narratives, we have carried out seven field studies at sea, consulted technical documentation, attended courses, read training material, and conducted sessions with users and subject-matter experts. Through this process, we have discovered that studying mariners online can be a useful supplementary way of gain-

ing insight on the maritime workplace. Here we have discussed how online media, such as blogs, forums, and social networking sites, can provide insight into the work and life of mariners onboard offshore service vessels. Similar approaches can be used when designing for other hard-to-reach environments, for example the aviation or space industry, an industrial plant, and other faraway locations. Online media could also be used when designing for closed communities such as chronically ill people and communities where the social distance between the designer and the user is great.

However, there may still be ways not addressed here of using online media in the interaction design process. In August 2012 the UBC project launched its first bridge concept, the Ulstein Bridge Vision. Two videos describing the concept were published online; the new design got attention on news websites. Without our intervention, mariners started discussing our design in the comment fields of news articles, in online forums, and on Twitter. This implies that the online user communities are interested in the work of designers.

Many questions remain unanswered when it comes to taking full advantage of new online field sites in the interaction design process. How could online media be used for co-creation, exploration, experimentation, and evaluation, as in the context of living labs? Could meeting users online be an alternative to personas or cultural probes? Could we contact users directly through online media when we need answers to specific questions? Could we use online media to get evaluations of design proposals? These and other new ways of engaging with users through online media are yet to be fully explored.

Acknowledgments

The work presented in this article was funded by the Research Council of Norway and the Ulstein Group. We would like to thank all the mariners who generously share aspects of their professional and personal lives through online media.

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DOI: 10.1145/2530539

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► Figure 1. A picture of the blogger Riglover's dog with the following caption: "For those of you who saw the photo of Archie with the sign around his neck saying he had eaten the floor, here he is again sitting on the new floor (which took me a week to lay) and this time I'm going to embarrass him big time, so here he is saying sorry with Xmas socks on" [8].