

Lessons learned in collaborative working to address rail freight safety risks

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ABSTRACT

Rail freight safety is key to delivering effective, low carbon transport. The Great Britain rail sector has identified a number of risks to address and a programme of work in order to improve safety. However, the multi-stakeholder nature of the rail freight sector in Great Britain can present challenges when addressing those risks. This paper presents a study to identify lessons learned in the execution of collaborative work to address one of those risks – establishing Common Safe Systems of Work. Seven interviews with key stakeholders in the Common Safe Systems of Work project were analysed for learning points to take forward in addressing other rail freight safety risks. 16 learning points were identified with an emphasis on effective project scoping, project governance, communications and clarifying responsibilities.

KEYWORDS

Collaboration; learning; safe systems of work; railways; freight

Introduction

Rail freight is a key function of the economy, moving bulk goods such as aggregates and fuel, intermodal containerised goods, dangerous goods such as nuclear fuel, and providing supplies and train movements for the build and repair of the railways itself. In Great Britain (GB), the total economic and social benefits of freight are valued at £2.5bn annually and removes the equivalent of 7 million heavy good vehicles from the roads (Rail Delivery Group, 2021). Therefore, the continued success and growth of rail freight is a cornerstone of transport decarbonisation, nationally and globally (e.g. UNESCAP, 2021).

Rail freight needs to be reliable. Incident-free rail freight is essential to ensure existing freight customer confidence while attracting new customers (Woodburn, 2019). Delays to freight trains can be costly, with minor incidents costing thousands of pounds in delay costs, through to accidents that might involve the loss of the freight load, damage to infrastructure or potentially weeks of disruption to both passenger and freight services (e.g. RAIB 2014, 2022). Most importantly, the carriage of freight needs to be safe. However, from a human factors perspective, freight functions such as the management of wagons in yards are one of the most under-researched areas of rail operations (Ryan et al., 2021).

The fragmentation of the GB rail sector since privatisation, and the need to remain commercially viable when operating within tight financial margins, can put pressures on safety performance. Particular pressures may come with increasing levels of on-call working and travelling to site for staff, shared use of sites by multiple operators, longer train consists that may involve complex splitting and reconstituting of trains within sidings and freight marshalling areas, and greater time pressure to deliver.

One of the challenges with addressing safety in rail freight is the number of stakeholders involved. Seven Freight Operating Companies of varying sizes work to deliver freight services. Stakeholders also include companies involved in the loading and unloading of freight trains, Network Rail (both for managing the infrastructure, and for engineering trains) and the customers of loads to be delivered. In some cases, such as freight at ports (Bowler and Basicik, 2015), operations may also be controlled the port owner and operating company. In addition, there are suppliers of wagons and wagon maintenance services (RAIB, 2022). Finally, there are organisations in the rail governance structure such as Rail Safety and Standards Board, and Office of Road and Rail. Therefore any programme of work to address freight risks must be a structured, and collaborative, effort.

The freight sector is committed to its focus on safety and has set out a number of collaborative programmes of work to improve practice. The National Freight Safety Group (NFSG) is a cross-industry group tasked with facilitating the improvement of health and safety in the rail freight industry through managing system risk (<https://www.rssb.co.uk/en/what-we-do/groups-and-committees/safety/ssrg/nfsg>). The NFSG has identified ten safety risks that require work to improve the safety and performance of the rail freight sector, including the wagon condition on the network, fatigue, trespass & Security, road risk and common safe systems of work.

One of the keys to success in managing these risks is to have effective, designated programmes of work that can facilitate successful outcomes between all collaborating stakeholders. The following paper looks at success factors for such projects, using the Common Safe Systems of Work (CSSoW) project as a case in point. The nature of the CSSoW risk is that the kind of fragmentation of the rail freight sector, described above, leads to issues with common working. Trains (and staff) may move between sites that have different ways of operating safely, leading to inconsistencies in practice and gaps in knowledge. This may lead to work being performed in an inconsistent manner, or set up expectancies that tasks may have been performed (e.g. expectations that certain checks have been performed before a train goes out on the network [RAIB, 2014]). The challenge therefore is to identify common ways of working. Reflecting the multifaceted nature of safe systems of work (Caponechhia and Wyatt, 2021) this also has to include shared and common documentation and competencies to implement common safe systems of work, across the freight sector.

The CSSoW project was already established as a programme of work at the inception of the NFSG, and was therefore breaking ground for future projects. Work to date on addressing CSSoW had highlighted a number of challenges and success, within a formal project management and governance structure. Much of this learning related to how to effectively collaborate to deliver common programmes of risk management. Therefore, lessons learned from CSSoW could help to ensure the effective delivery of projects associated with other rail freight risks, and more generally support collaborative working in the rail sector, particularly aimed at delivering the industry's Health and Safety Strategy. To identify these lessons learned, a study was implemented to capture learning from CSSoW project team representatives.

