NAVIGATING EVERYDAY CONNECTIVITIES AT SEA

ROYAL HOLLOWAY UNIVERSITY OF LONDON

Sailors' Society
CELEBRATING 200 YEARS

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ROYAL HOLLOWAY UNIVERSITY OF LONDON
NAVIGATING EVERYDAY CONNECTIVITIES AT SEA
STUDY REPORT

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ACKNOWLEDGEMENTS

This study would not have been possible without the assistance, cooperation and support of a number of people and organisations. They all deserve huge thanks. We are particularly grateful to the seafarers on both Ship1 and Ship2, who went above and beyond to share their stories and provide invaluable insights into their everyday lives, networks, and connectivities. We also want to thank our funders, Sailors' Society and Inmarsat, for supporting the project without knowing what it would look like or where it would lead. The research would never have been possible if it hadn't been for Seaspan, who allowed us to carry out our study onboard two of their ships, and Kuba Szymanski for helping us get the project off the ground. Without their support and willingness, the study would never have taken off.

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RESEARCH TEAM

Dr Rikke Bjerg Jensen

I am a social researcher in the Information Security Group (ISG) at Royal Holloway University of London, with research interests that orbit around everyday security practices enabled through digital technologies and mobile devices.

More specifically, my research focuses on how technology, and the information flows that it enables challenge our understanding of proximity and presence. I am particularly interested in how the relationship between people and technology facilitates and/or hinders different feelings of security as well as different security visions amongst people living and working on 'the edge' of society. I have undertaken extensive ethnographic fieldwork, as part of several distinct research projects, in the UK and overseas with the British military (including the Royal Navy), NATO, refugees and migrants, and seafaring communities to explore and understand the wider human-technology-security nexus.

Dr Olivia Swift

I am a maritime anthropologist with an established track record researching topics pertaining to the welfare of seafarers, most recently around issues of i) mental health, ii) women seafarers, and iii) superyacht crews. An interest in how people find meaning in their working lives, and about the structures and institutions that shape global labour relations underpin my research interests. I have extensive experience of conducting qualitative and quantitative research at sea and among seafarers in the Philippines and in ports around the world.

FOREWORD BY INMARSAT

Today, connectivity is about more than just social media and web surfing. It is increasingly a prerequisite to function in daily life. The ability to connect is becoming the default setting.

As we can see from this excellent pilot-study, seafarers on similar ships with similar route characteristics have vastly different connectivity experiences, which have a huge impact on their wellbeing whilst at sea. This is concerning, since fundamentally there are no longer any technological or financial barriers to providing decent connectivity at sea. The same advances that have propelled the 'networked economy' on land have allowed satellite operators to significantly improve both the capability and flexibility of their offerings to the maritime sector bringing down the cost of basic vessel connectivity to approximately 0.3% of the total cost of operating a vessel.

The disappearance of practical barriers means that the remaining need for change lies in mind-set.

There is a historic reluctance to provide connectivity to seafarers and the industry has a collective responsibility to address this, as this study indicates, it is becoming a highly critical factor on not only which ships a 'young and talented' seafarer will sail on, but whether they actually want to spend their lives at sea at all, if they are not connected.

Only when we come together as a maritime community, will this truly change and we will continue to work with a host of partners and charities such as Sailors' Society, who work untiringly to improve the quality of life for seafarers from a safety, training, mental health and social perspective.

With a collective effort, we will hopefully ensure that the thousands of seafarers stay connected to their families and loved ones wherever they are in the world and remain 'in control' of their life.

DREW BRANDY
Senior Vice President Market Strategy
Inmarsat

FOREWORD BY SAILORS' SOCIETY

Ask any of Sailors' Society's 120 chaplains what the seafarers they meet ask for most frequently and you'll get the same answer: WiFi.

A growing number of large-scale studies make it clear that connectivity is a key issue for seafarer welfare. This smaller-scale pilot study is intended to be a complementary addition to our understanding of this issue, offering more detailed insights into the huge impact that connectivity can have on seafarers' wellbeing.

While many in the shipping industry have suggested on board connectivity disrupts work and rest patterns on ships, this research shows quite the opposite - that the lack of reliable on board internet disrupts such patterns.

The seafarers described the worries and tensions caused by their lack of control over when they could contact their families. This would be resolved by reliable on-board connectivity.

As one seafarer so bluntly put it: "The only thing that is more important than connectivity is food."

The wellbeing of seafarers is of vast importance to the maritime industry. We all have a duty of care to those who are the foundation of our businesses – and with mental health playing a key role in their decision-making abilities, if we neglect that duty the consequences can be deadly and costly.

STUART RIVERS
Chief Executive Officer
Sailors' Society

REPORT HIGHLIGHTS

There is a need to understand the nuances of online connectivities – in its plural form – onboard ships to a much greater extent. For our participants, online does not simply mean online and connected does not simply mean connected. It refers to multiple connections, networks and relations that exist within and beyond the ship and it comes with a number of challenges and issues that need to be understood by shipping companies, charterers, agents, and welfare organisations.

One of the arguments for not providing onboard connectivity has been that it would disrupt work and rest patterns on ships. However, our research shows that, in fact, not having reliable onboard internet disrupts such patterns. If the only method of digitally connecting with kin and friendship networks is through personal mobile phones, seafarers will connect when the ship is within mobile phone signal range, regardless of the time of day, external factors, work or rest hours.

For all participants, the ability to connect with family on a regular basis whilst away was understood to ease transition into home life when returning from sea. In particular, being in frequent contact allowed them to keep up to date with everyday mundane events and activities at home. It allowed them to stay "in control" of their lives; thus, minimising the feeling that they were missing out on important life events.

The research revealed the extent to which seafarers have become prime targets for mobile phone sim card sellers and potential scammers in ports around the word. Due to limited and restricted onboard internet access, our participants felt that they had 'no choice' but to buy 'over-priced' sim cards and to risk being scammed in order to connect with family and friends. This made them feel particularly vulnerable and affected their sense of safety and security.

Pressures related to the lack of reliable and sufficient digital connectivities amplify other pressures such as financial pressure, family strains, and isolation felt by seafarers regardless of status.

Access to onboard connectivity is increasingly becoming a deciding factor in whether 'young and talented individuals' want to spend their lives at sea, and whether shipping companies are able to retain experienced and highly qualified seafarers. The research showed that seafarers would increasingly make career choices based on the 'internet deal' they could get.

SECTION 1
INTRODUCTION TO THE STUDY

Digital connectivity at sea has been one of the major talking points of the decade in the maritime industry, which has been slow to adopt technology enabling improvements in connectivity across the world's commercial fleet. While several studies have used surveys to try to establish the rate of these improvements and their wide-ranging implications, none – to our knowledge – has taken observations of crew behaviour and conversation with seafarers as their starting point. This study does just that. Its ethnographic, qualitative approach goes beyond a focus on the state of connectivity and what seafarers do with it and attends instead to how and why seafarers navigate and negotiate a web of connectivities – in the plural – and the meanings they ascribe to their experiences of doing so.

By not separating technology from the social relations in which it is embedded, the study begins to bring to bear the underlying factors that influence how seafarers engage with digital technology and mobile devices whilst at sea. We titled the project "everyday connectivities" because we wanted to keep the mundane, social and lived experience of seafarers' engagement with such technology at the fore. By assessing connectivity at sea in this way, we are better able to understand the effects of connectivity, no connectivity, poor connectivity, and their combining, particularly on seafarers' wellbeing, crew cohesion and isolation, morale, safety, and occupational effectiveness. Such factors are vital for crew retention, recruitment, and to safe and efficient ship operations.

Image 1: Doing research onboard two container ships also meant experiencing how seafarer lives are lived on a daily basis. For instance, being stuck at anchorage for several days without the ability to connect with anyone beyond the ship.

In addition, we were keen to explore the potential to better harness everyday uses of technology to increase cohesion and wellbeing amongst seafarers and their wider

community; this contrasts with prevalent thinking in which connectivity at sea is something that needs to be restricted and rationed, often driven by underlying concerns over security.

This study was motivated by a desire to go beyond the idea that increased connectivity is beneficial in any straightforward manner; a notion that dominates much current thinking, but which fails to engage with the wider question of what greater connectivity means to the individual. In contrast, this study seeks to understand connectivity, facilitated through and by digital technology, in connection to a range of welfare issues, some of which are amplified by the ability to connect with family and friends whilst physically separate.

The project's overall aim is to build a picture of how seafarers seek to establish a sense of community and group cohesion, and how digital technology and mobile devices both support and challenge the establishment of these feelings. Central to such ideas is understanding the ways in which social isolation on the one hand and group cohesion on the other are talked about – and how a focus on "everyday connectivities" provides quite a different way in to understanding the feelings that seafarers ascribe to their onboard sense of wellbeing.

