SeSAFE - Delivering industry safety through electronic learning

Stephen Eayrs. Smart Fishing Consulting

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In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.

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Acknowledgments

The genesis of this project was the fatal electrocution of Ryan Donoghue onboard the F.V. Newfish 1, owned and operated Austral Fisheries. In response to this tragedy, Austral Fisheries showed inspired leadership by funding the development of a national safety training project in partnership with the Fisheries Research and Development Corporation, which ultimately became known as the SeSAFE project. Austral Fisheries also developed in-house a suite of safety training modules (videos) to improve safety awareness and performance of their entire fishing fleet.

Austral Fisheries made two significant in-kind contributions to the SeSAFE project. This included gifting their entire suite of safety training modules to the project so they could be amended for use across the entire Australian fishing industry, with associated software training and technical support provided by their Health Safety & Environment Adviser, Oliver Krcoski. Their other significant contribution was funding the involvement of staff member and ex-commercial fisher Clayton Nelson in the project. Clayton's involvement was vital to getting this project up and running and building momentum around the country, and his vast industry knowledge, understanding, and commitment were an invaluable asset.

Members of the SeSAFE steering committee also played an invaluable role in building project momentum and success, and their guidance, insight, and contribution are very much appreciated. These individuals included the Chair of the steering committee, John Harrison (WAFIC CEO during the early days of SeSAFE), Clayton Nelson (Austral Fisheries), Tanya Adams (Tailored Health and Safety), Michael Drake and Chris Battel (AMSA), and Chris Izzo (FRDC). Later, Alex Ogg (WAFIC CEO) took over duties as Chair of the steering committee. Thankyou all for giving up your valuable time to support this project.

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Finally, this project would not have been possible without the vision and support of FRDC staff, especially Patrick Hone, Chris Izzo, and Crispian Ashby, and the financial administration of Grace Zhou (WAFIC).

Abbreviations

ACPF	Australian Council of Prawn Fisheries
AFMA	Australian Fisheries Management Authority
AMSA	Australian Maritime Safety Authority
FAO	Food and Agriculture Organisation of the United Nations
ICES	International Council for the Exploration of the Seas
LMS	Learning Management System
NPF	Northern Prawn Fishery
RTO	Registered Training Organisation
SIA	Seafood Industry Council
WAFIC	Western Australian Fisheries Industry Council
WRLC	Western Rock Lobster Council

Executive Summary

The SeSAFE project represented a unique and successful collaboration between the fishing industry, the Fisheries Research and Development Corporation (FRDC), and the Australian Maritime Safety Authority (AMSA) to improve safety awareness and performance in the fishing and aquaculture industry. For the first time, vessel crews were provided online access to modularised safety training that could be completed at home, onboard, or any other location. They could also complete the training offline, for example at sea, providing they downloaded modules beforehand. Importantly, SeSAFE training could also be provided to inexperienced crew before they step foot onboard, not afterwards as is tradition practice, thus filling a key safety void and risk.

A total of 48 safety modules (videos) were developed covering a range of generic safety topics such as emergency response, personal safety, and operational safety. A suite of fishery-specific modules was also developed for prawn fisheries around the country and the Western Rock Lobster fishery.

The delivery of modularised safety training proved to overcome many of the historical barriers to safety training, both perceived and otherwise, and over 250 fishers, many on a recurrent basis. It is estimated that over 80% of skippers and crew in the Northern Prawn Fishery (NPF) were engaged in SeSAFE training, while significant numbers of skippers and crews in other fisheries have done likewise. Greater project success was anticipated, although it was hampered by COVID 19 and associated impact on the industry, as well as restricting the ability of the SeSAFE Principal Investigator to engage with this industry around the country.

The success of this project has resulted in recent FRDC funding a follow-up project, FRDC Project No. 2020-067.

Background
Each year four or five individuals in the Australian fishing and aquaculture industry are fatally injured in the workplace and do not return home from sea. Available statistics suggest that working in this industry is one of the most hazardous occupations in the country.

There are considerable barriers to safety training in this industry. This includes perceptions that training costs are too high, that the timing and location of such training is inconvenient, and that the content is too broad and therefore less relevant to a specific fishery. It includes concerns regarding the efficacy of safety training delivered in a class room or group setting, that safety training is not required or unnecessary, or that one-time training is adequate. These concerns are sometimes driven by a belief that a vessel in survey is a safe vessel, simply because it meets statutory survey requirements, as well as a self-belief in one's own safety credentials and capability, proven or otherwise. Overcoming the barriers to safety training is a critical step towards improving safety awareness and performance in the fishing and aquaculture industry.

Aims/objectives
The overall aim of this project was to develop SeSAFE training, overcome traditional barriers to safety training, and improve safety awareness and performance in the fishing and aquaculture industry. This included development of numerous brief safety training modules (videos) that can be accessed online or delivered in a group setting, as well as raising safety-awareness through a variety of targeted extension activities.

Project objectives were:
1. Design and trial the LMS in the NPF and up to three other domestic fisheries, monitor module uptake and utility, and determine feedback on ease of use and the applicability from the trials, to help make necessary modifications before distributing to others.
2. Create linkages and pathways for the LMS to be taken up by industry associations and agencies to be used in championing the improvements in safety culture and training.

3. Based on the trials, facilitate further development of fishery specific modules via assistance from the Principal Investigator and technical input from consultants (365 solutions) to improve efficiency of the program and direct relevance to specific fisheries/sectors/agencies.
4. Utilise information from existing in-progress and under development safety projects funded by FRDC to ensure that the LMS is designed to optimise adoption and uptake by industry.
5. Identify, and where feasible, implement mechanisms to integrate the LMS into the overall marine safety program aimed at changing the culture and behaviour towards safety of the fishing industry.

Methodology

Initially, safety training modules were gifted to the SeSAFE program from Austral Fisheries. Several brief questions at the end of each module served to document module completion and comprehension of module material by the learner. Austral Fisheries also provided training in using Adobe Captivate 9 (later updated to Adobe Captivate 2017) to the SeSAFE Principal Investigator as well as the Adobe Captivate Prime Learning Management System (LMS) software. New SeSAFE modules were then developed by the Principal Investigator following an identified need or gap in existing safety training. In some instances, modules were suggested by fishers or others, including representative of industry peak bodies.

A substantial extension program was pursued to raise program awareness and build industry interest in SeSAFE training. Program activities included meetings and presentations to industry peak bodies, associations, and individual fishers. It included visits to fishing ports, companies, cooperatives, regulators, and others to discuss the SeSAFE program, as well as published articles in industry literature and the development of a SeSAFE website to describe the program, module content, and reasons why fishers should engage in the program. Extension activity also included the production of several videos designed to capture the program theme, '*What if you don't come home?*'.

Results/key findings

A total of 48 SeSAFE modules were constructed and made available to the fishing and aquaculture industry, and over 250 fishers and others accessed the modules. The majority of individuals that accessed the modules were employed by large, multi-fleet fishing companies, particularly in the Northern Prawn Fishery; in contrast, relatively few individuals employed by small, independent operators access the modules.

Most modules ranged from 4-8 minutes in duration, and each culminated in four questions that require a yes/no, true/false or multiple-choice response. Each module was grouped by theme to comprise a training course, namely, *Introduction*, *Risk Assessment*, *Emergency Procedures*, *Personal safety*, and *Operational safety*. A suite of fishery-specific modules was also developed for prawn fisheries around the country, as well as for the Western Rock Lobster fishery. The majority of fishers strongly agreed that SeSAFE training improved their preparedness and capability in responding to an emergency at sea and in reducing hazards and risks to oneself and others onboard.

Consideration was given to the feasibility of a revenue model whereby individuals select and pay for access to selected SeSAFE modules. This effort was a recognition that future SeSAFE funding is uncertain, including from existing sources, and that the utility of an industry funded 'select and pay' model to perpetuate SeSAFE training was an important exercise. A funding model was developed which allowed various permutations of funding sources and levels of financial support to be explored. This model was not acted on but served to provide insight into the extent of industry engagement in SeSAFE training in order to ensure longevity.

A review of Learning Management System (LMS) software was undertaken to seek an alternative Adobe Captivate Prime. This review was an attempt to overcome the limitations of Adobe Captivate Prime, including cost to subscribe learners, the time burden associated with administering and managing learners online, the absence of a 'select and pay' option, and challenges adaption modules for use with a mobile phone. Six software options were identified and reviewed in detail, but was ultimately put on hold. Future efforts to seek an alternative software will be funded by the follow up SeSAFE project (FRDC Project No. 2020-067).

A review of SeSAFE modules was completed by Seafood and Maritime Training, with the goal of mapping module content against Seafood Safety Skillset units of competency. The purpose of this review was to explore possible integration of SeSAFE modules into the units of competency, levering the advantages of online access and complementing the practical components of these units. Unsurprisingly, SeSAFE content did not fully cover all knowledge elements of these units or their respective performance criteria. This, however, was a useful foundation upon which to consider if SeSAFE modules should be upgraded accordingly, and if so, identify next steps. Any future efforts will be undertaken as part of FRDC Project No. 2020-067.

Implications for relevant stakeholders

This project has raised safety awareness in the fishing and aquaculture industry, as evidenced by the number of individuals that completed SeSAFE training, traffic on the SeSAFE website, and the number of SeSAFE presentations delivered at industry meetings and workshops. Subsequently many individuals in this industry are aware of the SeSAFE project and are now having safety conversations. Quantified evidence that this has translated into increased safety performance does not exist, but it's probable that increased safety awareness has contributed to changed behaviour and reduced the frequency and severity of accidents and injuries onboard.

Boat owners and skippers now have an opportunity to demonstrate enhanced commitment to crew safety by requesting they complete SeSAFE training. The documented completion of SeSAFE training by crew also serves to demonstrate enhanced commitment to workplace health and safety law and provide greater peace mind that all steps deemed reasonably practicable to ensure crew safety are being undertaken.

Recommendations

Sadly, each year there are number of serious injuries in the fishing and aquaculture industry, and all too frequently, fishers do not come home from sea. On this basis the major recommendation is that funding is sought to continue SeSAFE activity. Consistent with this recommendation, there is a need to:

- RETAIN delivery of SeSAFE training to existing users in the Australian fishing and aquaculture industry
- EXPAND the number of industry bodies, fishing and aquaculture companies, independent fishers and aquaculture workers, and others in the Australian fishing and aquaculture industry utilising SeSAFE training on a recurrent basis. This includes identifying and acting upon perceived incentives that might increase the number of fishers engaged in the training, and the development of responsive modules that can be accessed using a mobile phone.
- EXPAND the number of fishery-specific modules beyond those already developed for the ACPF, including fishery-specific modules for the WRLC.
- INFORM, via independent review of the design of user-pay funding models in Australian primary industries, the potential for the introduction of a SeSAFE user-pays model in the fishing and aquaculture industry, including a recommended road-map to realise this outcome.
- TRANSITION to a user-pays funding model to perpetuate the cost-effective delivery of SeSAFE training, based on the outcome of the independent review, that meets the needs of the fishing and aquaculture industry and other users of SeSAFE training in the future.

These needs will be addressed in the new SeSAFE project, FRDC Project No. 2020-067.

Keywords

Fishing, Aquaculture, Safety, Training, SeSAFE

Introduction

Each year four or five individuals in the Australian fishing and aquaculture industry are fatally injured in the workplace and do not return home from sea. Available data indicates the number of fatalities per 100 individuals in this industry is approximately 25 times higher than the number of fatalities per 100 individuals working in the mining or construction industry. It also means that working in the Australian fishing and aquaculture industry is one of the most hazardous occupations in the country.

Many more individuals working in this industry are injured at sea each year, and some are permanently incapacitated and their quality of life forever compromised. In many instances, these individuals face hardship walking, lifting, or completing other basic tasks and are unable to return to sea. Some may also. The most 'at risk' group in this industry are individuals between the ages of 20 to 24 years, followed by those aged 45 to 54 years.