Method

Participants

Seven interviews were conducted with members of the rail freight sector involved in the CSSoW project. Participants covered senior roles within NFSG and/or those closely involved in CSSoW delivery, including the CSSoW project manager, from five different organisations. At the time of the interviews the project was nearing completion approximately two years after its inception, and all participants had been involved for either the whole, or the majority, of that time.

While no specific measure of experience was taken, all had 10+ years of experience in the rail sector, with several having acted in a number of different freight rail roles dating back to pre-privatisation in 1993. All were fully informed of the purpose of the interviews in advance.

Procedure

The interview used an un-/semi-structured format, loosely based around four stages of the CSSoW project

- 1) Scoping and definition
- 2) Engagement
- 3) Execution
- 4) Close out and implementation

After giving an overview of their background, and their role in CSSoW, participants were asked about each project stage and to give their feedback on what worked well, what could be improved, and general principles that could be applied in future projects. Interviews lasted between 45 and 90 minutes. All interviews were conducted via Teams or Zoom.

Analysis

The first two interviews were not recorded and instead used extensive contemporaneous notes. However, the density of information was such that all subsequent interviews were audio recorded, with the consent of participants. Notes were taken during these interviews but were then elaborated upon through two replays of the audio per interview.

Given the aim of the analysis was to deliver rapid feedback to NFSG, rather than an in-depth thematic analysis, the notes were reviewed by the first author and clustered under learning points. These learning points were compiled as a short report, and circulated to authors 2 and 3 for feedback, before wider circulation to all participants. The only request for change was to broaden out learning point #9 to address programme as well as project management.

Results

The analysis of interviews identified 16 learning points for effective collaborative safety projects, based on what worked well and what could have worked better during the execution of the CSSoW project. The points are summarised in Table 1. Learning points are presented below broadly in terms of the four stages of the project (scoping, engagement, execution, close-out). Overall, there was a very high degree of consensus across participants as to the learning points identified.

Learning point #1: Invest time and effort up-front in defining the aims of the project

For an endeavour such as CSSoW, it is important to invest sufficient time up-front in the project to ensure the scope of the project is well defined, and all stakeholders are aware and engaged with the aims and expectations of the project. Use of problem statements are important here to articulate the issues at hand – “What are we trying to address, what is our goal, what does good look like?” These then need to be clearly communicated to ensure everyone has agreement and support for the planned work. While this was conducted to a degree for CSSoW, additional investment would have improved the level of understanding and agreement across the project.

Learning point #2: Confirm and communicate scope with senior stakeholders

A specific concern at project outset was clear agreement and communication of the scope of the project. Critically, this needs to involve not only the core deliverable (for CSSoW this was the template that all would use to describe their systems of work) but also communicating additional supporting activities (e.g. a common IT platform, Code of Practice, competency, retraining etc.).

Table 1: Summary of lessons learned from CSSoW

1. Invest time and effort up-front in defining the aims of the project	9. Assign dedicated, independent project management resource
2. Confirm and communicate scope with senior stakeholders	10. Establish a clear governance structure
3. Calculate and communicate project benefits	11. Maximise use of milestones and other project documentation / communication
4. Seek clear agreement of contribution and responsibilities of organisations involved during the project	12. Develop short, targeted communication to front-line staff and front-line managers
5. Seek clear agreement of contribution and responsibilities of organisations involved beyond the project	13. Seek out the managed involvement of external bodies
6. Plan in all activities	14. Develop an open, transparent culture of raising risks and concerns
7. Clarify responsibilities of working group members	15. Continue to use MS Teams and remote meetings along with face-to-face
8. Sequence projects effectively	16. Build on Success of projects like CSSoW

It is also important to be clear on what might be out of scope (e.g. not tackling changes to the National Operations Publications, commonly known as the rule book). Out-of-scope activities should be recorded and potentially addressed by separate sub-groups or task-and-finish groups. Given that there will be multiple organisations, each with different levels of commitment, this scope should be communicated in a clear and concise manner to brief senior management at stakeholder organisations – for example, a single graphical PowerPoint slide that represents project scope, and benefits (see also learning points #3 and #4).

Learning point #3: Calculate and communicate project benefits

One of the challenges of safety-related projects is that they compete with other priorities in the organisations involved. Also, organisations may feel the pressure of commercial sensitivities that can impede their contribution to the project. Part of ensuring the buy-in and support of senior management is therefore to identify short-, medium- and long-term benefits of a project. Some of these may be easily quantified (e.g. savings from reducing wheelset damage on freight wagons through common processes). Others may be less tangible or more qualitative (e.g. the general benefits of collaborative working that can be carried forward from CSSoW to address other risks). Articulating these benefits can ensure early engagement and provide the basis for committing resources during and beyond the project (see learning points #4 and #5).

