Advancing a Social Licence to Operate for improved evacuation of cruise ships

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SUMMARY

The development of technologies for improved evacuations of large cruise ships necessitates a sociotechnical approach to requirements elicitation, technology development activities, and the evaluation of the solutions produced. The concept of Social Licence to Operate (SLO) offers the opportunity to address concerns around ethics, regulations and de-skilling in planning for implementation and operation. This paper outlines the approach taken in advancing this SLO.

KEYWORDS

Social Licence to Operate, Sociotechnical Systems, Maritime Safety

Approach

Evacuating a cruise ship is a rare and dramatic event but the 10th anniversary of the grounding of the *Costa Concordia* highlights the importance of reducing the time required to safely and effectively evacuate all passengers and crew. The SafePASS project is working to develop an integrated system to support the safe and timely mustering and abandonment of large passenger cruise ships during emergencies. This involves redefining the evacuation processes and developing new technologies and equipment through real-time monitoring and location support for passengers (providing optimal evacuation routes) and enhanced life-saving appliances (life jackets and lifeboats) with the overall aim of reducing the time required for ship evacuation (Boulougouris et al., 2020).

The SafePASS consortium, consists of 15 partners including a shipyard, lifesaving appliance manufacturers, a cruise operator and academic institutions, and classification societies (http://www.safepass-project.eu/). The project is adopting a hybrid approach focusing on performing sociotechnical analyses of the current (*'as is'*) evacuation process, together with the future (*'to be'*) process of evacuating ships using the SafePASS systems and components. The development of safety-critical systems and technologies, which will ultimately be used by expert crew and novice passengers, necessitates a sociotechnical approach to requirements elicitation, technology development activities, and the evaluation of the solutions produced. To this end the project is engaging with all stakeholders to advance an SLO to ensure the project has the maximum impact in making the evacuation of cruise ships safer.

Researchers gathered evidence to populate a sociotechnical model of current evacuation practice and for future practice using the SafePASS systems. In addition to documentation and procedural reviews, 46 scenario-based stakeholder interviews were conducted with crew and industry experts across a wide variety of crew roles, four workshops were convened with international passengers (incl. passengers travelling with children/family groups, the elderly, those with additional access requirements). Surveys of crew (n.876) and passengers (n.215) were administered. Interview and survey results point to 3 concerns. (1) The ethics surrounding monitoring of passenger data in nonemergency scenarios. (2) The regulatory implications relating to training and drills, and the ethics of personal data. (3) The possibility that crew would become de-skilled due to increased reliance on technologies whilst still being considered the main form of redundancy should technological systems fail.

The concept of Social Licence to Operate (SLO) offers the opportunity to address these three concerns and is being advanced as part of the implementation roadmap for the SafePASS technologies. SLOs emerged from business management theory, which explored how businesses address societal needs and values (Donaldson & Preston, 1995). Several SLO frameworks have emerged, including Thomson and Boutilier's (2011) cumulative pyramid model. This model notes four levels of an SLO, namely acquisition, acceptance, approval and psychological identification, with each level separated by legitimacy, credibility and trust. Similarly, Prno and Slocombe (2014) put forward a systems-based conceptual framework for social license development, highlighting the role of complex adaptive systems and resilience and encouraging analysis of the contextual factors impacting social license development. Increasingly the public are seeking assurances that companies are acting in line with regulations, and that benefits and gains of commercial exploits will be shared (Moffat et al., 2016). This increased pressure on business to ensure societal acceptance can be addressed through a SLO – defined as the ongoing acceptance or approval of an organisation, process or technology by those most likely to be affected by it (Thomson & Boutilier, 2011). It is a set of demands and expectations, held by stakeholders, of how a business should operate (Joyce & Thomson, 2000). SLOs ensure the social conditions are in place to support the success of a project (Thomson & Boutilier, 2011) through stakeholder engagement (Adams et al., 2021). While SLOs arose from the mining industry (Gunningham et al., 2004; Moffat et al., 2016), they have been employed across energy (Adams et al., 2021; Hall, 2014), manufacturing (Gunningham et al., 2004), agriculture (Williams & Martin, 2011), and the marine sector (Moeremans & Dooms, 2021; Voyer & van Leeuwen, 2019).

While SLOs are increasingly employed, concerns have been identified. One such concern is stakeholder group legitimacy (Brueckner & Eabrasu, 2018). When identifying stakeholders there is a need to consider who is included, excluded and who serves to gain or lose from a proposed technology (Adams et al., 2021). While local stakeholders are more likely to be directly impacted by company actions or technologies, effects may be felt by society more broadly (Dare et al., 2014). For SafePASS this means that the stakeholders (both crew and passengers) need to be populated from beyond the project consortium. This variation both within and across stakeholder groups impacts the SLO process as different groups require different approaches to foster engagement (Dare et al., 2014). Ambiguity in SLO definition is also seen as a limitation, with SLOs considered poorly conceptualised (Bice, 2014) and difficult to measure (Parsons & Lacey, 2012). As such, there is a risk that SLOs will come to mean "everything and nothing" (Moffat et al., 2016). Scepticism surrounds the use of SLO terminology by business, considered a means to quieten community opposition (Owen & Kemp, 2012). This ambiguity in definition leads to variation in operationalisation (Hall et al., 2015), further impacting legitimacy. The impact of the absence of SLO standards can be seen in the Samarco dam disaster (Demajorovic et al., 2019). In this instance, the overvaluation of the concept of an SLO (Owen & Kemp, 2013), and the lack of an objective definition or methodology may have contributed to power imbalance between stakeholders and the company (Parsons et al., 2014), leading to the disaster. Standardisation of the SLO process as a means to increase SLO legitimacy is required (Brueckner & Eabrasu, 2018). Thompson and Joyce (2006) note that communities emphasise the importance of respect, communication and fairness rather than outcome when analysing the success of a SLO. As such, flexibility, stakeholder inclusion and trust are key to effective SLO development.

For SafePASS the identified concerns from stakeholders regarding ethics/data, regulations/data, and deskilling need to be built into the SLO and the implementation roadmap. The lessons learned from the advancement of SLOs in other contexts has informed the stakeholder engagement activities in the project and expanded the reach beyond the project consortium (especially including passengers with access requirements). The SLO will ultimately inform the specification of an implementation roadmap for cruise ship operators which will account for the concerns identified and ensure that the SafePASS systems will be successfully implemented and their full potential realised in improving the safety and speed of evacuating cruise ships in emergency situations.

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