In 2013, a crew member was fatally electrocuted while working on the deck of a prawn trawler owned and operated by Austral Fisheries. Following a coronial inquest into this fatality, Austral Fisheries agreed to enter into a so-called Enforceable Undertaking with Northern Territory WorkSafe. This option was selected to implement multiple safety initiatives and improve workplace health and safety across the Australian fishing and aquaculture industry. The alternative (and cheaper) option would have been to accept prosecution and then go about business as usual. However, the initiatives of the Enforceable Undertaking were designed to be more productive and have greater impact on safety awareness and performance in this industry rather than prosecution alone, and they included funding the development of a Learning Management System (LMS) to deliver safety training to the fishing and aquaculture industry. The FRDC agreed to collaborate with Austral Fisheries and co-fund this development, which became known as the SeSAFE program.

While the fishing and aquaculture industry ranks amongst the highest risk industries for safety in Australia, there are considerable barriers to safety training in this industry. This includes perceptions that training costs are too high, and that the timing and location of such training is inconvenient. It includes concerns regarding the efficacy of safety training delivered in a class room or group setting, particularly when not accompanied by practical safety exercises, and it includes concerns regarding the adequacy of training content, with manual handling, noise protection, and fishery-specific safety training just a few of the topics sometimes absent from other current safety training offerings. There is also a belief by many in this industry that safety training is not required or unnecessary, or that one-time training is adequate. This is sometimes driven by a belief that a vessel in survey is a safe vessel, simply because the vessel meets statutory survey requirements. In some individuals it is driven by a self-belief in one's own safety credentials, underpinned by a strong safety record, while in some younger individuals it is driven by a false belief that youth and strength increase their ability to respond and survive an emergency at sea. Finally, there are individuals who believe in the adequacy of safety training one-time only, and even years or decades later that refresher training is unnecessary.

The introduction of an LMS comprising multiple video safety training modules (hereafter known as SeSAFE training) has the potential to address many of these barriers, by providing cost-effective, structured, easily accessible, relevant, and timely training in a manner that is readily absorbed and understood. These modules can be delivered online and completed at home, at sea, or anywhere where Wi-Fi access is available. These modules can also be downloaded on to a table or mobile phone and then accessed when Wi-Fi is unavailable, thus ensuring SeSAFE training is accessible anywhere and at any time. SeSAFE training can also be developed and tailored to suit specific industry sectors, providing a comprehensive suite of training modules to suit all fishing methods.

As a result of ongoing industry interest in SeSAFE training, multiple next-steps have been identified to meet the needs of existing users and attract additional users to this training. This has resulted in recent FRDC funding (FRDC Project No. 2020-067) to continue SeSAFE activity and introduce new initiatives designed to ensure the longevity of this training. Funding support for this new project has also been received from AMSA.

Objectives

1. Design and trial the LMS in the NPF and up to three other domestic fisheries, monitor module uptake and utility, and determine feedback on ease of use and the applicability from the trials, to help make necessary modifications before distributing to others.

2. Create linkages and pathways for the LMS to be taken up by industry associations and agencies to be used in championing the improvements in safety culture and training.

3. Based on the trials, facilitate further development of fishery specific modules via assistance from the Principal Investigator and technical input from consultants (365 solutions) to improve efficiency of the program and direct relevance to specific fisheries/sectors/agencies.

4. Utilise information from existing in-progress and under development safety projects funded by FRDC to ensure that the LMS is designed to optimise adoption and uptake by industry.

5. Identify, and where feasible, implement mechanisms to integrate the LMS into the overall marine safety program aimed at changing the culture and behaviour towards safety of the fishing industry.

Method

The overall aim of this project was to develop SeSAFE training and improve safety awareness and performance in the commercial fishing and aquaculture industry. This included development of numerous brief safety training modules (videos) that are accessible online or delivered in a group setting, as well as raising safety-awareness through a variety of targeted extension activities.

Initially, the safety training modules were gifted to the SeSAFE program from Austral Fisheries, who pioneered the delivery of such modules to fishing crew in Australia. These modules covered a range of safety topics including emergency response, personal safety, and workplace health and safety law. Several brief questions at the end of each module served to document module completion and comprehension of module material by the learner. Austral Fisheries also provided training in using Adobe Captivate 9 (later updated to Adobe Captivate 2017) to the SeSAFE Principal Investigator as well as the Adobe Captivate Prime Learning Management System (LMS) software. Adobe Captivate 9 is a module authoring software used to design and build the modules. The completed modules were then uploaded to Adobe Captivate Prime, which serves as a repository and access point for learners to the modules. New modules were developed following an identified need or gap in existing safety training. In some instances, modules were suggested by fishers or others, including representative of industry peak bodies.

Adobe Captivate 9 was purchased by the SeSAFE program so the modules from Austral Fisheries could be tailored for the wider fishing industry and new modules developed. While Adobe Captivate Prime is free to download and use, a subscription fee is charged per learner. Consulting firm, 365 Solutions Consulting, based in Perth, W.A. played an important early role in the project by facilitating module development and delivery using the Adobe Software.

A substantial extension program was pursued to raise program awareness and build industry interest in accessing the SeSAFE training. It was also hoped this interest could be leveraged into additional financial support from sectors of the fishing industry. Program activities included meetings and presentations to industry peak bodies, associations, and individual fishers. It included visits to fishing ports, companies, cooperatives, regulators, and others to discuss the SeSAFE program, as well as published articles in industry literature and the development of a SeSAFE website to describe the program, module content, and reasons why fishers should engage in the program. Extension activity also included the production of several videos designed to capture the program theme, '*What if you don't come home?*'.

With limited history of online learning in the fishing and aquaculture industry, initial attempts to raise awareness of the SeSAFE project were heavily focused on fishing companies with multiple vessels. It was hoped these companies would be receptive to SeSAFE training for their crews, thus providing an opportunity to quickly build momentum and gain experience. As SeSAFE awareness increased across the industry, greater efforts were then made to engage with independent operators, either directly or opportunistically during their attendance and participation in extension activities via industry representative bodies.

Results

The SeSAFE project provided training to over 250 fishers and others, some on a recurrent basis. The majority of these fishers were engaged in the Northern Prawn Fishery, working on trawlers based in Northern Territory and Queensland. Many more individuals are now aware of the role SeSAFE plays in providing targeted safety training to the fishing and aquaculture industry.

SeSAFE modules

A total of 48 SeSAFE modules were constructed and made available to the fishing and aquaculture industry (Table 1).

Table 1. Complete SeSAFE module list (January 2021). Modules marked with an asterisk were adapted from modules gifted by Austral Fisheries.

SeSAFE modules	
Introductory modules	***Boat operations (general)***
Module introduction	Electrical safety*
Fundamentals of safety law*	Fuelling safety
Boat Policies*	Confined spaces
Safety inductions, drills, and safety management systems	Chemical substances and SDS*
	Gas safety
Risk Assessment	Stability
Basic risk assessment 1 – Job safety analysis*	Safe anchoring
Basic risk assessment 2 – Hierarchy of controls*	Safe berthing
Basic risk assessment 3 – Risk matrix*	Safe transfer of crew, catch, and equipment
	Dinghy safety
Emergency procedures	Safe watchkeeping
Medical emergency*	Heavy weather*
Man overboard*	
Fire onboard*	***Prawn fishing - safety***
Abandon ship*	Catch processing - safety
	Hazardous animals
Personal safety	Booms and fishing gear in and out
Working safely at sea	Hook up response
Personal hygiene	Winch safety
Personal Protective Equipment (PPE)*	Try net safety
Manual handling*	
Hand safety*	***Prawn fishing - practices***
Noise hazards*	Workplace hygiene
Slips, Trips, and Falls*	Prawn processing and quality
Personal Flotation Devices (PFDs)	Discharge and waste management
Sun protection*	
Heat related illness*	***Rock Lobster fishing -safety***
Fatigue awareness and management	Pot preparation and stacking
Mental health	Pot setting
	Pot hauling
	Pot diving

Most modules ranged from 4-8 minutes in duration, and each culminated in four questions that require a yes/no, true/false or multiple-choice response. Each module was grouped by theme to comprise a training course, namely, *Introduction*, *Risk Assessment*, *Emergency Procedures*, *Personal safety*, and *Operational safety*. Several modules were specifically built upon request by W.A. Seafoods including *Try-net safety*, *Safe boarding and disembarking a vessel*, *Refuelling safety*, and *Dinghy safety*. They also requested module content that described safe maintenance of blocks and tackle, and handling of codends. These modifications were made to existing modules that already covered working at heights and fishing gear safety. Modules were also developed following a request by the Australian Council of Prawn Fisheries (ACPF) and grouped into two courses, *Prawn Fishing - Safety* and *Prawn Fishing - Practices*.

Four fishery-specific modules were prepared for the WRLC, *Pot diving*, *Pot preparation and stacking*, *Pot setting*, and *Pot hauling*. Modification to three existing modules was also requested, namely, *Safe watchkeeping*, *Dinghy safety*, and *Safe transfer of crew catch and equipment*, as well as the development of a new module suitable for all fisheries, *Safety inductions, drills, and safety management systems*. These modules were developed in collaboration with several lobster fishers and the content reviewed by AMSA and Tanya Adams (Principal Investigator, FRDC Project No. 2017-231). These modules were completed but were not released.

All modules were designed to contain only basic information, usually being limited to the identification of hazards and risks and mitigating steps to avoid death or injury to oneself and others. The original suite of modules from Austral Fisheries were edited accordingly and stripped of company logos and theoretical content to ensure brevity. The content of newer modules was sourced from relevant material published by the Australian Maritime Safety Authority (AMSA) and other appropriate sources. The AMSA website was also a useful source of information. On occasion, non-published information was included in the modules, based on information and comments from commercial fishers and the SeSAFE Principal Investigator's own commercial fishing experience. Much of the content in the prawn-fishery-specific modules was sourced from documentation provided by the ACPF. All modules were verified for content accuracy, with AMSA staff, commercial fishers, and others providing comments and feedback. An example of a module is available at www.sesafe.com.au.

Module access to fishers and others

Module access to fishers and others was provided online. The first step was for boat owners and skippers to identify modules they considered suitable for their crew to complete (as SeSAFE training is not mandatory, the decision which modules should be completed by crew was left up to the boat owner or skipper). This often entailed a discussion with the SeSAFE Principal Investigator regarding module content, and in some instances, they were enrolled and provided access to modules to review.

The selected modules were then grouped by theme into courses, and multiple courses were grouped to comprise the training program. Boat owners and skippers then provided the email address of each crew member so they could be enrolled in the training program. Once the program was established, the enrolment of learners took only a few minutes. Each enrolled learner then received two emails from Adobe, one welcoming them to the program and providing a link to establish their own Adobe ID, and the other providing a link to access their assigned training program. They also received an email from SeSAFE that included a guide to getting started, with simple, step-by-step instructions and screen shots to guide the process of accessing and completing each module online. Learners could then access their entire learning program online on a computer, desktop, or tablet (Figure 1).

The training program required learners to successfully complete all questions in each module before progressing to the next module. Learners were permitted unlimited opportunities to answer each

module question. The successful completion of each module was recorded by the Adobe software and an email verifying their completion was automatically sent to the SeSAFE Principal Investigator. This information was then forwarded the boat owner or skipper.

Figure 1. Crew using a tablet to view SeSAFE modules. A benefit of using a table is an ability to download modules for completion at a later date, irrespective of Wi-Fi access.