SECTION 2
STUDY FRAMEWORK

In response to industry surveys into connectivity at sea, discussed in this section, the present study offers a nuanced picture of how the multiple types of digitally facilitated connections, relations and networks, enabled through mobile technologies, affect the everyday lives of seafarers onboard large container ships. Whilst the study has limitations both in terms of scope and approach, as outlined in relation to methods, it reveals intimate and insightful narratives about individual feelings related to onboard connectivities (or the lack thereof). To this end, it aims to give the seafaring community itself a platform where questions and challenges related to onboard connectivities can be brought to the fore.

Existing studies

Industry studies of connectivity at sea have been increasing in number in recent years. The best known is that produced by Futurenautics (2015 and 2018), which uses data from a survey of almost 6,000 seafarers to report on the state of connectivity and the maritime communications market as well as a range of related issues, such as: how much seafarers spend on digital communications; where they access the internet, for what services or websites and using what devices; seafarers' stated preferences regarding digital communications and the effect they perceive connectivity to have on security; and crew cohesion and recruitment. Interestingly, the 2018 Futurenautics report states that while 53% of respondents said they believed connectivity to have reduced crew interaction, an increase in reported connectivity has actually been matched by a 3% fall in usage, suggesting that if there is a correlation between connectivity and seafarers' isolation, it does not continue beyond a certain point. Work-demands limit time spent "connected" and we also know from the Happiness Index (Crewtoo 2016 and Mission to Seafarers 2018) that while seafarers "crave" connectivity, they also value time spent "unconnected", engaging with fellow crew members. Research by the Seafarers' International Research Centre at Cardiff University finds that only 13% of seafarers surveyed reported spending free time in their cabins to access the internet (Sampson 2017). According to the Centre's Director, Helen Sampson, the primary causes of social isolation among seafarers are changes in ship design and restrictions on alcohol and social events, rather than connectivity. Also striking in the Futurenautics (2018) findings is that 95% of respondents considered connectivity to have improved safety aboard ship – which counters oft-heard concerns about connectivity compromising safety and security.

Another valuable report, by Nautilus International (2017), draws on a smaller survey of 2,000 seafarers to describe the state of connectivity, its cost to employers and seafarers, the connected services seafarers can/cannot access, the impact of connectivity that seafarers attribute to retention and recruitment, and employers and employees' concerns regarding connectivity aboard ship. Notably, the report describes a divergence in whether employers think connectivity reduces crew interaction – with more thinking that it does not. Cost is the motivating factor for employers' decision-making around spending on communication systems – although a Futurenautics 2016 Research White Paper notes an apparent shift in priorities – with ship operators now being primarily motived by operational efficiency rather than set-up costs. Crew welfare is rarely a motivating factor, despite a large proportion of seafarers surveyed saying that connectivity is a very strong driver for switching companies (Futurenautics 2018).

While the overall picture of improving connectivity is consistent across the reports cited above, the statistics and figures contained in their detail sometimes vary or even contradict each other. No one study will give a complete or accurate picture of connectivity and related issues at sea, and surveys – like all methodologies – have their inherent limitations. Hence, our desire to contribute qualitative data about seafarers' lived experiences of connectivities into what is best seen as a landscape of complementary research, from which an "accurate" picture emerges cumulatively.

Research methods

To establish an understanding of digitally facilitated communications amongst seafarers, we developed an ethnographic study that looked at how seafarers use mobile phones and other digitally enabled devices in their daily lives, during long periods at sea, and the opportunities and risks that such usage introduces. The study engaged 43 seafarers onboard two container ships, one with onboard WiFi capabilities and one without, during two 10-day voyages. Access to ships was secured with the assistance of a large shipping company, Seaspan, which enabled one female researcher of Danish-Faroese nationality to carry out empirically grounded research on these two ships. Whilst the ships had differentiated internet facilities, they were both relatively new ships with spacious living accommodation, recreational and socialising spaces, and entertainment facilities, including pre-recorded local news media, television series, and movies.

SECTION 2
STUDY FRAMEWORK CONTINUED

"We've had a survey about internet, and no-one will say 'no' to more internet [...] but it's not that simple. The people creating the survey don't understand what it means not to have good internet. Because you're here, you will experience it too."

- participant, Ship1, February 2018

All participation was voluntary, which was made clear before any engagement with participants. Prior to undertaking the fieldwork, the study and the engagement methods were approved by Royal Holloway University of London's Research Ethics Committee. Furthermore, a Participant Information Sheet was created to ensure that all participants were aware of the underlying research aims and objectives, study methods, and their own voluntary involvement. Consent forms were also signed by all participants and by the researcher to ensure that everyone involved in the study understood, and were comfortable with what would happen to the information they provided.

Table 1 presents a summary of the geographical location and duration of both research trips, the composition and size of crews, participants and researcher, nationalities, language used, and outputs.

	Ship1	Ship2
Location	European waters	European waters
Participants	22 crew (male): Master, Chief Officer, 2 x 2nd Off, Chief Engineer, 2nd Engineer, 3rd Engineer, 4th Engineer, Electrical Officer, Bosun, 3 x AB, 2 x OS, Trainee Deck Hand, Oiler, Wiper, Chief Cook, Messman, Deck Cadet, Electro Cadet	21 crew (male): Master, Chief Officer, 2nd Off, 3rd Off, Chief Engineer, 2nd Engineer, 3rd Engineer, 4th Engineer, Electrical Officer, Bosun, 3 x AB, 2 x OS, Trainee Deck Hand, Oiler, Wiper, Chief Cook, Messman, Deck Cadet
Participant nationalities	Filipino, Ethiopian, Indian, Sri Lankan, Ukrainian	Filipino, Chinese, Indian, Sri Lankan, Ukrainian
Ship architecture	Built in 2017. Spacious living accommodation, communal spaces, single cabins with en-suites.	Built in 2014. Spacious living accommodation, communal spaces, single cabins with en-suites.
Language used	English	English
Voyage duration	10 days	10 days
Researcher	Female, 38, Danish-Faroese	Female, 38, Danish-Faroese
Outputs	Field notes and pictures	Field notes and pictures

Data Capture and Analysis

Three forms of data were captured during the research process: (1) written notes from group discussions; (2) researcher observations captured in note form; and (3) images captured by the researcher. The analysis employed a thematic content analysis, which allowed us to develop qualitative interpretations of both the researcher notes and the images. Written records were kept of all the generated data, and by systematically categorising and interpreting these data in relation to the seafarer context, specific categories related to digital connectivity and mobile phone use emerged directly from the data. This was done through an approach where we, individually and manually, traced dominant narratives across all fieldnotes. To ensure consistency, the narratives were aggregated, themes were developed based on the different analytical components, and relationships between the individual themes were explored. The study thus employed an inductive approach, where research themes and findings emerged directly from the captured data.

SECTION 3
RESEARCH FINDINGS

The findings emerging from this qualitative study are driven by a number of thematic ideas and trends observed in group discussions and individual conversations, during fieldwork aboard two container ships in February and April 2018. This section sets out such themes and trends. In order to exemplify the key findings, the section is divided into four sub-sections which each focus on a specific theme: (1) onboard connectivities; (2) rhythms and routines; (3) pressures of connectivity; and (4) recruitment and retention. Each sub-section will also include a summary of the key findings in relation to each theme. Through such summaries, key themes and trends are highlighted and exemplified, before being brought together in a conclusion in the subsequent section which also sets out recommendations.

Although the individual themes go across the data, some themes are especially relevant to a particular research environment. The themes identified here function as emblematic examples of wider research findings and comprise a range of sub-themes that contribute to the overall understanding of everyday connectivities at sea. It is therefore important to recognise that when trying to understand the meanings that seafarers ascribe to their everyday uses of digital technologies at sea, all of these themes, and the nuances that they entail, need to be taken into consideration.

Onboard connectivities

Seafarers, however far removed, live closeness and distance in differentiated ways; through their mobile phones and through other digitally connected devices.

The study brought to the fore nuanced understandings of how the multiple types of digitally facilitated connections, relations and networks, enabled through increasingly connected ships, shape and reshape seafarer lives. Because of the two distinct field settings, the findings related to onboard connectivity comprise a mixture of experiences with internet access and without internet access; as well as perceptions of what having onboard WiFi facilities would be like. The findings therefore demonstrate how the presence and/or absence of such facilities impact the daily lives of seafarers and the feelings that accompany them. The research showed that onboard digital connectivities, within and beyond the confinements of the ship, hold the potential to (re)create spaces of everyday safety and security for crew. However, such connectivities may also disrupt onboard rhythms and routines, if these

are seen to be too restrictive and/or too expensive.

> "Connectivity hasn't damaged social cohesion; smaller crews, ship architecture, and less time in ports have."
>
> - participant, Ship1, February 2018

Seafaring has changed significantly in recent years, with less time in ports and limited shore leave, increased automation, reliance on technology rather than on man power, reduced speed to minimise fuel consumption and environmental impact, socialising and alcohol consumption policies, and larger ships, yet, smaller crews. Along with the advancements in digital technologies both at sea and ashore, it is therefore important to recognise these significant broader changes, which have impacted upon how lives are lived at sea.