Learning point #4: Seek clear agreement of contribution and responsibilities of organisations involved during the project

Projects benefit from a clear statement at the outset of what is required from those involved. For CSSoW this included commitment of the organisations, for example to offer regular attendance at working group meetings. This also includes responsibilities such as for senior management to read updates from the project manager and from their own representatives in the working group. The understanding of commitment allows organisations to understand the resourcing that will be required to deliver the project, and to understand internally what is expected of them.

Learning point #5: Seek clear agreement of contribution and responsibilities of organisations involved beyond the project

The contribution and responsibilities of all organisations should also include, where feasible, an up-front understanding of the scope of work *beyond* the completion of the project. Relating to Learning Point #2, CSSoW required additional components to ensure successful delivery such as training, or IT support.

Learning point #6: Plan in all activities

Learning point #2 highlights the need to identify and scope out all the potential activities and elements of the delivery. All of these activities should be mapped to relevant milestones. Identifying and putting in plan clear milestones allows (1) all parties to know the scope of the work from the outset (2) for concerns about either the scope, or the commitments related to the scope, to be aired at the outset (3) to link these activities to clear milestones so project progress is always visible. This is common project practice, but the importance of communicating those milestones is amplified when multiple organisations are involved.

Learning point #7: Clarify responsibilities of working group members

Members of working groups need to be selected on the basis of their expertise, but also need to communicate back into their own organisations, particularly to director roles concerned with operations and safety. This communication needs to cover the progress of the project, potential actions that the organisation needs to take during the project, and potential actions and responsibilities that organisation will need to take on as part of the roll-out of the project. This clear awareness of project progress helps to ensure buy-in from individual organisation as the project proceeds. Also, as the project progresses, it may be necessary to set up sub-groups based on specific expertise, such as in CSSoW with an IT specialist sub-group to work out the IT deployment.

Learning point #8: Sequence projects effectively

As noted in point #7, projects tend to use similar resources, particularly in terms of subject matter experts participating in working groups. Most of this work is on a voluntary basis so there is a risk with multiple projects proceeding at the same time that resources become stretched, putting timely project delivery at risk. It is useful therefore to make sure projects are staged and sequenced by NFSG in such a way as to make best use of project resources and people over time.

Learning point #9: Assign dedicated, independent project management resource

The project manager is a crucial role, particularly (a) with collaborative projects where members may disperse back into their respective organisations, and then reform to discuss progress, issues and risks (b) to communicate up through the governance structure to report on progress and risks (c) where organisations are operating at different speeds and exhibiting different levels of commitment. This role should be appropriately ring-fenced in terms of time and resource, and ideally act in an independent capacity. Finally, it was identified that the management of the whole programme of addressing NFSG risks benefits from having independent programme management and oversight.

Learning point #10: Establish a clear governance structure

The involvement and active oversight of the NFSG as a strategic body is vital to give projects accountability and visibility. The NFSG can also identify blockers, risks and issues which can then been taken back into relevant organisations and addressed. Appropriate resourcing of the NFSG is therefore essential and this needs to be backed up with (a) a clear statement of the roles and responsibilities of NFSG (b) clear handover and empowerment to groups below NFSG working on

specific projects (c) clear action from the NFSG to ensure action and close-out of risks as they emerge.

Learning point #11: Maximise use of milestones and other project documentation / communication

Linked to clear planning (learning point #6) is the successful use of documentation to communicate progress. In CSSoW, the use of stage gate documentation facilitated a clear statement and agreement of when activities in the project were complete, and when the project was ready to move to the next activity. These stage gate documents can use appendices to specify details and gives working group members (a) something tangible to report back into their organisations to indicate progress (b) an opportunity for an individual or organisation that opportunity to raise concerns if they have issues.

Learning point #12: Develop short, targeted communication to front-line staff and front-line managers

While it is important to communicate value of the project to senior management, it is also necessary to communicate the aims and benefits of the project to front-line staff along with trade union consultation. This needs to be tailored to that audience – i.e. highlighting the practical and safety benefits of the change, and what it means for working practice. For example, in CSSoW, short, targeted animations have been developed that are generic and positive, so that it can then be used by every operator. Ideally this kind of communication should be generated as early as possible within the project.