In some instances, a fishing company requested their crews complete the modules as a group (Figure 2 & 3). Sometimes the group included the crews from all or most boats in the company, and at other times, with only the crew from one or two boats. This approach was utilised by Australia Bay Seafoods, Mareterram, M.G Kailis, Austfish, Tony's Tuna, and Paspaley Pearls. A computer, laptop, or tablet was required to access the modules and display them on a monitor or TV screen, and to enter the answers to module questions. All learners in the group were given a module answer sheet to document their answers. After each learner had time to answer a question, the group discussed and entered the answer they deemed correct using the computer, laptop, or tablet. The group had unlimited opportunities to enter the correct answer, and learners could edit their own answer sheet accordingly.

There was interest by the Bureau of Meteorology in Victoria in the development of a weather forecasting module to improve interpretation of weather information by fishers. Module content was discussed and the Bureau of Meteorology were provided a proposal from SeSAFE for module development with accompanying budget. Ultimately, they decided not to go ahead as this activity had not been budgeted, although their interest in future development remains strong. Similarly, a proposal was provided to Frances Bay Marine Facilities, in Darwin, Northern Territory to develop two wharf safety modules, after they expressed strong interest in fishers receiving training in wharf safety. A formal response to the proposal has not been forthcoming and is expected in the future.

Figure 2. Crew attempting SeSAFE training in a group setting. A benefit of this approach is that crew complete the training together in one sitting, and it provides the boat owner or skipper an opportunity to nuance the training by providing vessel-specific instruction.

Figure 3. Crew viewing SeSAFE modules in a group setting.

Adoption of SeSAFE training

Industry interest and adoption of SeSAFE training varied considerably within and between fisheries around the country. Efforts to encourage the adoption of SeSAFE modules initially focussed on raising awareness with fishing companies because they were easier to contact than individual fishers and considered to be more receptive to SeSAFE training. This included Australia Bay Seafoods, Westmore Seafoods, Austfish Pty. Ltd., W.A. Seafoods, Mareterram (now known as Sea Harvest), MG Kailis Group, Paspaley Pearls, and Tony's Tuna. All of these companies subsequently requested training for their crews, which was usually provided in a group setting, hosted by the SeSAFE Principal Investigator or other individual. As understanding of SeSAFE training improved, some of these companies gravitated in subsequent seasons towards crew completing the training online. Two companies decided not to continue with the training, as they considered how best to integrate it into

their existing training program, while the remainder have used the training on at least one other occasion, as refresher training for their crews. Some of these companies have decided their crews only require to complete SeSAFE training every other year, while at least two require their crews to complete the training annually. It is estimated that around 250 fishers have now received SeSAFE training.

Early in the life of this project all state and territory peak industry bodies as well as numerous bodies representing specific fishing sectors were contacted and made aware of SeSAFE training. Typically, this involved delivering a presentation describing SeSAFE training at industry body or sector meetings and discussing potential adoption by member fishers. These efforts also served to raise their awareness of SeSAFE training, explore potential constituent fisheries or individuals that might be interested in the training, understand specific challenges associated with delivering SeSAFE training to constituent fisheries, and encourage their active support of SeSAFE training. The Western Australian Fishing Industry Council (WAFIC), the Australian Council of Prawn Fisheries, and the Western Rock Lobster Council (WRLC) were early enthusiastic supporters of SeSAFE training, and the latter two bodies requested the development of fishery-specific modules and provided generous financial support. The response from several other peak industries bodies ranged from mildly interested to dismissive. Multiple efforts were made to engage with these bodies in an attempt to understand their response and find solutions, although for some it became clear over time that this was not an efficient use of project resources.

Efforts were also made to engage directly with independent boat owners and skippers. This was usually achieved opportunistically through port visits, direct phone communication, at industry meetings, or via cooperatives. Interest by these individuals in SeSAFE training for crew ranged from enthusiastic to dismissive. On multiple occasions boat owners or skippers showed interest in the training and requested access to view one or more modules. Other times they requested a learning program for their crew after discussing their needs with the SeSAFE Principal Investigator and having viewed one or more modules. Steps were then taken to enrol the crew in the requested training program. Unfortunately, with few exceptions progress thereafter stalled or ceased entirely. Sometimes the enrolled crew simply refused to complete the training, and skippers reported there was little the skipper could do to change their mind, while other times the crew departed the vessel before completing the training. At other times skippers requested they be enrolled to view the modules but then took no steps themselves to view the modules, despite follow up phone calls encouraging them to act. Overall, only a few crew members working for an independent boat owner or skipper completed the assigned training.

There were multiple conversations and meetings with individuals associated with the Clean Green Southern Rock Lobster program. These individuals considered the range of available modules and application to their program. Ultimately, after deep consideration, they decided not to incorporate SeSAFE training on the basis that some training content was already covered and that it would add cost to their program, which would likely be rejected by member fishers.

Several SeSAFE modules were adapted by the Northern Territory Department of Primary Industries and Fisheries as part of the Northern Territory Government's Aboriginal Fishing Mentor Program. The objective of this initiative was to provide training in safe fishing and processing practices to Aboriginal Coastal Licence holders in remote communities. Eight modules were developed including planning a fishing trip and dangerous marine life. These were televised on First Nations Broadcasting Australia, and can be viewed at https://industry.nt.gov.au/industries/fisheries/aboriginal-fishing.

In the last year of this project, the Australian Fisheries Management Authority (AFMA) requested SeSAFE training for their fisheries observer program. After some discussion a learning program consisting of selected existing SeSAFE modules was developed and 15 observers subsequently

completed the program. As a result of this exercise, AFMA have now formally agreed to fund future access of this program to their observers.

Industry feedback

Fishers that completed SeSAFE training in a group setting were asked to complete a three-question questionnaire. Each question related to their perceived improvement in preparedness and capability in responding to an emergency at sea and in reducing hazards and risks to oneself and others onboard. The majority of fishers indicated they strongly agreed that SeSAFE training achieved these outcomes (Figure 4).

Fishers that completed SeSAFE training online or at sea were not asked to complete the questionnaire given the challenges sending and receiving responses to questions. However, fishers almost universally praised the need and appropriateness of the training, and they appreciated the flexibility inherent in online delivery of training. With few exceptions, the absence of comments suggesting otherwise was an indication that module content was considered by fishers to be correct and appropriate.

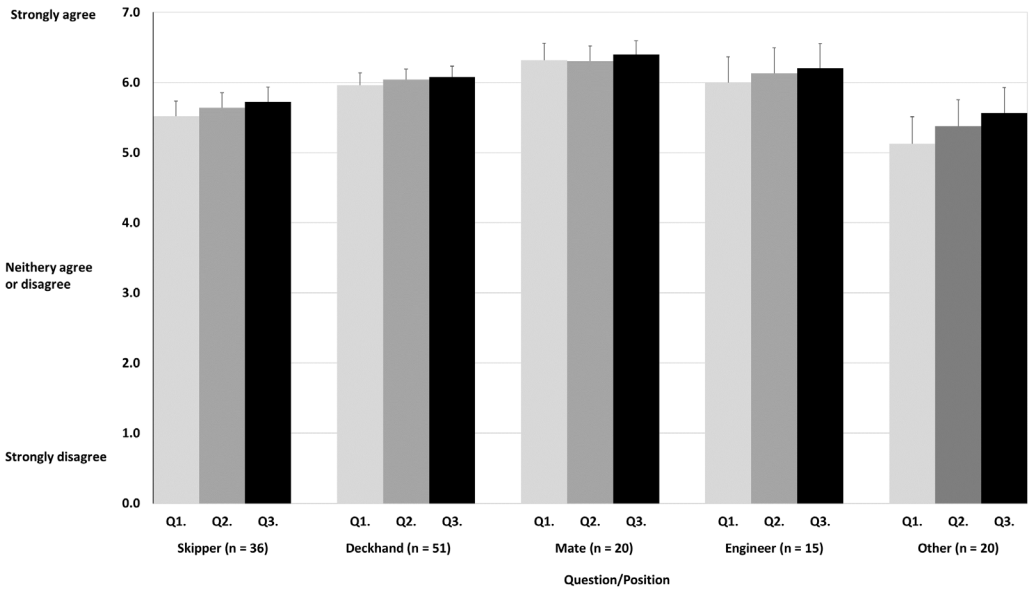

Figure 4. Mean responses (+/- std error) by fishers to the SeSAFE survey, by position onboard. Q1 - As a result of SeSAFE training I feel better prepared and capable of responding to an emergency at sea, Q2 - As a result of SeSAFE training I feel better prepared and capable of reducing risks to the health and safety of others at sea, , and Q3. As a result of SeSAFE training I feel better prepared and capable of reducing risks to the health and safety of others at sea.

Supplementary financial support

Additional financial support for the SeSAFE project was sought from the Australian Maritime Safety Authority (AMSA) and the fishing industry (Table 2). The purpose of this support was to i) facilitate the development of fishery specific modules, ii) increase the level of engagement with specific industry sectors, groups, or fishers, and iii) extend the longevity of SeSAFE project activity. This funding also helped support the production of multiple project videos, based on the theme '*What if you don't come home?*'

Table 2. Supplementary financial support, by donor.

Donor	Amount ($)
Australian Maritime Safety Authority	100,000
Australian Council of Prawn Fisheries	50,000
Western Rock Lobster Council	50,000
W.A. Seafoods	10,000
Austfish Pty. Ltd.	10,000
Australia Bay Seafoods	7,500
Westmore Seafoods	7,500
M.G. Kailis Group	5,000
Total	***240,000***

Revenue models

Consideration was given to the feasibility of a revenue model whereby individuals select and pay for access to selected SeSAFE modules. This effort was a recognition that future SeSAFE funding is uncertain, including from existing sources. SeSAFE partnered with Ewan Colquhoun (Ridge Partners Consultants and Advisors) and Tanya Adams (Principal Investigator, FRDC Project No. 2017-231) to explore the utility of an industry funded model to perpetuate SeSAFE training. Initially, an attempt was made to identify all major fisheries, industry groups and bodies, and other potential sources funding. A funding model was then developed which allowed various permutations of funding sources and levels of financial support to be explored. However, it became clear that relying upon such a broad number of funding sources would in itself be an issue, including the time and effort required to attract funding from these sources. Subsequently, a much simpler approach was considered, whereby funding is heavily reliant upon from individuals boat owners/skippers and crew. With this in mind a new model was developed, which allowed various permutations to be explored in terms of participating individuals and payment levels to recover project costs. This model was not acted on but served to provide insight into the extent of industry engagement in SeSAFE training in order to ensure longevity.

Review of Learning Management System software

A review of Learning Management System (LMS) software was undertaken to seek an alternative Adobe Captivate Prime. This software was being used by Austral Fisheries at the commencement of the SeSAFE project, and therefore adopted by SeSAFE to access the modules gifted by Austral Fisheries.

Alternative LMS software was reviewed in an attempt to overcome the limitations of Adobe Captivate Prime, including cost to subscribe learners and the time burden associated with managing subscription numbers, enrolling crew, monitoring their progress, and reporting progress to boat owners or skippers. This software also did not have a ‘select and pay’ option for learners and it did not easily facilitate the adaption of existing modules for use with a mobile phone. This latter option requires modules to be ‘responsive’ to different screen sizes, so they can be viewed on mobile phones as well as computer, desktop, or tablet. Subsequently, with an emerging vision that the longevity of SeSAFE hinges on overcoming these impediments, an online review other LMS software was undertaken.

With over 600 LMS software providers available globally, a suggested roadmap available at https://www.ispringsolutions.com/blog/how-to-choose-an-lms was utilised to hone in on a potentially suitable replacement. This process used to achieve this outcome is described in detail in Appendix A. Ultimately, six potential vendors were identified on the basis that they could overcome the limitations of Adobe Captivate Prime. There were also selected on the basis of being an Australian-based company, or with offices based in the country, and therefore should improve access to and responsiveness by customer support services (Table 3). Three vendors were then invited to deliver a presentation to an ad hoc SeSAFE committee to describe their product and how it would suit the delivery of SeSAFE modules to the fishing industry. The committee was comprised of several individuals from the SeSAFE steering committee, the SISI committee (including the SIA CEO), and Nicola Hutchinson, Program Manager, WRLC. Each vendor also provided free access to their LMS for SeSAFE and the WRLC to explore and test for a period of time.