Developments in ship architecture and entertainment provision, beyond digital technologies, are also important factors in how everyday connections between seafarers and their wider networks are facilitated and supported. This was evident in both research settings. Whilst senior officers had televisions and desktop computers in their cabins, as well as a day-room and a bedroom, everyone had access to communal spaces, such as the crew day room and the officers' day room, which included televisions, video games, karaoke machine, and sound systems. Moreover, recreational facilities such as a gym and table tennis, also shape seafarer lives. However, all participants explained how they would get bored after a while at sea. Whilst they did have other ways of entertaining themselves, as mentioned above, these became less and less interesting over time. Being able to connect was seen to bring new and outside perspectives onto the ship, which would strengthen social cohesion as there would be more topics to discuss.

With this in mind, in this section, we set out the findings related to the overarching theme of onboard connectivities, which includes the myriad networks and digital facilities through which seafarers at all levels connect with their kin and friendship networks.

SECTION 3
RESEARCH FINDINGS CONTINUED

	Ship 1	Ship2
Onboard WiFi	Yes	No
Internet data allowance	50MB per week (free)	N/A
Email	Individual emails accessed through shared computers or mobile phone app.	Individual emails accessed through shared computers or mobile phone app.
Phone	Phone calling cards (paid for)	Phone calling cards (paid for)
Media	Shared TV and computer in common rooms, access to local news sources, movies and TV series	Shared TV and computer in common rooms, access to local news sources, movies and TV series

Table 2. Onboard connections differed between the two ships. Whilst phone calling cards and individual emails were available on board both ships, the option to connect through WiFi was only possible on Ship1.

Key findings

Ship1 had onboard WiFi facilities, which meant that all crew members could connect using their mobile phones; however, this was limited to 50MB per week per person. Access to WiFi was enabled through password-protected personalised accounts, which would be activated once someone joined the ship and deactivated when someone disembarked. The account, and the data it held, was therefore personalised and assigned to individuals aboard the ship. Although this was seen to be better than no connectivity at all, there was general consensus that it was not enough to maintain satisfactory everyday relations with family and friends, especially during long periods at sea. In particular, these limitations meant that it was not possible to use Skype or FaceTime, download videos or music, or communicate beyond sending text messages. The 50MB data allowance was therefore only seen to be useful for sending WhatsApp or IMO[1] messages which would, however, need to be limited and rationed as further outlined in the subsequent section. Noted by most participants, 50MB was seen to be better than 0MB, 100MB was better than 50MB and unlimited connectivity was better than 100MB.

> "I have never been on a ship with connectivity"
>
> - participant, Ship2, April 2018

This was echoed in research done aboard Ship2, which exemplified how not having WiFi fostered certain expectations about the levels of internet connectivity that could be provided by ship owners. Most participants on Ship2 had never been on a ship with internet connectivity, which fostered many speculations about what having internet access would mean and how that would change their use of digital technology and their ability to communicate with home. Most participants noted that they would probably still be buying mobile phone sim cards in ports (see "pressures of connectivity" section), but having onboard internet, regardless of any perceived restrictions, would give them choice; a choice that they did not feel they currently had. To this end, there was a perception that access to onboard WiFi would improve their standards of living and working, both in terms of relations with family and in terms of onboard camaraderie.

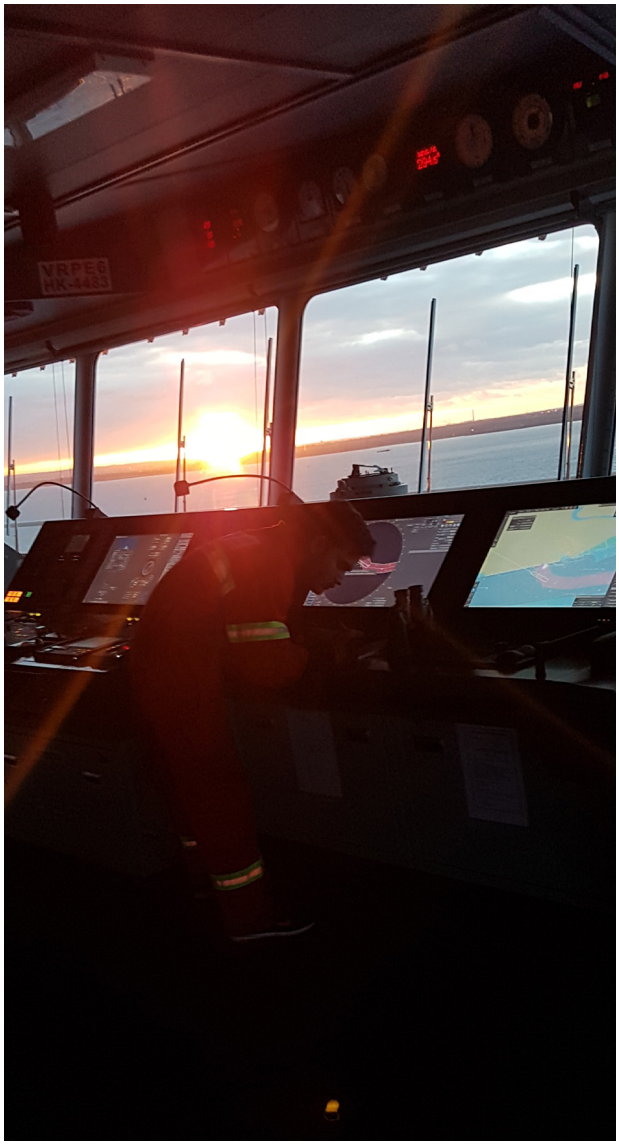

Image 3: Onboard digital connectivities enable seafarers to connect with family and friends, during long periods at sea, at times that suit them; thus, avoiding disrupting rest and work.

[1]WhatsApp is a free messaging and voice app, whilst IMO is a social networking site that enables free video calls and chat as well as sending text messages and sharing pictures. IMO is predominantly used by Filipino crews.

SECTION 3
RESEARCH FINDINGS CONTINUED

Participants also noted that there were big differences between ships in terms of internet connectivity more broadly. Both crew and officers agreed that there seemed to be an assumption amongst shipping companies that providing some internet onboard ships would respond to, and solve any demands about connectivity coming from the wider seafaring community. However, as noted by all participants, being on a "connected ship" could mean many things. The multiple restrictions, limitations and costs all contributed to a complex picture of multi-layered connections running through, within and beyond the boundaries of the ship. This was seen to generate a lot of uncertainty and frustration amongst most crew members. From these engagements, it was clear that there is a strong need to understand the nuances of online connectivities onboard ships to a much greater extent. For our participants, online did not simply mean online, but it came with a number of challenges and issues that need to be understood and dealt with, and it referred to multi-layered networks, connections, and relations that are not straightforward.

> "It is as if they [the companies] think we should be grateful; grateful that we've got some connectivity."
>
> - participant, Ship1, February 2018

Data allowances would be topped-up every Monday, and since it was not possible to transfer any remaining data to the next week, any unused MBs would be "lost". There was a general lack of understanding of why this was the case. As one participant noted: "If I decide to save up data, I should be allowed to do so". Similarly, the fact that it was not possible to pay for additional top-ups was also questioned by crew members. Both the crew and officers agreed that this should be optional as it would give them "choice" – something which they explained that they did not currently have.

The main question for many participants in this context was why they could not transfer left-over MBs to the next week, in cases where they had not spent all of their data allowance. In particular, participants noted that they would sometimes buy a mobile phone sim card in Europe (e.g. Rotterdam) and then use that during the European leg of their voyage. This meant that they would not be using their data allowance during this period. Because they could not transfer MBs onto next week's allowance, this meant that they would sometimes simply lose out on data. This was seen to be frustrating, and most participants on Ship1 strongly felt that there should be an opportunity to save up data that could then be used the following week.