Learning point #13: Seek out the managed involvement of external bodies

The involvement of external bodies at various points in the project, particularly at confirmation of key milestones, can hugely assist delivery. This can be in different ways. The involvement of the Office of Road and Rail in CSSoW assisted in giving projects the profile and re-iterate the project is a live issue that needs to be addressed. The regulator can also offer their expertise on the problem and proposed solutions. The involvement of trade unions can help to ensure that the concerns are raised at an early stage and to ensure buy-in of front-line staff. However, too much involvement of external bodies can stymie debate, so they should be involved in a structured way and only at appropriate points in the project.

Learning point #14: Develop an open, transparent culture of raising risks and concerns

NFSG member companies, whilst focused on health and safety risk, are also commercial organisations. This can lead to a reluctance to share commercially sensitive information or to work collaboratively. This reluctance can inhibit flexible and collaborative problem solving and can prevent the early raising, and management, or project risks. It is critical therefore to develop an open and collaborative culture within the project. Many of the learning points already identified can help with that – demonstrating the potential benefits of a successful project, clarifying the various channels for communication, ensuring participation at meetings, using tools for open and clear project reporting. Also, specific mechanisms can assist with open discussion, such as only taking comments via open forums.

Learning point #15: Continue to use MS Teams and remote meetings along with face-to-face

Following on from learning point #14, the use of Microsoft Teams and remote meetings required by Covid restrictions during the CSSoW project had some significant benefits, encouraging strong working group attendance and participation particularly as the project has progressed. This helps to encourage the open culture. It is also lower effort which was helpful given that availability for

working group members may be limited, and can encourage wider and more diverse participation. Therefore, once face to face meetings become more viable post-Covid, remote meeting should still play a part in projects. Nonetheless, face to face meetings do have a role at key points in the project, such as for scoping or workshopping ideas.

Learning point #16: Build on Success of projects like CSSoW

CSSoW has shown that collaborative working is possible within the highly commercial freight sector, that results can be delivered, and that learning from the project can also demonstrate a commitment to continuous improvement. In many ways, CSSoW has broken the ground for other projects going forward. Therefore it is useful to use CSSoW as an example of success (see learning point #3).

Discussion

The learning points above offer general guidance for the successful collaborative delivery of projects to address rail safety risks. While many of the learning points are examples of general good project practice (effective scoping, effective communications, clear plan, clear governance) there are a number of issues that are specific to safety, and rail safety, projects, particularly when organisations are having to work together to address common risks.

First, while it is well established that the *execution* of work has potential or perceived trade-offs with productivity and performance (e.g. Wilson et al., 2009), these interviews highlight that the *planning and integration* of safety work has to be traded-off with commercial pressures, availability of experts time, and so on. As a result, the need to successfully plan and resource the project is amplified in collaborative rail safety project and, in particular, clear, early communication of benefits at a senior level to get both buy-in and continued support for such programmes.

The work has highlighted again the importance of anticipating the needs of collaboration and the importance of the social and organisational elements of human factors programmes (Waterson and Kolose, 2010). Like Smeltink et al's (2019) work in airport ground handling, each organisation involved in the process is different with their own unique benefits that they bring to the project, and their own potential barriers.

As an additional point, it is useful in the future to grow the pool of people who participate in working groups. This is in part because time for participation is usually voluntary and therefore limited, but also because this increases the diversity of the group – for example, by including newer members of the sector who have not all come from a pre-privatisation background.

A specific lesson from safe systems of work, which is potentially applicable to other risks, is the CSSoW project has highlighted the multi-faceted nature of safe systems of work (Caponecchia & Wyatt, 2021) and the need to plan for the logistics elements – appropriate IT, the impacts on competency and so on. Moreover, it emphasises the work does not stop at the end of the project, but needs to be supported and funded into industry-wide deployment.

Conclusions

Delivering rail freight is a collaborative effort, and so is delivering the safety processes and risk management that enables rail freight delivery. This paper has taken a case study of delivering Common Safe Systems of Work to understand ways to make this delivery more effective. Ensuring sufficient up-front effort in scoping and planning the work is key, given the number of other pressures that exist in the rail freight sector. Clear communications, both to senior management and to front-line staff is critical, both at the outset and across the duration of the project. Finally, it is important to recognise and plan for the effort and commitment that is needed beyond the end of the

project to ensure successful deployment and that the full benefits of the work to address risks are achieved.

Limitations to this study are the small number of participants, though learning points and comments had become stable and consistent by the time of the final interview. What would be useful would be to compare the activities of other projects that were addressing the other NFSG risks to understand common themes. The analysis was not rigorous to the extent that it used a full thematic analysis approach but was arguably sufficient for the task at hand. An obvious limitation is that this is limited to the idiosyncrasies of the GB rail sector, and it would be useful to understand whether this learning could apply to other non-GB rail organisation, rail passenger organisation, or indeed other examples of inter-agency safety working.

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