The review of LMS's was an informative process, although it became clear that few LMS's provide an option for users to pay for module access or allow for offline access to modules. These are considered essential options in any replacement LMS. This review was ultimately put on hold. At the same time as this review, it became clear that an investigation into user-pays options for individuals to access training in other industries was warranted before selecting a new LMS. Subsequently, plans commenced to seek a contractor to i) investigate revenue-generating models used in Australian primary industries for the purpose of delivering safety and/or other training to employees, ii) evaluate the risks and benefits of applying these models in the Australian commercial fishing industry, iii) evaluate the risks and benefits of the introduction of a certificate of achievement in the commercial fishing industry, and iv) identify structure and systems needed for SeSAFE to establish a bespoke revenue model to fund safety training in the commercial fishing industry. This activity was not completed prior to the conclusion of this project (it was also not an explicit activity in the project proposal, but reflected the dynamic nature of project activity). This activity will be funded by the follow up SeSAFE project (FRDC Project No. 2020-067).

SeSAFE Steering Committee

A SeSAFE steering committee was established to provide advice and guidance to the SeSAFE Principal Investigator. Initially the committee Chair was John Harrison (WAFIC CEO), and committee members included Clayton Nelson (Austral Fisheries), Tanya Adams (Tailored Health and Safety), Michael Drake and Chris Battel (AMSA), and Chris Izzo (FRDC). Later, Alex Ogg (WAFIC CEO) took over duties as Chair of the steering committee.

This committee met three or four times a year, supported by frequent communication between the SeSAFE Principal Investigator and committee members. The committee was an important source of knowledge and guidance, including identifying industry sectors to target and opportunities consistent with the objectives of the project. The committee usually met at the WAFIC offices although on several occasions meetings multiple members dialled in remotely. It also helped identify the project name, SeSAFE, as well as the project logo and theme, *What if you don't come home?*

Registered Training Organisations

Several attempts were made to engage with Registered Training Organisations (RTOs) to explore potential integration of SeSAFE modules into their training program. A rationale for this blended approach was to differentiate their training program from that offered by others, which could be leveraged to increase students to their program, particularly given ease of access, cost, flexibility, and adaptability of SeSAFE training.

Multiple RTOs exist around Australia were found that claim delivery of maritime safety training. A decision was made to hone in on one or two of the larger RTOs with a history and reputation in

Table 3. Comparison of six LMS vendors (asterisk indicates preferred vendor).

LMS platform	Absorb*	Acorn	Docebo	Global vision*	iTRA (Train Trac)*	LearnUpon
Website	https://www.absorblms.com/products/learning-management-	https://acornlms.com	https://www.docebo.com	https://www.globalvision.com.au;	https://www.itra.com.au/traintrac/	https://www.learnupon.com/
Location	Canada; Service & support in Sydney	Canberra	Italy and Canada	Melbourne	Perth	US, Ireland, Australia (Sydney office)
Annual fee	14500 (unclear what this pays for and if the monthly user fee is included)	Not provided online	$19,200 (unclear what this pays for and if the monthly user fee is included)	$5,900 + GST (all hosting, support, and licensing) + a one-off $7,500 + GST fee for setup, branding, training, and interfacting to back or paypal	$49/month (online training only) or $149/month (upload scanned licences/certificates; record offline/practical training; visibility matrix - offline, face to face and competency; competency mgt and reminder emails; prioritised email support) unlimited users	$14,988 (250 Active users per month, 2 portals)
Cost per user	$5	For 101-500 users ($ per month): $3.5 (LMS only); $6.00 (content only); $7.50	Cost per user is not made clear on their website, although payment is for active users only. PC mag says cost begins at USD$3.33 per user per month - 300 active users); presumably this is included in the annual fee	Not provided online	$6000 - SeSAFE bulk module upload fee (30 x $200 ea.); Support service included, certificate of completion included, branding included.	Not provided online; presumably the annual fee covers all costs
SCORM	Yes	Yes	Yes	Yes	Yes	Yes
Mobile phone compatible	Yes	Yes	Yes	Yes	Yes	Yes
eCommerce	Yes	Yes	Yes	Yes; talks to PayPal or bank	Yes	Yes
Customer support	• 24/7 • Absorb academy - self-service training tools for administrators • Help desk. faqs, instructional articles, community discussion portal.	• Business hours • Online	• 24/7 (live rep) • Business hours • Online	• Local help desk (business hrs) • Email support	• Online	• 24/7 (live rep) • Online

Continued overleaf

LMS platform	Absorb*	Acorn	Docebo	Global vision*	iTRA (Train Trac)*	LearnUpon
Reviews	• Capterra - https://www.capterra.com.au/software/61763/absorb-lms Overall 4.4/5; Ease of use 4.4/5; Customer service 4.4/5; Features 4.1/5; Value for money 4.3/5	• Capterra - https://www.capterra.com.au/software/191086/acorn#reviews Overall 4.7/5; Ease of use 4.8/5; Customer service 5/5; Features 4.6/5; Value for money 5/5	• Capterra - https://www.capterra.com.au/software/127213/docebo#reviews Overall 4.2/5; Ease of use 4.2/5; Customer service 4.0/5; Features 4.2/5; Value for money 3.9/5	• Capterra - no review found	• Capterra - no review found	• Capterra - https://www.capterra.com.au/software/130044/learnupon#revie Overall 4.8/5; Ease of use 4.7/5; Customer service 4.9/5; Features 4.6/5; Value for money 4.8/5
	• PC mag - https://au.pcmag.com/education-1/35237/absorb-lms Highly regarded, clear interface, ideal for medium to large businesses (code for it is expensive?)	• Software advice - https://www.softwareadvice.com/au/lms/acorn-profile/reviews/ Ease of use 5/5; Customer service 5/5; Functionality 4.5/5; Value for money 5/5	• PC mag - https://au.pcmag.com/cloud-services-1/58788/docebo #1 choice, clear interface, high functionality (meaning it has bells and whistles)	• PC mag - no review found	• PC mag - no review found	• PC mag - https://au.pcmag.com/cloud-services-1/64315/learnupon Highly regarded, great interface, intuitive, adding questions to courses a bit tedious (already added by captivate prime). Overall 4/5
Clients	• Clients include Sony, Red Robin, Global eTraining, Tiffany & Co, Johnson & Johnson	• Clients include ASIC, Dept of Social Services, Learnhub, Dept of the Prime Minister and Cabinet; Clean Energy Regulator	• Clients include Walmart, Uber, Denny's, Bose	• Clients include government house (Victoria and Canberra), SA Rail, Vic Rail, Worksafe Vic, various hospitals	• Clients include Rio Tinto, Shell, Chevron, Komatsu, Southern Metropolitan TAFE, ATCO Gas Australia	• Clients include Booking.com, Tripadvisor, Logitech
Notes	1. Content authoring tool is Koantic, which can accept and convert Adobe Captivate Prime files as well as other paper-based training materials that organisations might already have e.g. word and powerpoint training materials. 2. Only charged for users that actually activate their subscription. Fees can be further negotiated if users found to have activated their subscription but not using the learning. 3. The Absorb platform can be tailored to accommodate all fisheries within Australia as a single entity (to your point that you're working on a national program).	1. Clean looking interface, but seems to have a lot of features that would need to be turned off or removed; is that possible? 2. History with Adobe Captivate Prime, although platform primarily aimed at delivering their own courses. 3. Can be installed on SeSAFE domain, but then again all seem to be able to do this.	1. Clean looking interface, based on online videos. 2. Apparently this is Capterra's most popular LMS. 3. Expensive.	1. Phone conversations and subsequent emails have been positive and very helpful; sent additional documents and always quick to respond to email queries; They dug further to track down how I can scale modules for iphone screens. 2. Can be installed on SeSAFE domain; No additional fees for data storage. 3. Their Service Level Agreement identifies response time frames; the company closely monitors response time to emailed requests for help; help desk staff based in Melbourne.	1. This is a small local company engaged in developing virtual reality, augmented reality, and e-Learning (including the LMS); will they support their LMS in the future? 2. To date they have been very engaging, responsive, and interested in SeSAFE.	1. "LearnUpon enables companies to create separate portals or custom learning environments for different categories of users, such as, employees, partners, or customers. These portals have their own unique login (clientname.learnupon.com) and can be quickly branded. You can also license your courses out to them based on a number of enrolments and/or for a specific timeframe."

providing training for the fishing industry. Trainers of the first RTO (name withheld) expressed strong interest in SeSAFE training, immediately recognising its value and benefits of training delivery. Unfortunately, this interest was summarily dismissed by executives of the RTO for reasons that were never made clear, although the trainers hinted they might have felt threatened by SeSAFE and did not have the interest or capacity to explore potential collaboration. A second RTO (name withheld) was contacted and they agreed to map SeSAFE training content against elements of the Shipboard Safety Skill Set (previously known as Elements of Shipboard Safety), including MARF029 - Meet work health and safety requirements. Over a long period, this RTO made no progress with the mapping exercise, citing a need to focus on other pressing issues.

A subsequent approach to Seafood and Maritime Training (SMT) in Tasmania was warmly received. SMT staff agreed to complete a mapping exercise of SeSAFE modules against the assessment elements of the following units of competency, MARF027 - Apply basic survival skills in the event of vessel abandonment, MARF028 - Follow procedures to minimise and fight fires on board a vessel, MARF029 - Meet work health and safety requirements, and MARF030 - Survival at sea using survival craft. These four units comprise the Shipboard Safety Skill Set, a requirement for Coxswain and Master certification.

Based on this exercise, it quickly became clear that many assessable elements in the four units of competency could not be met by SeSAFE training, given their performance criteria require learners to either 'practice', 'operate', 'follow', 'carry out', or 'apply practical skills'. SeSAFE was only relevant where the assessable element required 'knowledge evidence'. SMT identified that SeSAFE training content most closely aligned with the MARF029 - *Meet work health and safety requirements* unit of competency, however, no performance criteria of any knowledge evidence element in this unit were fully addressed by SeSAFE content. Furthermore, some performance criteria associated with a knowledge evidence element were not addressed at all by these modules, for example, loss of rudder or hull damage. In short, SeSAFE module content did not i) cover all knowledge evidence elements in any unit of competency, and ii) did not cover all performance criteria. Subsequently, in their present form, there is little scope for SeSAFE modules in their present form to be used by an RTO in their Shipboard Safety Skill Set training program. Only one element of the MARF030 performance criteria, *Use and purpose of personal protective equipment*, was considered to be fully addressed by the Personal Protective Equipment SeSAFE module.

Links to other FRDC Safety Programs

SeSAFE forged close links to FRDC Project No. 2017-231, *To develop a national marine safety extension resource toolkit and to trial with all fisheries jurisdictions*, including joint presentations at industry meetings and workshops, contribution to Fish Safe Australia podcasts, linking the SeSAFE and Fish Safe Australia websites, and contribution of newsworthy articles to the Fish Safe Australia project newsletter. The Principal Investigator to this project, Tanya Adams, also played a key role in the SeSAFE Steering Committee and working collaboratively with SeSAFE in the engagement with RTOs.

The SeSAFE Principal Investigator is an observer in FRDC's National RD&E Seafood Industry Safety Initiative (SISI), and contributes project updates, raises issues, and seeks guidance and feedback.