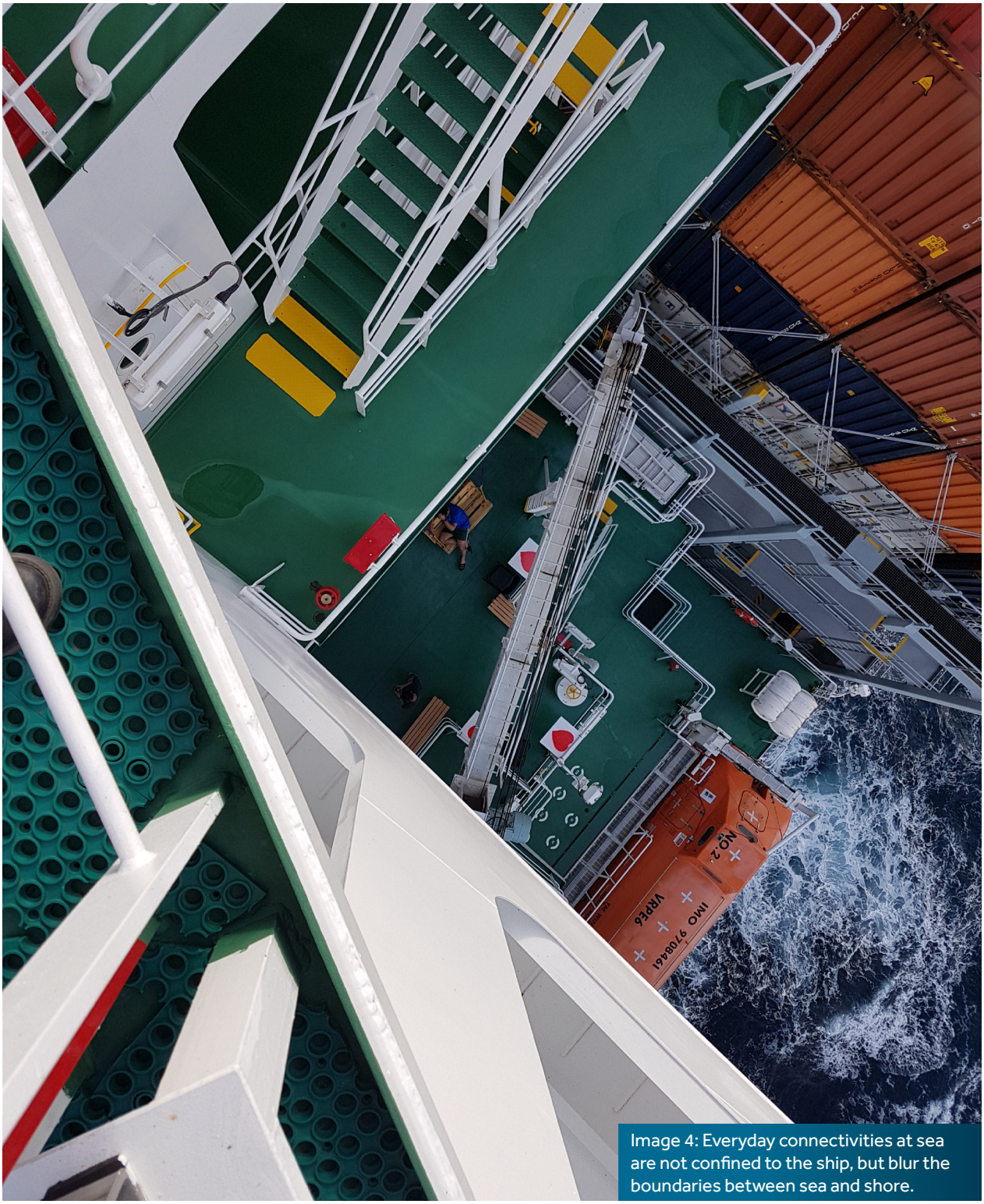

Image 4: Everyday connectivities at sea are not confined to the ship, but blur the boundaries between sea and shore.

SECTION 3
RESEARCH FINDINGS CONTINUED

It was also noted by all participants on Ship1 that a number of sites were blocked when trying to access them through ship-provided WiFi, which meant that they would have to find alternative ways of connecting. This was particularly evident in terms of messaging apps such as IMO, which could only be accessed through a VPN. Whilst no official company instructions were provided on how to do this, participants explained how they would share information about how to circumvent internet restrictions in order to enable them to access platforms through which they could connect with family and friends. This ability to be able to communicate with family back home, using apps, platforms and services with which they and their wider networks were familiar, was noted to be the most important aspects of crew welfare. It was, however, unclear as to why these restrictions were in place. Some seemed to suggest that they had been put in place to help crew members limit their use but, generally, there was a lack of understanding of why sites such as IMO, Facebook and Instagram were not accessible.

> "It's fine for some officers to spend a lot of money on phone cards, but it's different for ratings."
> - participant, Ship2, April 2018

In addition to connecting using digital means, all crew members had the opportunity to use other methods of connecting and communicating with friends and family. Some participants would buy calling cards through the Master, to be used with their mobile phones, which would allow them to ring international numbers. This costed them around 25 cents per minute. This method was only used by a minority of participants on either of the ships. Whilst one participant on Ship2 noted that he would spend $200 per month on calling cards, another participant on the same ship explained that calling cards were too expensive for him. In general, most participants on both ships explained that they would not buy calling cards. This was mainly down to costs and, importantly, the fact that they did not meet their needs; in contrast to digital connectivities which gave them flexibility. However, those who did buy calling cards said that they would ration their use and only call for three-four minutes at one time to keep costs down.

Because of the lack of onboard connectivity (Ship2) and limited use of calling cards, some crew members would not connect with anyone outside the ship, during long sea passages. This was despite the fact that everyone had access to a personalised (company) email that could be accessed through either the shared computers in the

crew day room and the officers' day room or through an app on their mobile phones. However, this medium was not perceived to be satisfactory and would therefore not be used by most participants. First, because these emails were company emails, there was a perception of being monitored. Second, the emailing system had a built-in delay, which meant that it was impossible to have a sensible "conversation" over email. This would create a feeling of being constantly "out of sync". It was noted that it would take between 15 minutes and two hours to reach the other person, and this was not seen as very useful for anyone. The time-delay therefore meant that they would not use emails to communicate with loved ones. Third, participants noted how the server would often be "offline", which would mean that emails could not get through. This would not only impact upon social relations, but also upon the operation of the ship, as ship-to-shore and shore-to-ship communications were disrupted on these occasions. Emails were thus not seen as a reliable way of communicating with family and friends.

"On a scale from 1 to 10, I would say that internet connectivity is an 8 in terms of importance. The only thing that is more important than connectivity is food."

- participant, Ship1, February 2018

It was very clear that instantaneous messaging was seen as critical to everyone on both ships as they noted that it was difficult to maintain close relations without having instantaneous communication. Therefore, instant replies enabled through platforms such as WhatsApp and IMO were the preferred mode of communication within current restrictions. Also, it was noted that some questions or arguments needed to be resolved immediately. For instance, one example was given of how an argument with a girlfriend back home would result in a lot tension aboard the ship and impact upon camaraderie and cohesion, which could then not be resolved if the individual had run out of data. For most participants, therefore, the most important aspect of digital connectivity was the speed and immediacy that it enabled. This allowed them to communicate with people back home in a less disruptive manner. This was also emphasised by one participant who had decided not to use onboard WiFi because he had experienced that the unreliability and inconsistency of the connection did not suit him and had caused more harm than good to his personal relations.

SECTION 3
RESEARCH FINDINGS CONTINUED

As noted above and outlined in Table 2, there was no WiFi aboard Ship2. Participants were unsure as to why this was the case. However, there were a lot of stories and rumours circulating about the possibility that connectivity would soon be available on the ship. Such rumours were based on the fact that all the equipment required for onboard connectivity had previously been installed and had been ready for use but then a decision was made (somewhere) that all the equipment should be taken out again. This fuelled wide-reaching speculations as to why this was the case, on the one hand, and raised expectations that new equipment would soon be installed, on the other. However, there was also a sense that shipping companies did not appreciate the impact that such uncertainties about internet connectivity had on people's wellbeing or the labour involved in installing this equipment. One participant explained how he had been instrumental in setting up WiFi equipment on his previous ship, but had never benefitted from it.

Findings summary

- **Limited connectivity is better than no connectivity.**
- **Providing WiFi onboard ships does not solve or respond to all the challenges facing seafarers, but it may reduce some of the emotional stresses and pressures that come with separation and isolation; it also creates new challenges that need to be recognised and understood.**
- **Uneven and unreliable connectivity creates feelings of uncertainty and frustration amongst seafarers and their families.**
- **Access restrictions and blocked sites have meant that seafarers find ways of circumventing such restrictions e.g. through VPNs.**
- **Company-provided emails are only rarely used as they are seen to not provide seafarers or their families with a satisfactory communication channel; this is mainly due to the built-in delay which means that it is not possible to engage in sensible "conversations" over emails.**
- **Onboard ships without connectivity, perceptions and expectations of internet access are out of sync with what is experienced by those that have onboard connectivity.**

Rhythms and routines

Seafarers become avid mobile phone users and rely on digitally facilitated channels to stay in touch with family and wider networks of friends.

The study uncovered how uneven and unreliable digital connections disrupt the patterns and rhythms of everyday life, work and rest, during long periods at sea. It revealed the creative ways in which seafarers navigate and negotiate digitally facilitated connections to establish "safe spaces" that allow them to maintain strong

ties and intimate relations during times of separation from family and friends. To this end, this section outlines research findings relating to the ways in which multiple onboard connectivities as well as connections facilitated through external channels (e.g. mobile phone sim cards purchased in different ports) affect the rhythms of the ship. Research findings in relation to the overarching theme of "rhythms and routines" cover a range of observations about everyday practices relating to digital connectivity and mobile phone usage by seafarers. These include the rationing of data consumption, a culture of sharing knowledge about ways to connect, internet use in port, and how connectivity may disrupt work and rest patterns.

