

Workload Probe

Instructions and Guidance

Purpose of the Tool

The dynamic nature and complexity of the rail industry and signalling environments suggested the need for analytical approaches to take a broader view of the workload concept and consider the interaction of sociotechnical and information processing demands placed upon the signaller.

The Workload Probe is an analytical interview based tool that explores workload issues considered to exist within the signaller's working environment. The tool is intended to identify how and where a mismatch exists in the signaller achieving their goals in the time available and the context of their workplace. This tool does not intend to provide a redline limit to judge a signaller's workload against.

Using the Tool

Overview

An interview is completed by a human factors specialist either with an individual or a group of signallers and aims to elicit information on positive and negative experiences that influence the signaller's workload. The interview involves general questions about their workload and then systematically asks the signaller to consider a number of loading factors that have been previously recognised as influencing signaller workload. This aims to understand how certain factors i.e. signalling equipment and the timetable may come together to create a workload issue.

A voice recorder can be used to record the interview but at the very least notes should be taken. A fishbone diagram with an exploration table is provided to facilitate the documentation of why signallers believe each loading factor influences their workload.

Data obtained during the workload assessment either from observations, commentary or from other workload tools e.g. AAT, IWS, ODEC may focus the interview to consider specific issues. Alternatively data from the Workload Probe may suggest the need to collect additional data to investigate the credibility of claims made during an interview.

The Interview and Recording Process

1. Before arriving for the workload assessment

Inform the Local Operations Manager prior to the workload assessment that Interviews with a representative¹ number of staff will be required. This should allow sufficient time for the local manager to approach and arrange times when signallers are required. Practicalities and availability will determine if you are able to interview signallers individually (preferable), in twos or a group

¹ Representative refers to the signaller's experience (novice to expert) and also a sufficient number to avoid biases created by only interviewing a small number of signallers

It is useful to explain that:

- Each interview shall last no longer than an hour
- The purpose of the interview is to gather information about signallers positive and negative experiences of workload that will provide useful information to support other parts of the workload assessment
- A separate room or area where interruptions are unlikely and conversations can not be over heard is essential.

2. Before starting an interview with a signaller

- Establish a rapport with the signaller through conversation and by introducing who you are, establishing if they know why the current workload assessment is being completed and explaining the purpose of the interview.
- Establish if the signaller(s) is happy to have their interview recorded. Explain this is only for your records to assist in accurately understanding what was said on returning to your office.
- Advise signallers that recording and even the interview can be stopped at any time and any comments made will be deleted if requested.
- Outline the format of the interview and briefly show the signaller the areas that will be discussed.
- Advise the signaller that on writing the final report no signaller will be identified by name and any quotes used will retain this anonymity.

3. Interviewing

Aim

The aim of the interview is to understand how the signaller considers the workload they experience is influenced, both positively and negatively, by the type of work they complete and the contexts in which that work is completed.

Everyone is different and the skill of interviewing is to encourage the signaller to explore and provide information, or examples, to collaborate their comments. The role of the interviewer is to assist the signaller explore their perceptions of the workload they experience and remain focused to the topic being discussed.

The Interview Questions

(These are also provided as a separate document *Probe Interview Questions*)

Question 1

How long have you been a signaller and how long have you worked here?

Ask the signaller to say how long they have been a signaller for and how long they have worked at their current workplace.

Question 2

How would you describe the work generally required of you when working at this signalling workstation/signal box?

An initial warm up exercise is provided to capture the overall view of the workload currently experienced by signallers. The recording sheet provides a table to document the descriptors selected by the signaller. You can explore these further by asking and recording why they consider their work in that way. Use this to encourage the signaller to reflect on how they view their work in general.

Question 3

What in your opinion makes a shift unmanageable and unacceptable with regard to the type or amount of work required of you?

This question is intended to be open to the signaller to raise any factors they believe influential to the level of workload experienced within different shifts.

Question 4

Considering each of the loading factors represented within the fish bone diagram below...

Consider with the signaller each of the loading factors recognised as influential to signaller workload and represented within the fish bone diagram. Question to understand if any aspect of these factors should be recorded as influencing signaller workload. A description of what each factor refers to is contained within the diagram.

Each issue associated with a loading factor should be further explored to understand:

- Why/how does this influence signaller workload?
- Is there a risk to safety, performance or signaller wellbeing?
- Do signallers currently have compensatory strategies to avoid this risk and what are they?
- What if any corrective actions do signallers believe is necessary?

4. Recording information

Use the recording sheets provided in the document ***Workload Probe Recording Sheets***.

Completion of the demographic details of the interview is vital to track where, when, which signallers and which investigator completed the workload probe.

There is also space provided to record any relevant background information to the completion of the workload assessment in general or why the workload probe was used.

A table is provided to briefly record the answers received from question 2. Subsequently a number of blank tables can be printed off to record the loading factors identified from the rest of the interview questions. Finally a table to collect direct quotes from signallers is also available to highlight examples from phrases used by signallers and extracted during the transcription of recorded data. These may assist in providing credibility to conclusions drawn by the interviewer.

Obviously a voice recording of the interview provides very accurate data for later analysis or transcription.

Brief notations and use of the fishbone diagram during the interview may also be useful to direct the remainder of the interview but is also a back up should technology fail. These notes can also provide an immediate source for reflection on key workload issues that may require further investigation using other workload tools i.e. the AAT during your visit.

The fish bone diagram provided can have key issues discussed during the interview written down the lines representing the most representative loading factor. The information gained through further exploration can be recorded within the tables provided. This will provide rich information to consider when justifying why certain workload issues exist or Workload Principles were observed as absent. There are two blank boxes within the fishbone diagram to provide the interviewer with the opportunity to add additional loading factors not previously highlighted.

Data Management

Data may either be in the form of electronic voice recordings that should be stored securely and only be used for the workload assessment. These data can either be transcribed fully or used to check and verify comments during the report writing phase. Any quotes or references to signallers should retain the anonymity of the signaller who provided the information.

The fishbone diagram provides a simple recording device to document key findings about each loading factor discussed during the interview and considered as influential to signaller workload at the workplace being assessed. Two blank boxes provide the investigator with the opportunity to add, as required, additional loading factors not previously highlighted.

When reporting the findings from the Workload Probe each loading factor identified from the interview should be listed and the key findings explained. Quotes should also be included, without identifying any one signaller, to illustrate the relevance of each loading factor.

The Workload Probe should assist in judging if mismatches exist between the work (tasks, time pressures and mental demand) required by the signaller (individual capacity to complete the work) and the context (the work place and system status) that they have to complete the work in. Assessing the content of the data collected from the Workload Probe against the Workload Principles will systematically explain why certain principles are not achievable within a workplace.

All data should be reported back to Network Rail Ergonomics Team to allow for further analysis and validation of the tool. Contact emma.lowe@networkrail.co.uk.

Limitations

As an analytical interview based tool the Workload Probe is only as good as the quality of information collected. Therefore information on how to complete the interview process and record the necessary data is provided. This aims to facilitate good practice between human factors specialists completing the interviews.

As with all interview and analytical tools the data collection process and analysis of data from the Workload Probe is more time consuming than other workload tools within the toolkit. The trade off between the time required versus the richness in data obtained will be considered by those completing the workload assessment and likely to be the deciding factor on whether this tool is required.