Discussion

This project developed 48 safety modules and was responsible for providing safety training to over 250 fishers and others. Many of these individuals have now received this training more than once, and interest in SeSAFE training in the fishing and aquaculture industry remains strong around the country. The delivery of modularised safety training has proven to overcome many of the historical barriers to safety training, both perceived and otherwise, and has contributed to the number of learners that have completed this training. Greater success was anticipated although this was hampered by the introduction of COVID 19 in Australia and associated impact on the fishing and aquaculture industry. Some boat owners and skippers did not want to engage in SeSAFE training because responding to COVID 19 and maintaining a viable fishing business took precedent, despite an opportunity for SeSAFE training to be completed in isolation. An inability to travel and unprecedented steps to protect crews from infection resulted in the cessation of most extension activity, including port visits and presentations at industry meetings.

The vast majority of individuals found the process of enrolling in SeSAFE training, viewing modules, and completing questions a straightforward and simple exercise. However, a few individuals experienced difficulties, particularly those with limited experience and confidence in using computers and computer software. In almost all instances an email exchange or phone conversations with the SeSAFE Principal Investigator overcame these difficulties and resulted in a successful outcome. It was also found that these many of these individuals had not correctly followed the emailed instructions, and that few had bothered to read the troubleshooting guide. A few of these individuals did not even have an email address and/or did not know how to establish an email address. These challenges highlighted the need for the Principal Investigator to be available to talk with individuals and guide them through the process of accessing and using SeSAFE training, while for some of these individuals a default option was to participate in group training for crew members of the same fishing company.

Early in the project it was not anticipated that many fishers would receive SeSAFE training in a group setting, given a perception they would be averse to this style of training delivery. However, many fishing companies used this approach on at least one occasion, finding it a cost-effective way to bring their skippers and crews together to receive safety training prior to the start of a fishing season. The advantages of this approach included completion of training by multiple crews at the one time and opportunities for crew to ask their skipper clarifying questions specific to their boat. This also permitted the boat owner or skipper to clearly state their expectations from crew regarding safe working behaviour, and to outline safety practices specific to their boat.

The questions at the end of each module served multiple purposes. Overall, this training was about raising safety awareness and improving safety performance. By answering questions correctly, the learner was demonstrating their comprehension of material covered and awareness of the risks and hazards of working at sea. For boat owners and skippers, the completion of modules by their crew served as an example of their commitment to crew safety and efforts to meet their duty of care requirements under workplace health and safety law. By providing learners unlimited opportunities to correctly answer a question, they were eventually able to learn the correct answer unassisted. It was felt this approach helps minimise stress associated with a perception of being tested, builds their confidence in their knowledge, and helps them to act safely at sea. In a group setting, question answer sheets completed by the crew were collected by the boat owner or skipper for their recordkeeping. A disadvantage of this approach is that numbers of individuals completing group training are not always provided to SeSAFE, hence challenging the accurate recording of the number of learners that complete SeSAFE training.

The mapping exercise of SeSAFE modules did not fully meet all performance criteria associated with the unit of competency, MARF029 - Meet work health and safety requirements. This was not an unexpected outcome given the modules were never developed with this outcome in mind. However, this review was useful because it provides a first order understanding of where SeSAFE modules stand with respect to the performance criteria. It also served as a foundation upon which to consider if SeSAFE modules should be upgraded to satisfy the performance criteria, and if so, what has to be done next. However, it should be remembered that the existing modules were designed as an entry point into safety training for crew, and a complement to onboard inductions and other training programs such as Shipboard Safety Knowledge, not as a replacement. To the extent that modules should be upgraded should be a point of consideration in the follow-up SeSAFE project.

An important gap filled by SeSAFE is the delivery of safety training to crew before they step onboard a vessel. In an industry where inexperienced crew are often hired at short notice, sometimes only hours prior to departure, this is an important development. Historically these crew step onboard and then receive a safety induction, sometimes hours or longer after boarding the vessel and commencing work. This is not appropriate because it places these crew at risk of injury or worse, primarily because they will struggle to recognise hazards and risks and their response may be inappropriate or untimely. This also poses a risk the safety of other crew, and is counter to taking all steps deemed reasonably practicable to minimise hazards and risks to crew as prescribed under workplace health and safety law. The penalty for a boat owner or skipper for failing to take all steps deemed reasonably could be a large fine, jail, or both, under recently introduced industrial manslaughter laws.

A significant outstanding challenge for the SeSAFE program was engagement with independent operators. In many fisheries around Australia, these individuals operate small fishing vessels that are often several decades old. While these vessels may satisfy statutory survey requirements, many enjoy grandfathered exemptions from recent survey changes, and yet they have been responsible for many of the recent fatalities at sea. Unfortunately, progress with boat owners or skippers of these vessels was limited, despite their relatively poor safety record, and many are not interested in safety training of crews beyond that that is absolutely necessary. In some fisheries this was in part due to the peak industry body or other representative body dismissing the utility of SeSAFE training and negativity relaying this outcome to local fishing cooperatives and individual fishers, either overtly or otherwise. Elsewhere, boat owners or skippers were reluctant to do anything more than invest time in onboard safety inductions for crew, due in part to a belief that inductions are adequate and additional safety training is unnecessary. This reluctance was exacerbated in fisheries where crew turnover is measured in trips or weeks, requiring inductions of replacement crew to be frequently held. An additional challenge was the attitude of crew to training, including those with experience under their belt. Many of these crew simply fail to understand the importance of safety training, let alone appreciate a need for periodic refresher training. This attitude was particularly apparent in crew that work on small, independently-owned vessels, particularly where the onboard safety culture is not strong. In several instances these crew flatly refused to commence the training, safe in the knowledge that finding crew is a challenge and that dismissal by the skipper was unlikely. In response, some boat owners attempted to incentivise their crew to complete SeSAFE training, by offering an increased share of catch value upon completion, but sadly only one or two individuals maintained employment long enough to enjoy this increase.

Based on challenges experienced to date, particularly with some small independent operators and their crew, it appears that additional motivators are required to encourage their involvement in SeSAFE training. While SeSAFE training already overcomes many of the traditional challenges to safety training, both perceived and otherwise, and it is cost effective (free), flexible, adaptable, appropriate, and for many, easy to use, this is still clearly insufficient motivation for some individuals. Additional steps that should be considered to motivate these individuals includes:

- Raising and stressing the need and importance of changing behaviour and taking all steps deemed reasonably practicable to ensure the health and safety of everyone onboard. Facilitating change in any organisation or individual starts with ensuring they understand why a proposed change is necessary, because these individuals need to feel a personal need to make the change. With regard to safety training, it is important for individuals to feel that such training is necessary, including the importance of training new crew before they step onboard and periodic refresher training of all crew irrespective of their experience. A core strategy to achieve this outcome is clear and concise messaging, repeated over and over again. The multiple videos produced by SeSAFE were an attempt to raise awareness of the impacts of an accident at sea, based on the simple question, *What if you don't come home?* By encouraging consideration of the question fishers were guided to consider the impact of not coming home on themselves and loved ones. By interviewing experienced fishers, and having them relate personal stories of other fishers that had not come home, the videos also pushed the message that an accident at sea can happen to anyone, even those with decades of experience, sometimes with fatal consequences. Fundamentally it was hoped these videos would act as a touchstone for fishers and drive home an emotionally-charged message to stay safe and take all opportunities to improve safety awareness and performance. This messaging was mirrored in various published SeSAFE articles, on social media, and during presentations.
- The recently introduced industrial manslaughter laws in each state and territory also provided an opportunity to flag the seriousness of failing to adopt safe work practices. While these laws had not yet been enacted in the fishing industry, a threat of massive fines and/or jail time is a complimentary motivator for change, particularly when backed up with recent examples of this law being applied in land-based industries. Anecdotal evidence at this time suggests that this message has not been received by all fishers around the country, although the number is diminishing rapidly. It is important that future safety messaging includes mention that such an outcome is now real possibility.
- Emotionally-charged messaging is an effective tool to raise awareness and motivate individuals to change, and is often more effective than fact-based messaging. However, regular communication of SeSAFE training, including merits, benefits, and costs is important for knowledge transfer. This includes sharing news how current users are utilising the program, their reasons for doing so, and benefits. To an extent this may help apply peer pressure to individuals not using the training, and if the benefits are deemed adequate, the fear of missing out becomes a motivator for change.
- Exploring opportunities for a reduction in vessel insurance as a result of all crew completing SeSAFE training. This possible benefit has been considered for some time, although a decision was made to not pursue this option until a critical mass of fishers in a fishing fleet were using this training. With most of the NPF fleet now using SeSAFE training, and large numbers of fishers in the Western Rock Lobster fishery expected to follow suite in the near future, exploring this option is now feasible.
- Exploring opportunities for skipper-led financial incentives to crew to complete SeSAFE training. To date only limited efforts have been made to link such incentives to SeSAFE training, and so it remains unclear if this is a viable inducement. Future consideration of this option across multiple fisheries is needed in the future.
- Overcome fears of using a computer to access training modules by developing so-call responsive modules that can be accessed on a mobile phone. Many, if not all fishers today use a mobile phone, but many only have limited experience using a computer or laptop and may feel anxious given their limited knowledge and experience. This emotional barrier can be overcome by providing fishers the option of completing SeSAFE training using a mobile phone. This also optimises module accessibility and convenience, using a device that most fishers utilise daily and is readily available.

- Explore the development of a SeSAFE card, similar to a white card in the construction industry. This could be carried by fishers to demonstrate completion of a suite of SeSAFE modules; cards may have different designations depending on the number or range of modules completed. Potentially, holders of this card could be deemed a more 'attractive' hire, a safer bet, with greater safety awareness than non-card holders. Ultimately this card could be considered an unofficial entry requirement to work in this industry, where new hires are required to complete several modules before stepping onboard for the first time. Curiously, an increasing number of boat owners and skippers are asking about a white card equivalent, so there is at least some knowledge and interest in this option.
- Work closely with AMSA to determine how they can actively 'promote' SeSAFE training. The mandatory completion of this training, periodically or otherwise, is not considered by AMSA to be an option, however, staff could raise SeSAFE awareness informally as they visit fishing ports around the country and talk to fishers. They could also provide SeSAFE contact details for interested fishers to make further enquiries.

Conclusion

The SeSAFE project represents a unique and successful collaboration between the Australian fishing industry, FRDC, and AMSA to improve the likelihood that fishers come home from sea. Over 250 fishers and others have now completed SeSAFE training, many recurrently, and awareness of SeSAFE is widespread throughout the Australian fishing industry.

Efforts have now commenced to build on project success and ensure the longevity of the SeSAFE training, including recent funding by the FRDC to expand SeSAFE activity (FRDC Project No. 2020-067). This activity will attempt to overcome some of the challenges experienced in this project, including the reluctance of individuals working on small fishing vessels, develop so-called 'responsive' modules so learners can access modules on a mobile phone, and investigation potential revenue models. Supplementary funding sources will also be sought from industry bodies, fishing companies, and others.

A core objective of this project was to introduce SeSAFE training to fishers in the NPF and up to three other fisheries, and to use knowledge gained to modify the training and seek opportunities to introduce this training into other fisheries (*Objective 1*). A focus on the NPF during the life of this project has resulted in over 80% of the fleet now using SeSAFE training in one form or another. Many of the larger fishing companies that operate in this fishery now require their crews to complete training prior to the beginning of the fishing season. At least one other company has a suite of selected modules on standby for crew hired at short notice. Other fisheries that have engaged in SeSAFE training include Southern Bluefin Tuna Fishery, Exmouth Gulf Prawn Fishery, Shark Bay Prawn Fishery, Northern Territory Demersal fishery, as well as the Pearl industry. In all instances this training was well received and feedback was positive. On occasion, feedback resulted in module changes and upgrades.