Key findings

The research exemplified, in a number of ways, how participants would ration their internet use by using "low data consumption" apps to make their internet data last for longer. On Ship1, this was particularly evident through the rationing of the onboard data allowance, which provided them with 50MB to spend over a week. This limited access to onboard internet meant that all participants would restrict their own personal use. For many, this was not only seen as frustrating and unnecessary, but also disruptive to their wider networks of friends and family. Extending this narrative, all participants explained how they would ration their internet use to make sure that the 50MB weekly allowance would last for the entire week. This meant that although they would generally message on a daily basis, they would make sure that they would not go over 7MB per day. All participants noted how they would "budget" their usage in different ways. Some explained that they would only do one or two messages a day, others would save up data to use on a Sunday. It was seen as important to not run out of data half-way through the week, especially during long sea passages. If they, by Sunday, still had any data remaining they would either share it with other crew members or download videos or TV series in order to use up any remaining data.

Participants noted that they would spend a lot of time and energy constantly tracking their own data usage and searching for low data consumption apps, in order to make their weekly MBs last for longer.

SECTION 3
RESEARCH FINDINGS CONTINUED

This form of everyday "budgeting" of internet data exemplifies the importance that digital connectivity plays in the daily lives of individuals whose lives are lived at a distance and away from their family and friends, for long periods at a time. Moreover, it exemplifies the efforts and creativity that participants invest in ensuring that they can stay in touch with loved ones whilst at sea, even if this is only through restrictive and restricting channels and platforms. Participants also noted that they were always on the lookout for new apps that would allow them to do what they wanted to do without using much data. In this sense, IMO was seen as consuming less data compared to WhatsApp. Similarly, most participants explained that they had not brought their laptops because trying to connect a laptop to the internet would consume too much data.

As noted above, Ship1 participants revealed how they would share any remaining data with other crew members if needed. This was done through the sharing of account passwords, so that they could use each other's data allowance. This practice was particularly used if someone did not want to use their weekly allowance or if someone was low on MBs because they had accidentally used up their data. This often happened when someone had failed to deactivate automated mobile phone and app updates. The sharing of data was also particularly used in situations where a crew member was out of data but was in desperate need of being able to communicate with home; examples of unresolved arguments with girlfriends and wives were used to explain when the sharing of MBs would be particularly important. This was seen as a way of managing everyday cohesion onboard ships as well as managing relationships at a distance. Everyone noted that they would always change their passwords the following week, when their accounts had been topped up in order to stop anyone from using their designated data allowance. It is important to note that this form of password and data sharing was not common practice but happened occasionally when someone was in need of instant online communication. However, this particular aspect of a culture of sharing exemplifies the often hidden practices that shape how people maintain everyday lives in exceptional circumstances, and the roles that digital connectivities play in bridging and connecting people and places.

Image 5: The everyday rhythms and routines of the ship are driven by the core function of the ship; the transportation of goods across great geographical distances. Seafarer lives are lived alongside these rhythms.

Similarly, onboard Ship2, where participants had to rely on external methods of connecting, there was a culture of sharing knowledge about which sites to use in terms of reducing data consumption, which sellers to buy from and not to buy from to get the best deals on mobile phone sim cards, and in which ports to buy sim cards that would cover larger areas. For example, northern Europe was seen to be better than southern Europe and Asia because the cards covered larger areas – and not just one country (although these cards were also seen to be expensive by the crew). This culture of sharing knowledge and experience was particularly evident when new crew members joined the ship.

All participants noted that the atmosphere on the ship would change when people had internet connectivity. This was particularly evident on Mondays when everyone's internet allowance had been topped up (Ship1) and when the ship was nearing port or close enough to land to pick up a mobile phone signal (Ship1 and Ship2). Having this level of connections from outside the confinements of the ship also meant that new information reached the ship which created new topics for discussion. This was particularly important for onboard socialisation and cohesion.

SECTION 3
RESEARCH FINDINGS CONTINUED

It was also evident that the mood of the ship could be impacted by changing routes and sailing schedules, as this would not only increase the workload but it could have an effect on the crews' ability to connect with people beyond the ship. Onboard Ship2, where all digital connectivity was facilitated through external channels, the uncertainties that were introduced by delays or last-minute changes impacted upon people's ability keep up with life back at home. A number of examples were given where crew members had missed a child's birthday or a friend's wedding, for instance, due to unforeseen delays or changes.

> "You may have planned to message someone or speak to your family when you're in a certain port on a certain date, but when the schedule then keeps changing these plans are disrupted and you feel terrible. You eventually lose your friends."
>
> - participant, Ship2, April 2018

Plans to connect with friends and family were therefore constantly disrupted onboard Ship2, as there was no alternative to connecting using mobile phone sim cards bought in port, which caused a lot of stress and headache for seafarers and for their families. To this end, as observed on Ship1, onboard connectivity, albeit limited and restricted, made a significant difference in terms of being able to maintain everyday communications with close family members and to feel "in control", as some participants explained.

One aspect of connectivity that was true of both ships was how the moving in and out of connectivity disrupted work and rest patterns. At moments when participants had either used up their weekly data allowance (Ship1) or were connecting using mobile phone sim cards they had purchased in port (Ship1 and Ship2), the position of the ship would be closely monitored in order to get a sense of when and where it would be possible to pick up a mobile phone signal. The inability to connect using onboard internet therefore disrupted established work and rest patterns and routines in particular ways.

If the only method of connecting using digital technology is through personal mobile phones then it must be expected that crew members will use every opportunity they get to connect with family and friends, when the ship is within mobile phone signal range, regardless of the time of day, work or rest hours.

> "Sometimes you don't want to go to sleep because there is a chance that you will have mobile phone signal."
>
> - participant, February 2018

The mobile phone was thus present in all aspects of daily life and work aboard the two ships, and it was often used to search for connectivity (sometimes where there was none) to establish contact with loved ones beyond the ship.

In terms of disrupting rest and work patterns, participants on both ships assumed that the underlying reasons for not providing better internet connectivity were costs and the perception that they would spend too much of their resting time online between shifts. However, as was noted by one participant: "We know that we have to rest between shifts, we're professionals."

The rhythm of going into port was dominated by the search for good, cost-effective (free) internet connectivities. In fact, the ability to connect with wider kin and friendship networks through different social media platforms, such as Facebook and Instagram, and video calling services, such as Skype and FaceTime, was the main priority for participants when in port. It was noted by all participants that if they had reliable and sufficient internet connectivity on the ship, they would not have to go into port at all i.e. for many, the main reason for going into port was to use the internet.

Findings summary

- **Limited data allowance leads to the rationing of data use and creative approaches to finding low data consumption applications and platforms.**
- **A culture of sharing in terms of internet connectivity and data allowance was observed on both ships, in differentiated ways.**
- **The lack of reliable and sufficient onboard digital connectivity disrupts work and rest patterns as crew members connect using their mobile phones when these are within signal range, regardless of time of day.**
- **The main and overshadowing reason that participants go ashore during, sometimes very short port stays, is to connect with family members using reliable internet connections.**
- **Moving in and out of connectivity, and the lack of constant connectivity, may have a negative effect on sleep and work patterns.**

SECTION 3
RESEARCH FINDINGS CONTINUED

Pressures of connectivity

Digital connectivity during times of separation comes with both positive and negative qualities. Seafarers experience the freedoms that it enables as well as the pressures that it creates.

Fragmented connections, which surface when the ship moves in and out of connectivity or when on-board data allowances run out, create a series of pressures and emotional stresses that often unsettle individual feelings of safety and security. To this end, the study highlighted how the reworking of sailor lives through technological advances and changing work models produce feelings of distance and isolation, but also togetherness and community. This section, outlines key findings in relation to the freedoms and pressures that come with differentiated connectivities during long periods at sea, separated from family and friends.

Key findings

Because of the limited and restrictive onboard digital connectivities experienced by seafarers, they become key targets for sellers of mobile phone sim cards in ports around the world. The crew on both ships spoke of an ecosystem of sim card sellers in ports, upon whom they would rely for mobile internet connectivity. Whilst many participants (ratings in particular) noted that they would weigh up the value of spending money on a sim card in one port over the other, they still felt that they had "no choice" other than to buy "over-priced sim cards". Participants also noted that they were in a particularly vulnerable position and were prime targets for scammers who were selling cards that did not contain either the minutes, speed, or data that they were promised. This was a recurring problem. A number of examples were given of how seafarers had been scammed, which meant that these sim card sellers were referred to as "the Mafia" in the sense that they could not be trusted. Participants felt in a particularly vulnerable position because of their mobile lives and because they would be desperate to connect by the time they reached a new port. There was a lack of understanding amongst participants of why their employer(s) would "force" them to engage with these sellers.

