Task analysis – Process of developing safe work method statements including regulatory and business user requirements in Australia

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1.1 Background

This study describes a task analysis of the process for the development, application and close-out processes involved with Safe Work Method Statements (SWMS) a regulatory requirement for certain types of high risk work under the WHS Act in Australia. The analysis was conducted for the Australian air traffic navigation services provider, Airservices Australia.

Airservices’ current business context is one of capital development projects for its safety systems technology and infrastructure renewal with a high number of projects involving high risk construction work to upgrade our systems and workplaces. The project activity occurs in parallel to our workers continuing to perform their normal operations to maintain navigational aides for the Australian aviation community.

The SWMS process relies on risk management information and knowledge of the job activity. SWMS documentation is a regulatory requirement in the Australian WHS legislation to provide an administrative level of risk control as it communicates risk management instructions for specific tasks in a job activity e.g. working with energised equipment or installing equipment while working at height on a radar tower.

The expectation is that workers will follow the instructions as written in the SWMS or vary the instructions on site if indicated by the local conditions to maintain desired state of risk control. SWMS as a legal requirement to protect worker’s health and safety has generated much discussion across industries, and safety professionals in Australia. Business representatives have questioned the value of the SWMS as a requirement in terms of both business effort and its contribution to safety outcomes.

At Airservices, the current process to create SWMS documents uses standardised Word templates, which are drafted, reviewed or revised and then an authority signs in either hard copy or by electronic signature. At this stage, the SWMS is part of a work package for field operatives to apply. The authorised or completed SWMS is applied as a field reference in hard copy. The organisation desires to move to electronic workflows for its risk management and worker instruction documentation and is in an early transition phase.

User feedback triggered the task analysis of the SWMS process due to concerns about excessive work effort and indications of quality issues. The analysis was part of broader system improvement program of work including investigation of options to change business tools and knowledge management systems.

1.2 Method

An ergonomist conducted the analysis with verification by selected end-users. The analysis included:

• Process mapping based on the issued instructions for how to create a SWMS (i.e. how a SWMS ‘should’ be done).
• A sample of 10 recently completed SWMS documents (authorised records) was surveyed for quality. Database repositories related to project activity were surveyed to consider what if any information was transferred from the SWMS document, analyse reasons for the redundancy and identify any quality issues.
• Consultation with representatives of the people involved in the process (the users) occurred. Users were asked to identify the roles in the process. As a larger number of people ‘touch’ the document throughout its development and application, selective interviews were held with representatives of the units who do each task step to understand ‘how the task was actually done’ and obtain estimates of effort.

Estimates of efforts from the users were tallied for the ‘drafting’ stage of the task. As this stage was an identified ‘pain point’ the analysis obtained an understanding of effort and mapped the needs, wants and desires of these users comparing this with the needs wants and desires from other stakeholders including specialist advisors.
The representative users and two management authorities with field roles in the process (who were also technical specialists) were asked to verify the findings of the task analysis through interview and exposure to the drafted report. A report was presented including the task analysis and consultation occurred with management about findings with discussion about improvement options.

1.3 Results

From interviews, users stated they had issues with:

- The increasing numbers of SWMS required to be drafted
- Perception of excessive effort - this was related to the complexity of SWMS and authorisation process
- Understanding the value of SWMS
- Recognising the validity of SWMS - this issue arose from difficulties sourcing reliable and valid information on risk and its control.

From the tasks analysis, the drafting process for a SWMS to sign off by the authority as instructed by the organisation involved seven steps and five roles across three different business groups. To provide perspective, the process to instruct those responsible (such as site managers) and workers on WHS risk management requirements and close out the job with feedback into the risk control information base as instructed (from drafting to job close out) involved thirteen tasks steps and seven roles.

Making the SWMS process more complicated was the inclusion of a risk rating step to complete the document to the instructed standard. There was a legacy rationale for this requirement. Management identified that it could now be removed due to improvements in business systems managing risk information and governance that the work activity was permitted in terms of risk tolerance and did not need a discrete risk rating for each job activity.

Other findings include:

- usability issues for the multiple roles involved;
- undesired variations leading to quality issues;
- excess effort comparing process for SWMS generated for projects application compared to those SWMS used in normal operations for similar types of work; and
- perceptions of uncertainty with risk control adequacy leading behaviour of overly detailing content for task breakdown and controls or unnecessary escalation to higher management authority for authorisation.

Positive findings included emergent solutions created by users to create efficiencies in the required process. Collaborative effort of specialists and workers was also apparent in the production of uniquely derived SWMS to suit the nature of the work in project. Risk for project work is often novel, related to the technical nature of the work installing new technology in remote Australian locations by multiple trades and parties on site.

Other issues identified relate to user expectations and perceptions of quality and value; consistent understanding of when a SWMS is required; behavioural issues to deviate from requirements or personal confidence to take responsibility for risk decisions; business rules around the separation of roles for risk assessment for activities and drafting of safe work instructions.

Options identified from discussion with management, users and advisors about what can be done to improve process efficiency, ease of use and quality of the output of the SWMS artefact is presented in an operations context. Other findings of the task analysis exposed systemic issues for obtaining feedback from field operatives about how the work was really done on the day. Worker intelligence is critical to base our system requirements in reality.

Options for improvement such as software to support electronic workflows are discussed. Proposed strategies to remove barriers to better manage risk information in a diverse organisation, and address the context of project drivers, workforce capability pressures and information technological systems facing a generational upgrade are discussed.
1.4 Conclusions and Lessons Learned

While Airservices is a medium sized organisation, its business function is complex. There are interdependencies in workflows across its business structure for roles such as specialist advisors, project planners and technical operatives working in the field. Controlled risk management systems are in place for both its air navigation services and the health and safety of its workers. Risk control process instructions are issued from a centralised function after extensive consultation with end users. The instructions are then adopted by business groups, and implemented in the field. After a determined period, the instructions are reviewed for their fitness. A quality management approach supports activity such as task analysis which rigorously looks at the reality of the user experience and desired business process.

Organisations in similar transition from paper-based documentation to electronic workflows for risk management instructions for workers may benefit from formal task analysis of their existing process (as instructed and as actually performed) before specifying requirements and outlaying money for software. The task analysis report provided a common reference for the process to be understood. The report highlighted the reality of the users and identified task steps, effort, roles and interfaces, factually and qualitatively. The identified opportunities due to the task analysis and related work program harnessed the imperative to change. Presentation of the report to stakeholders supported their leadership to address a long-standing issue. Some of the changes were cost-effective and quickly done with minimal threat to WHS outcomes. Airservices is exploring other longer term options for benefit.

By adopting the proposed process changes for the creation of SWMS, Airservices stands to regain at least 1 full time equivalent of employee effort and with other interventions in planning will be able to reduce the 300 SWMS per year in the projects context assumed to be required for legal compliance or risk management purposes.

Options to evaluate the impact of longer term benefits of adopted changes on behavioural practices and perceptions of workers will be discussed.