There is no doubt that the safety culture in the fishing industry has improved as a result of the SeSAFE project. For example, in many prawn fisheries around the country, SeSAFE modules are being used on a recurrent basis (*Objective 2 and 5*). Even for those that access these modules only once, safety awareness and knowledge are improved, and if nothing else, widespread promotion of this project improves safety consciousness across the industry. Requests from ACPF and the WRLC to develop fishery-specific modules serve as indicators of industry support for SeSAFE training and provide an opportunity for these industry bodies to champion a need to improve safety culture and training. A request for fishery-specific modules is an obvious example of SeSAFE relevance (*Objective 2 and 3*). The modules requested by the ACPF have been used in many prawn fisheries around the country, with module content sufficient to accommodate most regional differences in prawn-trawl operation. Several of these modules are also incorporated into the learning program used by AFMA fisheries observers.

Collaboration with other FRDC safety projects (*Objective 4*) was primarily in association with the Fish Safe Project (FRDC Project No. 2017-231). This collaboration yielded important developments and outcomes and leveraged the skills, expertise, and industry knowledge and contacts of individuals involved in each project. It also helped provide a fuller understanding of the challenges of improving safety awareness and performance in the fishing and aquaculture industry.

Unsurprisingly, the SeSAFE program can only partially contribute to accredited safety training units of competency that comprise the Shipboard Safety Skill Set (*Objective 5*). The mapping of SeSAFE modules against these units was a useful exercise because it provided a baseline from which further module development could be considered. It also served as a foundation upon which to consider what needs to be done to upgrade existing modules accordingly, to consider if a second suite of

modules should be developed that meets unit requirements, and to provide context to consider if such changes should be pursued in the future. These will all be considered in the follow-up project.

Implications

A critical goal of the SeSAFE project was to raise safety awareness and performance in the fishing and aquaculture industry. SeSAFE has been highly successful in raising awareness, not only in individuals that have completed SeSAFE modules, but in others through extensive outreach activities. Brand awareness has increased to a point where many fishers are aware of the SeSAFE program even if they have not attempted the modules. Subsequently, it is not unreasonable to expect an improvement in safety performance, although measurement of gains is not currently an option.

Boat owners and skippers are required to meet duty of care obligations in the workplace, that includes 'taking all steps deemed reasonably practicable' to provide a safe and healthy workplace for everyone onboard. The completion of SeSAFE training and associated recording of crew performance is an important early step to demonstrate a commitment towards this obligation, particularly when combined with crew safety inductions and drills and vessel-specific Safety Management Systems. Because SeSAFE training can be commenced before joining a vessel, risks to the safety of new and inexperienced crew can be reduced before they arrive and step onboard. Traditionally, these individuals do not receive a safety induction until after they have stepped onboard, and are therefore at heightened risk until such training is received. For the boat owner and skipper this is a risky approach because it is inconsistent with the requirement to take all steps deemed reasonably practicable. Under this circumstance it cannot be argued at all steps deemed reasonably practicable were taken, and if the new crew member is seriously injured or worse, the boat owner and skipper could face significant financial penalty and even jail time.

Importantly, SeSAFE training offers a solution to many of the traditional barriers to safety training that hinder or deter fishers and aquaculture workers. This includes;

- Perceptions that the cost of training is unaffordable (Cost). SeSAFE training is currently provided at no cost to the boat owner, skipper, or crew.

- Inconvenient timing of training that does not meet the operational needs of industry, particularly when a new or replacement fisher or worker is required at short notice (Timing). A SeSAFE training program can be delivered to one or more individuals usually within an hour of notification.

- Inconvenient or inaccessible training location, particularly to individuals at sea (Location). SeSAFE modules can be completed online or offline prior to departing for the vessel or en route. Modules can also be completed at sea whilst steaming or during quiet periods.

- Less than optimal classroom setting for delivering WHS training (Setting). SeSAFE training can be completed at home or anywhere an individual has internet access. Modules can also be downloaded and completed at a later date in a comfortable setting.

- Inability to provide training in remote locations, either on land or at sea, where internet access may not be available (Access). SeSAFE training can be completed offline, providing modules are downloaded beforehand.

- Inability of existing fishing safety training courses to address general workplace safety such as manual lifting, electrical safety, fall protection, and personal protective equipment, and fishery-specific safety training (Relevance). A suite of SeSAFE modules have been developed that cover many workplace safety hazards and risks. Additional modules have been developed specifically for the Australian prawn industry and the western rock lobster industry. Fishery-specific

modules can be developed upon request. Boat owners and skippers have the ability to select only the modules they deem relevant to their crew.

- Lack of recognition of industry culture, particularly with respect to attitudes by fishers and aquaculture workers towards safety, peer pressure, and onboard culture of risk-taking (Culture). Module content has been developed specifically for the fishing industry, cognizant of the challenges of working in a dynamic workplace, often under difficult weather conditions, and well aware of the attitudes of fishers toward safety training.

Recommendations

The SeSAFE project was an opportunity to explore the introduction of online learning for the fishing and aquaculture industry. Overall, this project was a success and many fishers have and are accessing this training periodically. Industry interest in this project remains high and is growing. However, the safety performance of this industry remains an issue - sadly each year there are number of serious injuries and fatalities - and on this basis the major recommendation is that funding is sought to continue SeSAFE activity. Consistent with this recommendation, there is a need to:

- RETAIN delivery of SeSAFE training to existing users in the Australian fishing and aquaculture industry
- EXPAND the number of industry bodies, fishing and aquaculture companies, independent fishers and aquaculture workers, and others in the Australian fishing and aquaculture industry utilising SeSAFE training on a recurrent basis. This includes identifying and acting upon perceived incentives that might increase the number of fishers engaged in the training, and the development of responsive modules that can be accessed using a mobile phone.
- EXPAND the number of fishery-specific modules beyond those already developed for the ACPF, including fishery-specific modules for the WRLC.
- INFORM, via independent review of the design of user-pay funding models in Australian primary industries, the potential for the introduction of a SeSAFE user-pays model in the fishing and aquaculture industry, including a recommended road-map to realise this outcome.
- TRANSITION to a user-pays funding model to perpetuate the cost-effective delivery of SeSAFE training, based on the outcome of the independent review, that meets the needs of the fishing and aquaculture industry and other users of SeSAFE training in the future.

These needs will be addressed in the new SeSAFE project, FRDC Project No. 2020-067.

Extension and Adoption

The overall goal of the SeSAFE extension strategy was to improve safety awareness and performance in the Australian fishing and aquaculture industry. Early in the life of the project an extension strategy was developed, which included information sharing via industry meetings, internet and social media, industry publications and newsletters, conferences and workshops, the industry grapevine, information linkages with related/other projects, and public media. This strategy was agreed by the SeSAFE steering committee; it will also be continued beyond the life of this project, being a core activity in the follow-up FRDC project (No. 2020-067). The strategy and outcomes are as follows:

Strategy

Prepare a brief project summary announcing the project and share the summary with multiple fishing industry associations/groups around Australia, state/territory and federal government departments, as well as to fishers and other individuals.

Outcome

This was completed and shared widely via email to individuals representing industry associations and groups, individual fishers, government staff, researchers, and others. This was followed up by multiple emails to these individuals at various times during the life of the project, that served as project status reports. The contents of these emails also helped inform project presentations to industry groups around the country, social media posts, and project literature.

Strategy

Develop a SeSAFE project website. This will serve as an online public portal and provide essential project information, including progress reports and status. It may ultimately serve as access point to vital safety links, such as AMSA and suppliers of sea safety equipment, links to relevant videos, news items, and other projects. A SeSAFE logo will be developed to provide a recognisable link to the project and stimulate safety awareness.

Outcome

The SeSAFE website was established (www.sesafe.com.au). The website contains useful project information including a description of the project, a list of training modules, a video demonstrating a SeSAFE module, coroners' reports and findings, access to project videos, and project FAQs. It also provides a link to Fish Safe Australia (FRDC Project No. 2017-231), industry bodies that are participating in SeSAFE, and safety articles published in the media. A SeSAFE logo was developed.

SeSAFE project information is also available at:

- WAFIC - https://www.wafic.org.au/what-we-do/access-sustainability/sesafe/,
- Baird Maritime (Ausmarine) - https://www.bairdmaritime.com/ausmarine/ausmarine-fishing-and-aquaculture/feature-project-sesafe-to-transform-fishing-industry-safety-culture/,
- ACPF - https://australianprawnfisheries.com.au/sesafe-project/,
- WRLC - https://www.westernrocklobster.org/general/wrl-to-support-and-fund-improved-safety-performance-in-the-industry/,
- SIA - https://seafoodindustryaustralia.com.au/our-priorities/safety/
- Fish Safe Australia - http://fishsafeaustralia.com.au/

Strategy
A brief project video will be produced highlighting the importance of safety at sea in the fishing and aquaculture industry. This will be a professional production designed to promote consideration of WHS and safe operating practices.

Outcome
Three professionally produced videos were completed. This was possible primarily as a result of receiving financial support from AMSA and the fishing industry. The videos were produced by Millstream Productions. Each video was underpinned by the project theme, *What if you don't come home?* Two of the videos are accessible on the SeSAFE website. Additional short videos were produced and shared with industry, usually in the form of a Christmas safety message.

Strategy
Use social media to share project information with industry. Appropriate social media will be used to raise safety awareness, share project developments, and provides access to other relevant material. The project Steering Committee will help guide the development of a social media plan that considers the utility of Face Book, Instagram, Twitter, and other social media in the context of this project, identifies the most appropriate media options, and guides development of appropriate content.

Outcome
Social media was used on multiple occasions to share news of project developments. Face Book was the dominant social media platform used, and news of project developments were shared primarily via FRDC, AMSA, WAFIC, and SIA Face Book posts. Numerous project articles were shared by these groups, thus increasing readership and understanding of the project.

Strategy
An article will made available to an industry publication such as FISH, Ausmarine, NT WorkSafe, or other for publication at least twice per year. Article content will include a project description, progress, and insights into the utility and operation of the LMS, including feedback from fishers and others that have completed LMS modules.

Outcome
The majority of published articles appeared in FISH magazine and articles published by WAFIC, including their annual reports. At least one article appeared in FRDC's Message in a Bottle e-newsletter. See Appendix B for examples.

- FISH magazine
  - https://www.frdc.com.au/media-publications/fish/fish-vol-26-3/five-minutes-to-a-safer-workplace
  - https://www.frdc.com.au/media-publications/fish/fish-covid19-special-issue-2/time-online-to-upskill
  - https://www.frdc.com.au/media-publications/fish/fish-vol-26-2/fisher-takes-on-ocean-workplace-safety
- WAFIC Annual Report 2017. p.42.
- WAFIC Annual Report 2020. p.54-55.
- Working Boats. Issue 20. December 2020. P. 33-34.

- SeSAFE project video. 7 NEWS Wide Bay. https://www.facebook.com/watch/?v=2217870298424476

Strategy

Attend meetings with industry. Project news and developments will be shared at various industry/association around the country by the Principal Investigator and Steering Committee. The Principal Investigator is currently preparing a dedicated travel plan, and the project Steering Committee will contribute/modify to this plan at the first Steering Committee meeting in April, 2018. It is anticipated the travel plan will be adapted as word of additional meetings becomes available.

Outcome

A travel plan was developed and approved by the Steering Committee, cognizant that it served as a foundation and subject to change as opportunities presented. Table 2 lists most presentations delivered by the SeSAFE Principal Investigator, by audience, location, and time. Travel was significantly curtailed as a result of COVID 19 and associated lockdowns and travel restrictions.

Table 2. List of formal presentations to industry during the life of the project.