"In most ports, sim card sellers come onto the ship to sell their stuff. We call them 'the Mafia' because they cannot be trusted but we're reliant on them."

- participant, Ship1, February 2018

Image 6: Participants voiced a number of different pressures which were amplified by the lack of ability to connect in a frequent and reliable manner. These included financial pressures, pressures from family and friends, work pressures, and pressures from being isolated.

From a different perspective, participants also noted that if no sim card sellers turned up in a port this would have a significant impact on the mood onboard the ship. In some places it would be possible for them to go ashore to buy sim cards in port, but in other places this was not an option either because of limited time or because of security. Related to a wider culture of sharing, it was also noted that they would often buy sim cards for each other, in situations where some crew members were too busy to either go ashore or be present when the seller(s) came aboard the ship to sell sim cards.

"If you go to the ship office and realise that there are no sellers and you can't buy a sim card, it's really depressing. You've been looking forward to it for several days, because you know you'll be in port and then you can get a sim card. It's really depressing."

- participant, Ship2, April 2018

It was noted by most participants that during long sea passages there would be no choice to buy sim cards because they would not come into port. For those without onboard connectivity (Ship2), this would cause a lot of stress as they had no option to

SECTION 3
RESEARCH FINDINGS CONTINUED

engage in everyday messaging with family and friends. They noted that if they had reliable and sufficient onboard WiFi they would not feel the need to make themselves vulnerable to potential scammers. Similarly, free onboard connectivity was also seen to even out the gap between officers and the rest of the crew, as it gave everyone the same opportunity to connect with friends and family – regardless of salary and status.

Participants voiced a number of pressures during the group discussions. These centred on financial pressures, work pressures, family pressures and pressures related to limited digital connectivities. In terms of financial pressures, these were related to the costs associated with buying sim cards and onboard calling cards in order to be able to connect with wider kin and friendship networks. Because of the mobility of the ship, moving across large geographical distances and from country to country, there is a need to buy multiple sim cards in different ports. For most of the ratings, it was not an option to buy sim cards in every port. Financial pressures also related to the underlying reason why many participants were spending up to nine months at sea away from their loved ones. To this end, all participants, in all group discussions and conversations, voiced a very clear sense of their obligations to provide for their family. As one participant noted: "They can't just eat vegetables all the time, they also need to eat meat."

Another pressure in relation to digital connectivity expressed by many participants was the pressure coming from family members who found it difficult that it was not always possible to connect using digital technology. It was unclear as to how much crew members would know about the levels of connectivity before they joined a new ship. This would also make it difficult for them to prepare family members for what they could expect in terms of internet connection. Many participants thus noted that they had to manage family expectation about levels of and access to onboard digital connectivity. In this context, the question of onboard internet cafés surfaced on a number of occasions. Although these were seen to be better than having no internet, they did not meet participants' need and desire to be able to have intimate conversations with loved ones.

> "If you're away from your family for nine months, you want to have the ability to communicate in private – especially over the internet."
>
> - participant, Ship2, April 2018

In this respect, video calls were seen to be the most important aspect of digital connectivity, although on both ships this was only possible when they could use the internet in port or when they could connect using mobile phone sim cards. The ability to see their family, children in particular, and for family members to see them, was explained to be key to increasing wellness and wellbeing amongst seafarers and their families.

> "We might be physically distant but we're not distant emotionally."
>
> - participant, Ship1, February 2018

For all participants, the ability to connect with family members on a regular basis whilst away was understood to ease transition into home life when returning from sea. In particular, being in frequent contact allowed them to keep up to date with everyday mundane events and activities at home. It allowed them to stay "in control" of their lives, minimising the feeling that they were missing out on important life events.

On both ships, there was a real sense of being out of sync with family members back home, which added a lot of pressure in terms of navigating time differences and multiple communication channels. Restrictions imposed on data usage (Ship1) and the limitations experienced in terms of accessing digital connections (Ship1 and Ship2) added to these pressures as they required extensive planning and negotiation of multiple digital platforms and networks. It was, however, recognised that such planning would quite often be disrupted by external factors such as delays or unexpected work demands. As an example, during the research aboard Ship2, a two-day delay into port resulted in a lot of frustration about the lack of connectivity. Whilst one crew member had promised to Skype his three-year-old daughter on her birthday, another participant explained how he had missed his parents' anniversary because of the delay and the lack of digital connectivity aboard the ship. Based on onboard observations during this delayed voyage, it was evident that people were constantly searching for a mobile phone signal in "all corners" of the ship, whilst most conversations during meal times or during socialising activities would also include references to issues related to connectivity.

SECTION 3
RESEARCH FINDINGS CONTINUED

Work pressures often interfered with planned socialisation activities, which meant that contact with people back home would be prioritised over spending time with crew members outside of work hours. This was evident aboard Ship2 when the ship was within mobile phone signal range. Participants also highlighted that shift work made this particularly difficult. In this respect, participants were keen to provide examples of why reliable onboard connectivity was so important to them and to their families. For many, having the mobile phone and being able to connect gave them a sense of control over their lives; it gave them a lifeline to their family and friends back home. It also provided them with a sense of security and the ability to navigate sometimes unfamiliar cultures and systems. Moreover, for some, connecting with family and friends was seen as a way of making the time they spent at sea more bearable.

> "I'm counting every month, every week... how long until I go home; being able to connect using my mobile would help me during this time."
>
> - participant, Ship2, April 2018

It was evident that most, if not all communication beyond the confinements of the ship is to contact family members. It was noted that there was a significant difference between crew members who are married and those who are not. As one participant noted on Ship2: "I'm still single, so I can cope with the lack of WiFi, but this will change once I get married and have a family." Similarly, as described above, all participants on Ship1 explained how they would message people daily. However, because of the need to ration their internet use, they would choose very carefully who to message. To this end, only people "very close" to them (girlfriends, wives, children, and parents) would receive regular messages. Increased internet access would therefore allow them to communicate with wider networks of people and to maintain friendships which would otherwise disintegrate, during long periods of disconnection. In particular, this was related to the ability to use social media platforms such as Facebook and Instagram to share pictures from different places and sites as well as everyday activities, which could currently only be done when using internet servicers in port (e.g. Seamen's Clubs). Social media was also used to stay in contact with each other after they leave the ship and after their contracts end. Facebook, in particular, was seen to contribute to the feeling of being part of a wider network of seafarers.

Findings summary

- Seafarers note that they are prime targets for sim card sellers and potential scammers in ports around the world, which makes them feel particularly vulnerable.
- Because of what they refer to as "unreliable and unsatisfactory" onboard internet connectivity, seafarers have "no choice" but to spend money on mobile phone sim cards, so that they can connect with wider kin and friendship networks.
- Ship owners hold the key to minimising access gaps between officers and ratings by providing free, reliable and sufficient onboard connectivity, as this would mean that access to the internet would not be determined by affordability.
- Pressures of limited onboard connectivity take many forms and amplify other pressures related to work, isolation, family, and money.
- Whilst onboard internet cafés are being increasingly discussed as an alternative to individual onboard digital connectivity, these were not seen as meeting seafarers' (and their families') needs for privacy and intimacy.
- Digital connectivities enable seafarers to stay "in control" of their lives, minimising the feeling that they are missing out on important life events.
- The research revealed that seafarers were more or less unable to access social media platforms, whilst at sea, due to enforced restrictions.
- Platforms such as FaceTime and Skype were seen as critical to maintaining satisfactory relations with family back home, and there was a lack of understanding amongst participants why such platforms could not be made available to them.

SECTION 3
RESEARCH FINDINGS CONTINUED

Recruitment and retention

Levels of onboard connectivity influence the choices seafarers make about future employments and about future employers.

"It would be interesting to know how different levels of connectivity affect the happiness of the ship".

- participant, Ship1, February 2018

As noted previously, whilst 50MB of data was not perceived to be sufficient to maintain close relations with family and friends, it was seen as much better than having no connectivity at all. This was also evident when comparing Ship1 and Ship2. The main difference voiced by participants was "choice"; whilst participants on both ships would buy mobile phone sim cards and find alternative ways of connecting, Ship2 participants felt that they had no other option than to spend money on sim cards if they wanted to use digital connections. The fact that there were no free methods of connecting created a gap of access between ratings and officers, as access to digital connectivities would be determined by affordability. This section goes beyond onboard connectivity and explores how perceptions of WiFi facilities and capabilities affect the choices crew members make about their future employments.

Key findings

Underlying all the other themes outlined in the previous sections was the question of why onboard WiFi access was limited to 50MB on Ship1 and non-existent on Ship2. Whilst some participants suggested that this was due to the cost of providing internet aboard ships, others believed that this related to companies not wanting their employees (seafarers in this case) to be distracted by social media or other digital platforms. However, since there was a perception that some shipping companies provided unlimited internet access onboard their ships, these reasons were not generally accepted by the participants. Hence, there was a lack of understanding of why they did not have the same levels of access.