Audience	**Location**	**Month/Year**
National Science Industry Leadership Program	Sydney	Sept/2018
FRDC Workplace Health and Safety Workshop	Adelaide	Oct/2018
Australian Council of Prawn Fisheries	Brisbane	Oct/2018
Western Rock Lobster Council	Perth	Oct/2018
Northern Territory Work Safe	Darwin	Oct/2018
Australian Southern Bluefin Tuna Industry Association	Port Lincoln	Nov/2018
Northern Prawn Fishery Industry Association	Brisbane	Feb/2019
AMSA Fishing Industry Association Committee	Canberra	Mar/2019
ICES/FAO Fishing Technology & Fish Behaviour Working Group	Shanghai	Apr/2019
Tuna Australia	Sydney	Apr/2019
Moreton Bay Seafood Industry Association	Brisbane	Apr/2019
Sydney Fish Markets	Sydney	May/2019
Geraldton Fisherman's Cooperative	Perth	Aug/2019
Australian Council of Prawn Fisheries	Brisbane	Oct/2019
Seafood Directions	Melbourne	Oct/2019
MG Kailis Group	Exmouth	Oct/2019
Moreton Bay Seafood Industry Association	Brisbane	Mar/2020
FRDC Seafood Industry Safety Initiative	Darwin	Feb/2020

Strategy

Attend AMSA's NAV 18 conference in May, 2018 and Seafood Directions in 2019 and 2021. Other conferences yet to be identified may provide an opportunity to present project details and outcomes.

Outcome

AMSA's NAV 18 conference was attended by the SeSAFE Principal Investigator. Clayton Nelson delivered a presentation that included a description of the SeSAFE project. A SeSAFE presentation

was delivered by the Principal Investigator at Seafood Directions in Melbourne in October 2019. This was well received and resulted in several audience members requesting training for their crew. Steps were taken to deliver a SeSAFE presentation at the World Fisheries Congress in Adelaide in 2020, although this conference was cancelled due to COVID 19. There are plans to hold this conference in 2021. The Principal Investigator also delivered a SeSAFE presentation at the ICES/FOA Fishing Technology and Fish Behaviour Working Group meeting in Shanghai, China. While safety at sea is usually outside the remit of this group, the focus of the presentation was to demonstrate how an LMS could be used to deliver training in almost any topic, including fishing technology. This also provided an opportunity to gauge if other working group members were engaged in or aware of similar training efforts elsewhere. Note, funding to attend this meeting was not provided by SeSAFE.

Strategy
Exploit media opportunities for project coverage during the life of this project.

Outcome
As a result of the highly publicised tragedy of the F.V Diane, one television interview and several radio interviews were completed. This provided an opportunity to raise awareness of the SeSAFE project. Several podcasts were completed, an initiative of FRDC Project 2017-231. These can be accessed on Podbean by searching for Fish Safe Australia.

Strategy
Leverage the Industry grapevine. As an increasing number of fishers and others become aware of the LMS, or complete LMS modules, the frequency of safety-related discussions between individuals will increase, both at-sea and onshore.

Outcome
Measuring the increase in safety related discussions on the industry grapevine as a result of SeSAFE (and other FRDC safety projects) is not possible, however, it is clear that industry awareness of SeSAFE is high. A demonstrable example of this is the periodic phone calls or emails from skippers requesting training for their crews. These individuals have heard of SeSAFE and taken steps to enquire about training. Increasingly the SeSAFE Principal Investigator is encountering individuals that have heard of SeSAFE and are aware of opportunities for safety training. Presumably this is due largely the effectiveness of the extension strategy.

Strategy
Building linkages and share information with other related projects.

Outcome
Early in the life of the project efforts were made to forge a link with the Southern Rock Lobster Clean Green Program. Individuals engaged in this program considered the application of SeSAFE training to their program, although ultimately declined the opportunity on the basis that some training content was already covered internally and that it would add cost to their program and be rejected by member fishers. Close linkage was established with the FRDC 2017-231 project. This included close collaboration between the Principal Investigators to both projects, such as sharing information relevant to both projects, collaboration on industry articles, joint presentations at meetings with industry, and ensuring both project websites included a link to the other project.

Project materials developed

Project materials include project videos (available at www.sesafe.com.au) and a project post card. The purpose of the post card was to provide a simple way to share project information. A copy of this post card was distributed to each individual that attended a SeSAFE presentation.

SeSAFE – Training for the fishing and aquaculture industry

- ***What is the SeSAFE project?*** A new initiative to develop pre-sea training modules and complement training provided at sea by the boat owner or skipper
- ***What topics do the modules cover?*** The modules cover health and safety at sea, including personal safety, emergency procedures, boat policies, and WHS law Fishery specific modules can be developed upon request
- ***How do I access modules?*** They are accessed online or by downloading an app.
- ***How long do they take to complete and what is the cost?*** Each module takes about 4 minutes to complete, culminating in several brief questions Access to all modules costs $6 per month per fisher.
- ***What happens after I complete the questions?*** A record of your answers is sent to the boat owner or skipper, verifying module completion and comprehension This training contributes to a duty of care requirement by a boat owner or skipper

Fatalities and Injuries at sea

5 The average number of fatalities each year in the commercial fishing industry (2013)

25 The number of times more likely a fatality will occur on a commercial fishing boat compared to the mining industry

? The number of injuries at sea on Australian water because most injuries are unreported

FRDC

Australian Government
Australian Maritime Safety Authority

WAFIC

For further details, go to www.sesafe.com.au or contact:
Steve Eayrs
Ph. 047 278 4530
Email. seayrs@sesafe.com.au

SeSAFE

Appendices

Appendix A - Choosing an LMS for SeSAFE training

Preamble

The SeSAFE project has been using the Adobe Captivate Prime Learning Management System (LMS) for three years. Modules are first developed using Adobe Captivate and then uploaded (published) to Adobe Captivate Prime. This approach is currently workable although there are several issues that warrant consideration of an alternative LMS platform. These include:

- Adobe Captivate subscription costs are high. Presently a single subscription costs $72/year. While crew members across multiple boats can be enrolled using the one subscription, a subscription can be 'held up' while the first crew member completes the assigned modules. This issue is exacerbated by skippers and/or crew that are curious to inspect the modules but are slow to actually do so; in this instance the question becomes how much time should they have to look at the modules, particularly if they are at sea for long periods of time. This behaviour often necessitates purchase of a second subscription to avoid delay and lost enthusiasm by those that are awaiting training. SeSAFE currently has purchased 67 subscriptions, which equates to almost $5k/year. As SeSAFE grows, so too will this cost.
- Adobe Captivate Prime requires an administrator to manage subscription numbers, enrol crew members, monitor their progress, and report progress to boat owners or skippers. This is a significant time commitment, particularly to an administer responsible for managing training to a large number of crew across multiple boats. Assuming that all crew members require the same package of modules (learning program), the administrator is required to seek from each crew member their email address, then enrol each in the learning program, send them an email with a link to sign in, await their completion of the program, and then inform the boat owner or skipper when they have completed the program. If all crew members require a different learning program, the administrator will additionally need to assign different modules to each learning program for each and every crew member. This will also increase the complexity of any database to document and manage crew member progress. A much simpler option is for crew members to be responsible for signing in themselves and gaining access to the program. The crew member would first be informed by the administrator and/or the boat owner or skipper[1] that they are to complete a particular learning program, and it is then their responsibility to do so using an emailed link provided by the administrator. Such an option can also be established to provide the crew member automatic certification of module completion.
- Adobe Captivate Prime does not allow users to select and pay for module access. SeSAFE is a national program with a mandate to provide training to crew members across all fisheries around the country. This includes providing standardised generic training where possible (supported by fishery-specific training where such modules exist), to minimise inconsistency between states and territories and streamline training for crew members, particularly those

[1]On the assumption boat owners or skippers in the West Coast Rock Lobster Fishery are satisfied with the content of the learning program, the WRLC could instead take responsibility for this action. This would mean each boat owner or skipper only has to pass the name and email address of each crew member to be trained to the WRLC; they then can take a passive role in this training and can focus their attention elsewhere.

that work across multiple boats in a season or multiple fisheries. Such an approach is also desirable to ensure the longevity of the SeSAFE program and delivery of safety training. This means a user-pays portal would need to be developed independently of Adobe Captivate Prime. It also means the administrator would somehow need to receive notification of module selection and payment by each and every crew member, and then complete the multiple tasks mentioned previously. Further challenging this approach, the administrator would need to complete to these tasks immediately after payment has been made by each crew member. An LMS platform that allows for users (or representative bodies) to pay for SeSAFE training overcomes these impediments, significantly simplifies the tasks of the administrator, and is a logical forward step.

How to select a suitable LMS?

There are currently several hundred LMS platforms available to deliver SeSAFE training (one online review indicated there is more than 600 platforms). A suggested roadmap available at https://www.ispringsolutions.com/blog/how-to-choose-an-lms to choose an LMS is based on 5 steps:

Step 1. Identify your needs

- Establish goals and objectives
- Know your audience - age, computer literacy, available training hardware (e.g. tablet)
- Number of learners

Step 2. Define your LMS requirements based on Step 1.

- How will you register users?
- Will you require administrators, authors, publishers, etc.?
- How will new users be enrolled - email, excel file import, other?
- Online training only? Blended (modules, video, webinars, etc.)? Instructor-led?
- Can the interface be customised? Provide certification option?
- Cloud-based or hosted solution?
- Cost considerations? Pay per active user? Pay per learner? Pay as you go? Licence fee?
- For guidance see https://www.ispringsolutions.com/blog/lms-requirements/

Step 3. Explore the market

- For reviews of numerous LMS vendors, see https://www.capterra.com/learning-management-system-software/

Step 4. Evaluate vendors

- Browse through vendor websites
    - Does the LMS have required features?
    - How long has vendor been on the market?
    - Are additional training materials available?
    - How is their customer support? Available at convenient times? Responsive?
    - How are updates handled?
- Test the LMS
    - Does it have desired features?
    - Is the interface easy to understand and use?
    - Load up the system - stress test

- Ask for a demonstration and ask
  - About cost (purchase cost, hosting, installation, updates, support costs)
  - Check its flexibility, customisability, scalability, data protection and recovery

Step 5. Choose the LMS

As a final point for consideration, many available LMS platforms are based overseas, some which provide training to tens of thousands of employees or more. With Adobe Captivate Prime, trouble shooting a problem means wading through their online user help guide to find a solution to an issue or contacting their online virtual assistant. A locally supported LMS platform (including those based overseas but with Australian-based staff) should conceivably overcome this issue by providing direct access to customer support staff, during normal business hours, that are more responsive to our specific needs. It is also appropriate to consider using a locally supported platform given the impact of Covid 19 on the Australian economy.

SeSAFE response

The following response using the proposed 5-step process is described below:

Step 1. Identify your needs

The overall goal of the SeSAFE project is to raise awareness and provide training is safe work practices at sea. Specific project objectives are:

1. INFORM, via an independent review of the design of user-pay funding models in Australian primary industries, the potential for the introduction of a SeSAFE user-pays model in the fishing and aquaculture industry, including a recommended road-map to realise this outcome.

2. TRANSITION to a user-pays funding model to perpetuate the cost-effective delivery of SeSAFE training, based on the outcome of the independent review, that meets the needs of the fishing and aquaculture industry and other users of SeSAFE training.

3. RETAIN delivery of SeSAFE training to existing users in the Australian fishing and aquaculture industry

4. EXPAND the number of industry bodies, fishing and aquaculture companies, independent fishers and aquaculture workers, processors, observers, researchers, and others utilising SeSAFE training on a recurrent basis.

5. EXPAND the number of fishery-specific modules beyond those already developed for the ACPF, including completion of fishery-specific modules for the Western Rock Lobster Council and weather forecasting modules for the Bureau of Meteorology.