"I've heard that other ships have unlimited internet access. Is that true? If it is, we should have it too."
- participant, Ship1, February 2018

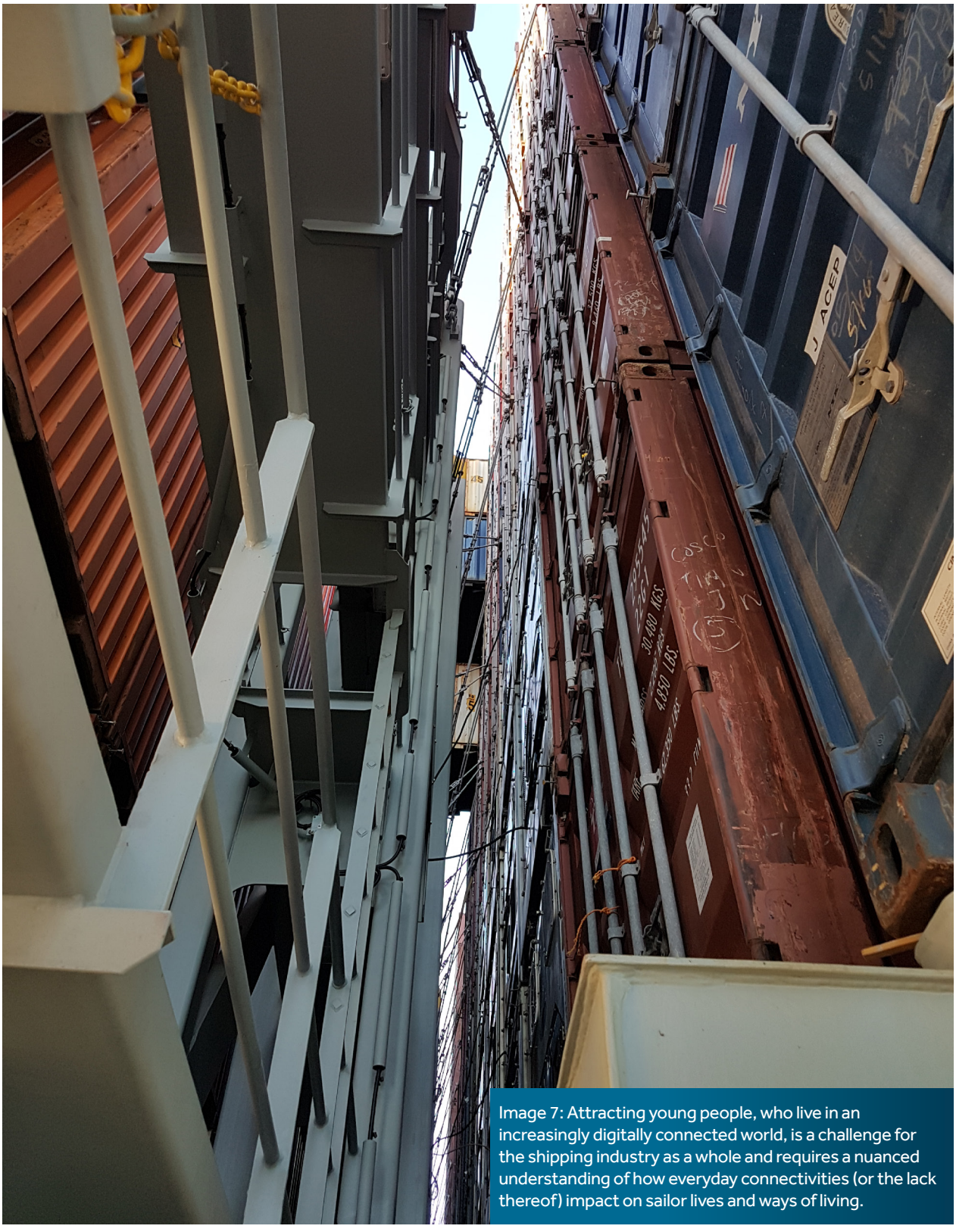

Image 7: Attracting young people, who live in an increasingly digitally connected world, is a challenge for the shipping industry as a whole and requires a nuanced understanding of how everyday connectivities (or the lack thereof) impact on sailor lives and ways of living.

SECTION 3
RESEARCH FINDINGS CONTINUED

Linked to this, rumours about the provision of WiFi on other ships flourished on both Ship1 and Ship2. Most participants knew of people who had left companies that did not provide onboard WiFi access in order to join companies where connectivity was perceived to be "better". Some participants had experience from other ships where they had been given a weekly 25GB data allowance, which was seen to be sufficient to enable them to do what they wanted to do. As one participant noted: "The people were happy with their level of connectivity." With this in mind, there was a suggestion that more connectivity brought more happiness – although this was questioned by others, who highlighted that increased connectivity would also bring new issues and challenges that needed to be understood.

For many, the prospect of "more" and "better" connectivity was understood to be a key driving force behind choice of employer. In relation to this, onboard both ships, many stories were told about how people had left different companies in the hope that they would receive better connectivity somewhere else. Some also suggested that shipping companies were struggling to keep "young talent" if they did not keep up with digital technologies and developments happening elsewhere.

> "Why should talented young people want to give up the internet and everything that comes with it for up to nine months, if they don't have to? Of course they will choose to go to companies that give them that."
> - participant, Ship2, April 2018

Moreover, participants questioned the imposed access restrictions which they had to bypass in order to access everyday digital platforms that were used by their family and wider friendship networks. There was general consensus that such restrictions only meant that people would spend a lot of time and energy finding ways to circumvent them.

Since connectivity was seen to be one of the main priorities for seafarers (after food), participants found it difficult to understand why this was not being taken seriously by companies in general. It was noted that there is now an expectation that you will have internet access wherever you go – including at sea. Questions raised by potential recruits was described as relating to speed and reliability of the connections, rather than whether internet access was provided. In this context, one participant noted that he would not use the internet at all whilst onboard the ship as he felt that there were too many restrictions

and he could not do what he wanted to do. Therefore, it was easier for him not to connect at all. Instead, he would buy calling cards so he could ring home, but this was not seen to be a long-term solution.

Findings summary

- **In both research settings, digital connectivity and internet access were key discussion points in everyday conversations amongst crew members; during meal times, during socialising activities such as table tennis matches and online gaming, and during work shifts.**
- **There were extensive rumours about the levels of internet connectivity on other ships.**
- **Seafarers compare and contrast the positives and the negatives between different companies when they make choices about future employment opportunities; onboard internet connectivity is often the deciding factor in these choices.**
- **There was a lack of understanding amongst the participants as to why it is not possible to have unlimited onboard internet access.**
- **Everyone knew of someone who had left seafaring behind because of the lack of digital communication available.**
- **It is difficult to recruit and retain "talented young people" without providing them with reliant and sufficient onboard internet connectivity.**

SECTION 4
DISCUSSION AND RECOMMENDATIONS

There is a growing need to understand the multiple and nuanced online connectivities – in its plural form – that blur the boundaries between sea and shore, home and away, and work and leisure for the seafaring communities. Through such connectivities, seafarers live and share their daily lives during sometimes long periods at sea. For them, online does not simply mean online and connected does not simply mean connected. Rather, it refers to myriad connections, networks and relations that exist within and beyond the ship and it comes with a number of challenges and issues that need to be understood by everyone in the maritime industry, including: shipping companies, charterers, agents, communications providers, and welfare organisations.

More research should be done in wider maritime settings to help facilitate discussions and nuanced understandings of the impact of everyday digital connectivities at sea.

One of the overarching arguments from ship owners, for not providing onboard WiFi, has been that it would disrupt work and rest hours onboard ships, which could ultimately compromise safe and efficient ship operations. However, our research shows that, in fact, not having reliable internet access onboard ships significantly disrupts such patterns. The research exemplifies that if the only method of digitally connecting with kin and friendship networks, whilst at sea, is through personal mobile phones, seafarers will do so when the ship is within mobile phone signal range, regardless of the time of day, external factors, work or rest hours. This can ultimately have a direct impact on general welfare, wellness, and occupational effectiveness amongst seafarers, who navigate several everyday digital connectivities, at any one time.

Constantly moving in and out of connectivity disrupts sleep and work routines, and could have a negative impact on crew wellness. More should therefore be done to even out the unevenness of digital connectivity onboard ships and across shipping companies.

It is critical to recognise that internet connections have become critical to the lives of seafaring communities and, therefore, it should be an integral part of everyday modern seafaring. Regardless of whether shipping companies provide onboard WiFi, seafarers navigate and negotiate several interwoven digital connectivities every

single day. They do so largely to minimise emotional stresses and pressures of being separated from family and friends for long periods of time. This might be done by circumventing access restrictions, sharing account passwords, buying mobile phone sim cards in ports, rationing data use, and monitoring ship positions to predict when a mobile phone signal will be available. Digital connectivities at sea, exemplified by the presence of the mobile phone in most aspect of ship life and living, therefore need to be at the forefront of current thinking, future policy discussions, and planned wellness programmes.

Digital connectivity cannot and should not be understood as separate from the social. Future initiatives and policies need to consider the relationship between the two in order to improve crew wellness and social cohesion, and to reduce emotional stresses and feelings of isolation among seafarers.

Limited onboard connectivity and the pressures linked to finding alternative ways of connecting were found to amplify other pressures related to work, isolation, separation, family, and money. This was exemplified by the buying and selling of mobile phone sim cards in ports.

Image 8: Participants voiced a number of suggestions and put forward a series of recommendations for improving onboard connectivities, within and beyond the ship.

The study showed how seafarers felt that they had “no other choice” than to spend money on these sim cards, although they knew that they were prime targets for potential scammers.

SECTION 4
DISCUSSION AND RECOMMENDATIONS CONTINUED

Providing free and reliable onboard WiFi access does not solve all challenges facing the maritime community; yet, instant, regular and stable digitally facilitated contact with family and friends helps build emotional resilience amongst seafarers.

Importantly, making digital connectivity available on ships brings to the fore new challenges that need to be recognised and understood. Messaging apps and platforms which allowed video calls, such as FaceTime and Skype, were seen to be critical to maintaining intimate relations with family members, across sometimes large geographical distances. The ability to see people, especially children, through video calls was understood to be the most important aspect of digital connectivity.

Shipping companies should consider reducing the levels of restrictions imposed on internet usage onboard in order to allow seafarers to connect using an array of digital platforms, without having to bypass existing constraints.

Access to onboard connectivity is increasingly becoming a deciding factor in whether 'young and talented individuals' want to spend their lives at sea, and whether shipping companies are able to retain experienced and highly qualified seafarers. The research revealed that a growing number of people were moving to companies which were seen to provide "better" internet facilities; often driven by perceptions and rumours about the levels of connectivity on other ships.

Increasingly, seafarers make career choices based on the "internet deal" they can get. This needs to be taken into consideration in future ship designs and policy discussions.

Finally, the study revealed a general lack of understanding of why certain limitations and restrictions related to onboard connectivity were imposed. Ensuring that seafarers are aware of the underlying reasons for such restrictions should be an essential part of future training and education.

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APPENDIX

Navigating everyday connectivities at sea
A pilot study

Who we are and what we do

We are two researchers from Royal Holloway, University of London. We would like to conduct on-board research with seafarers during two separate research visits. We work in an open and participatory way to understand how the multiple types of digital connections, relations and networks affect on-board security as well as the wellbeing and cohesion of crews. In particular, we are keen to explore the potential to better harness everyday uses of technology to increase safety and security, cohesion and wellbeing amongst seafarers and their wider communities.

Project aims and outputs

This pilot study will result in initial guidance for employers, unions, welfare organisations, seafarers and their families about how to best use mobile and internet technology to increase safety and security, cohesion and wellbeing among seafarers on ship and more broadly. Such issues are central to crew retention, recruitment and to safe and efficient ship operations. The study will therefore explore how to support the use of digital means in the establishment and maintenance of supportive relationships for seafarers. To achieve this, we need seafarers to share their thoughts with us so we can learn from their experiences and feelings about their use of digital technologies in creating and maintaining personal and work relations.

Methods of engagement

Our approach is driven by qualitative research methods, including participatory observations and semi-structured interviews. In order to establish a comparable element, we are working on board two, Hong Kong-flagged ships in European waters, with different levels of access to digital technology. This will result in a collection of fieldnotes, interview notes, field mappings and diagrams.

We do not expect participants to have specialised knowledge of digital technology or mobile devices or to use these on a regular basis. The most important thing for us is that participants are willing to share their experiences with, and views of such technologies. Participants are free to fully or partially withdraw at any time, without giving a reason.

Data management

All data will be safely stored and only the named researchers will have access to these data. All data will be kept confidential and

participant involvement will be anonymised to the extent that no personal data will be released. The results of the study will be written up as a report and parts of it will be published in academic journals.

Ethical considerations

It is not expected that this project will raise any ethical concerns. However, ensuring the welfare of research participants and protecting any information they provide are key ethical questions in any research involving human participants. All participation will be done on a voluntary basis and data will be not be attributable to any individual. Everyone taking part in the study will be asked to sign a consent form (see attached).

Research topics

In broad terms, the on-board research will centre on four overarching topics:

i) Use of digital technologies onboard ship and during shore leave
ii) Networks (close and distant relations)
iii) Expectations about connectivity (external and internal pressures)
iv) Positives and negatives (reflections on the quality of connectivity)

By focusing on these broader topics related to digital technology, the research aims to tease out the feelings that seafarers ascribe to their use of everyday connectivites whilst at sea and during shore leave. It is through such topics and through participatory observations that the research will bring to bear deeper understandings of the impact of digital technology and everyday connectivity on security at sea, crew cohesion and wider questions of on-board wellbeing.

Examples of provocations that can be used to explore different aspects of everyday connectivity:

- With better/ improved/ more digital connectivity I could...
- With no digital connectivity I cannot...
- Digital connectivity is most useful when...
- Digital connectivity is least useful when...

Contact details

If you would like more information or have any questions, you can contact one of the researchers.

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CONSENT FORM

To take part in research study
Navigating everyday connectivities at sea

This form is to be read and signed before participation.

Initials	Statement
	The nature of the research has been explained to me.
	I understand that the interview will only be recorded with my consent.
	I understand that what I say will be treated as confidential by the researcher.
	I understand that my name (or chosen name) will not be used in any written reports or presentations.
	I understand that I have the right to withdraw my involvement with the research whenever and for whatever reason I wish.

Name:_____

Participant signature:_____

Researcher signature:_____

Date:_____

ROYAL HOLLOWAY UNIVERSITY OF LONDON

TOPIC GUIDE

This topic guide will be used during on-board observational work. The interviews will be conducted in a **semi-structured manner**. This means that whilst the interviews will be guided by five overarching topics and a series of probing questions, the structure is flexible to allow broader participant views to emerge. Participants will also be asked to use examples to support their views.

1) Access to digital connections and devices

a) What digital technologies, devices and/ or platforms do you use whilst at sea, if any?
b) What are your reasons for using such technologies, devices, and/ or platforms (e.g. personal, work, social interaction, family relations, gaming, news consumption, online browsing)?
c) How different is this use to when you are on shore/ at home?
d) How do you think your use might change in the future, if at all, and why?
e) How has your use of digital technologies changed in the last two years, if at all? Why do you think that is?
f) To what extent do you feel you have sufficient levels of digital access? Why? Why not?
g) What do you expect from digital technologies – now and in the future (e.g. faster connection, more time to spend on connectivity)?
h) How important is digital connectivity in comparison to other aspects of crew care (e.g. food, other forms of communication)? Why?

2) The making and re-making of social ties

a) Who do you tend to connect with using digital technologies whilst at sea? Why?
b) How often do you connect with family members, friends, work colleagues using digital technologies whilst at sea?
c) What are your preferred means of connecting with your social relations? Why?
d) How different or similar are these connections to your offline connections?
e) What are the positive and/ or negative aspects of connecting with family and friends using digital technologies, whilst at sea? Why?
f) What topics do you tend to discuss using digital technologies, whilst at sea (e.g. everyday, mundane issues, family relations, work, news)? With whom?
g) Would you like more or less contact with social ties whilst at sea? Why?
h) How does digital connectivity strengthen or weaken social ties?

3) Crew cohesion and on-board camaraderie

a) How important is crew cohesion and on-board camaraderie? Why?
b) How does digital connectivity affect on-board camaraderie?
c) How does access to digital technologies hinder or strengthen crew cohesion? Why?
d) How does access to digital connections affect work relations/ morale/ occupational effectives?
e) How much time/ money do you spend engaging with digital technologies and platforms whilst at sea – now and in the future?

4) Welfare and wellbeing

a) To what extent is social isolation an issue for seafarers?
b) How can this be observed? Why do you think this is the case?
c) During your work life, have you ever experienced social isolation? How did it manifest itself?
d) How does digital connectivity affect notions of closeness and distance?
e) How can digital connectivity be used to improve on-board wellbeing?
f) How can digital connectivity be used to establish better welfare-related networks?
g) How does being digitally connected whilst at sea make you feel?

5) Security and pressures

a) To what extent does your use of digital technologies change across the work cycle (e.g. pre-departure, at sea, homecoming)?
b) To what extent does digital connectivity help you maintain everyday pressures? (e.g. from work, from home, from isolation)
c) How does digital connectivity affect feelings of detachment?
d) How concerned are you about the security of digital communication at sea (e.g. your personal information, company information)? Why?
e) To what extent do you trust digital technologies? At sea? At shore?
f) To what extent do your attitudes to security differ on board to on land?
g) How secure do you feel using the network on board?

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