6. PROMOTE SeSAFE as the industry benchmark in pre-sea safety training to meet duty of care requirements.

SeSAFE training modules are designed for users of all ages, although the age demographic of commercial fishers is probably skewed towards individuals that are 35 years of age or older. However, individuals expected to use this training will include younger individuals, including late-teens or early twenties. The computer literacy of this younger demographic is probably relatively good, although for some it may be limited or poor; for some older individuals it may be rudimentary or close to non-existent. English is the dominant language in the fishing industry although reading and writing skills of some may also be limited, particularly in foreign crews.

SeSAFE modules are currently developed using Adobe Captivate software. A link to these modules is then delivered to users via email. Users click on the link and are directed automatically to Adobe Captivate Prime software, where they register their name and gain access to the modules. Users typically use a laptop, desktop, or tablet to access and view the modules. Mobile phones are currently not an option due to issues associated with scaling module slides to fit smaller screen sizes. When wi-fi signal strength is weak or non-existent, modules can be accessed using a tablet providing they have been downloaded beforehand when wi-fi signal was strong.

The number of users is expected to vary with time, being determined in part by the timing and duration of fishing seasons. Overcoming disinterest in safety training is a key hurdle to user numbers. Over the next two years it is hoped to increase the number of recurrent users to 3-400.

Step 2. Define your LMS requirements based on Step 1.

The following is required from the LMS:

- An ability to receive and publish modules produced using Adobe Captivate software, as well as PowerPoint, videos, and documents.
- An ability for users to select and pay online for module access. This platform would ideally be accessed via the SeSAFE project website, www.sesafe.com.au.
- An ability for users to access modules via the internet on a laptop, desktop, or tablet.
- An ability to access modules on a mobile phone, with no loss of image quality or need to reformat slides.
- An ability to download modules on a tablet or phone, for use when wi-fi signal is weak or non-existent. Secure access to ensure only one user can complete the modules on a tablet is necessary.
- Automatic generation of a certificate of completion upon completion of selected modules, and copies of the certificate delivered electronically to selected third parties e.g. the skipper.
- A secure data base that records personal details and performance of each user, that also delivers automatic reminders of refresher training on an annual basis.
- An ability to upload new modules periodically.
- An ability to easily and cheaply upload modules that have been periodically modified or updated. The content of most existing modules is relevant for several years, although on occasion there is a need to update content in response to new developments.
- An ability to enable videos to be linked or uploaded, such that users experience no buffering or delays.
- An ability for the project administrator to readily access and talk directly to customer support for troubleshooting purposes during business hours.
- Demonstrated history of responsiveness to client issues and needs by the LMS provider.
- Competitive pricing that accounts for inconsistent number of users per year.

Step 3. Explore the market

The following LMS platforms have been identified. All have been selected because they are Australian companies or have offices based in the country, on the basis that this should improve access to and responsiveness by customer support services. It is also considered an important option to support the Australian economy, given the impacts of Covid 19.

The identified platforms are;

- Absorb (www.absorblms.com), with an office in Sydney, NSW.

- iTRA (itra.com.au), based in Perth, WA.
- Acorn (www.acronlms.com), based in Canberra, ACT.
- Docebo (www.docebo.com), based in Italy and Canada
- Global Vision Media (www.globalvision.com.au), with an office in Melbourne, Vic.
- LearnUpon (www.learnupon.com), with an office in Sydney, NSW.
- Sentrient (www.sentrient.com.au), based in Melbourne, Vic.

Step 4. Evaluate the vendors

Comparison between LMS platforms is challenging. With some limitation most platforms are somewhat similar in their features and functionality. In a sense they all act as a repository and access point for training modules and other related material, they provide a means for monitoring user progress, and they provide certification to users upon completion. It seems most if not all are suitable for delivering SeSAFE training modules to fishers, managing SeSAFE training content, and tracking user progress. Many of the listed providers above include a user-pays option (known as eCommerce in LMS parlance) although Adobe Captivate Prime does not. Apparently, they are all iOS and Android compatible, and all except Adobe Captivate Prime allow video conferencing, although this feature is not considered useful to SeSAFE at this time. Gamification is also a common feature of many LMS platforms, which allows users to achieve points, virtual medals, or badges in recognition of their performance and/or to complete against other users, although this is also not currently considered to be a useful option to SeSAFE.

Several other criteria are important for determining a suitable LMS product:

- Simplicity/Ease of use for administrator and the user. This relates to navigation of the LMS platform for the administrator and user, ease of adding users, monitoring progress, managing data, reporting and certification.
- Cost. This includes establishment of LMS, subscriptions, uploading of Captivate Prime modules, platform maintenance, and customer service.
- Compatibility. With modules developed using Adobe Captivate software
- Customer service. Responsiveness to inquiries, capability of staff and enthusiasm in dealing with a relatively small client.
- Customer reviews.

A comparison of the identified LMS platforms is available at:

- https://www.capterra.com/learning-management-system-software/compare/61763-191086-145872-130044/Absorb-LMS-vs-Acorn-vs-Adobe-Captivate-Prime-vs-LearnUpon, and at
- https://www.capterra.com/learning-management-system-software/compare/127213-144645-132935-130044/Docebo-vs-Employment-Hero-vs-TalentLMS-vs-LearnUpon and at
- https://www.capterra.com/learning-management-system-software/compare/127213-130044/Docebo-vs-LearnUpon.
- Sentrient, Global Vision Media, and iTRA reviews are not available for review on this website.

Step 5. Choose the vendor

A summary of each vendor to assist the selection process is provided in Table 3. Note that the websites for each do not provide consistent information. They also make it difficult to know if advertised costs include upload costs and all other support. This will need to be teased out in phone conversations, once vendors have been prioritised.

Appendix B - Selected media articles

isentia

AUTHOR: Sarah Nicholson SECTION: GENERAL NEWS ARTICLE TYPE: NEWS ITEM AUDIENCE : 16,643
PAGE: 12 PRINTED SIZE: 386.00cm² REGION: QLD MARKET: Australia ASR: AUD 1,179 WORDS: 414
ITEM ID: 1292393202

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Personal tragedy driving Matt's latest film project

The Tablelander, Atherton

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LOSING a mate to the deep blue made Tablelands filmmaker Matt Blyth's latest project even more meaningful.

Sea Rogue – a work that's been described as documentary, animation and short film – tells a "dramatic true story about the dangers working at sea and how important it is to consider safety in that environment".

For seven years, Mr Blyth spent months filming documentaries on commercial fishing boats working around the country with vision collected for a national safety program called the SeSAFE project.

"I've seen fishermen who take safety incredibly seriously, who won't step on the back deck of a boat without a PFD (personal flotation device) and a hard hat," he said.

"Unfortunately they're the exception to the rule (and) there are others who would only reach for a life jacket if their boat was sinking in the most dangerous conditions or if they're climbing out on a boom arm.

"I've heard and recorded stories of survival and near-miss that make it hard to sleep at night."

Mr Blyth lost best mate Brook Vetter at sea in 1997 and said that experience was something he "would never get over".

"You only get one best mate. I'd known Brook since I was 7.

"I'd known him 20 years when we lost him," he said.

"He left wife Caroline (and) three-month-old son Trav behind, and a huge extended family.

"Ever since, I've wanted to do something to change the narrative and hopefully improve the statistics."

A decade later, the Tumoulin resident "stumbled" on *Sea Rogue*, the story of the NSW fishing trawler that sank off Byron Bay.

"Deckhand Michael Williams performed a superhuman effort to swim 15 nautical miles (27km) in an attempt to save the lives of skipper Charlie Picton and fellow deckhand John Jarrett," Mr Blyth said.

"To mark the 10-year anniversary Mr Williams released a book of spoken verse poetry about the ordeal to honour his mate, Charlie, and that's what grabbed my attention.

"It's an incredible story of survival (and) from the moment we met Mick we connected, given we have both lost good mates at sea there was a lot of common ground.

"Mick's book is powerful, it wasn't hard to turn it into a compelling documentary."

Sea Rogue won the Port Shorts International Film Festival Jury Award and Human Spirit Award of Exceptional Merit at the US-based Documentaries without Borders Film Festival.

View the trailer at www.youtube.com/watch?v=GLH8jdoE9Wo

Safety conscious: FV *Territory Leader* unloading catch; Float-free EPIRB secured to mast; Michael O'Brien speaks about on board training – *Images supplied*

Australia Bay Seafoods puts safety first

Australia Bay Seafoods General Manager and career fisherman Michael O'Brien, talks to *Working Boats* about how the tragic loss of life with the capsizing of FV *Dianne* and FV *Cassandra* prompted them to reinforce their approach to safety. By Lauren Smit

Six men, all professional divers, died when their commercial bech-de-mer vessel *Dianne* overturned off the town of 1770 on the evening of 16 October 2017.

One survivor was rescued by a passing yacht the following morning and the alarm was raised. But that was hours after the capsize and, by then, *Dianne* had sunk to the seafloor, carrying with her any hope of rescuing the men trapped inside.

The coroner investigating this tragedy, and another involving the death of two men on the capsized prawn trawler *Cassandra*, highlighted the safety benefits of float-free EPIRBs for commercial fishing operations.

Float-free EPIRBs perform two important functions. Firstly, they automatically disconnect from the vessel and float free at a depth of 1 to 4 meters. Secondly, they automatically switch on and start to transmit a distress signal without the need for manual intervention by crew.

Float-free EPIRBs will be mandatory for certain commercial vessels, including many fishing and dive operations operating domestically in Australia from 1 January 2021.

Australia Bay Seafoods General Manager Michael O'Brien said *Dianne* was a turning point for industry.

'If professional divers couldn't handle that situation underwater, your average fisherman was going to find it a lot more difficult,' Michael said.

Australia Bay Seafoods is Australia's largest tropical snapper fishing operation operating out of the Northern Territory in the Gulf of Carpentaria and beyond, close to the maritime border with Indonesia.

Michael described a sense of disbelief and heartbreak among the broader Australian fishing and diving community after *Dianne*, followed by a realisation that his company had to respond in its own way to the tragedy.

Australia Bay Seafoods installed float-free EPIRBs on all three of their vessels.

'We looked at it logically, putting our [float-free] EPIRBs on our masts. Either way the vessel rolls, if that was worst-case scenario, it would be able to float up from the starboard or the port side roll.'

— Michael O'Brien

'In a worst-case scenario, being a vessel capsizing, it's a very difficult thing if you're stuck inside and you've got to go looking for an EPIRB,' Michael said.

'We looked at it logically, putting our [float-free] EPIRBs on our masts. Either way the vessel rolls, if that was worst-case scenario, it would be able to float up from the starboard or the port side roll.'

The company also maintains secondary EPIRBs in the wheelhouses of all three boats as an additional safety measure.

But float-free EPIRBs weren't enough for Michael and after reading through the coroner's recommendations, made public nearly two years after *Dianne*, he took further steps to give his crews the best chance of survival if the worst happened at sea.

'We put in emergency escape lights in all our cabins and all our exit doors within the vessel which switch on automatically once the vessels go through a 60 degree swing. We also took the opportunity to put glow-in-the-dark tape along the bottom of the wall with arrows marking the direction to the exits,' Michael said.

Michael believes that safety on commercial fishing vessels is an evolutionary process, aided by advances in technology.

The company keeps iPads on all three vessels. Downloaded onto each iPad are SeSafe training modules and an app called Miracle with important documentation for things like near misses, incidents and safety updates. They also use the iPads to share lessons learned among the fleet.

After years of doing training onshore, the company realised it could affect greater change to the safety culture among its crews by running training in the workplace—at sea.

'Like the rest of the industry we've still got a long way to go,' Michael said, adding that what worked for Australia Bay Seafoods might not work for every operation.

'You just have to do what works for you, your people and your operation.'

More information

Project SeSafe:
sesafe.com.au

Safety management systems:
amsa.gov.au/sms

Changes to EPIRB laws for domestic commercial vessels:
amsa.gov.au/float-free