

Introducing SmartCap into your everyday operations often prompts a review of fatigue-related policies, the most notable being the Fitness for Work or Fitness for Duty policy. This document offers some guidance for those considering integrating SmartCap with existing processes, and provides specific examples of how other SmartCap users have done the same.

Where SmartCap Fits

The SmartCap system is intended as a decision support tool for users in the assessment of their fatigue and the related risks. As such, caution should be exercised not to treat the information provided in too prescriptive a manner, or out of context.

Change management is something that needs to be performed during the deployment of a SmartCap system. Change can be daunting for everyone and some people deal better with change than others. If your staff are well informed of the reasons and need for change the more willing they will be to accept change. With the introduction of SmartCap there is the potential for change to the Fitness for Duty policy and this needs to be well developed and clearly communicated prior to deployment. In our experience, operator acceptance is greatest in those sites where the process has been developed and well communicated to the workforce. Some example questions and processes that need to be developed are:

- What happens when I get a Level 4 alarm?
- What happens if I get multiple alarms?
- What happens with the data that is captured?
- Will I be able to work overtime if I get alarms throughout a shift?

There are a number of areas where SmartCap would typically be referenced in a Fitness for Duty policy, as follows:

Definitions

The policy should clearly define SmartCap as a decision support tool, and indicate that numerical information (fatigue levels) is recorded and provided to operators. It is useful here to include an interpretation of each level for clarity:

- Level 2:** This is a normal level of alertness, where the SmartCap is not detecting any signs of a lowered ability to resist sleep.
- Level 3:** This is a normal level of alertness, where the SmartCap is detecting the first signs of a lowered ability to resist sleep.
- Level 3+:** Suspected impairment related to fatigue
- Level 4:** Significant impairment related to fatigue, associated with an increased risk of microsleep.

Action response plan

Given the ability for SmartCap to provide alarms, there is typically one or more prescribed actions defined in the policy. An example would be to park the vehicle (fundamentally stable) at the nearest safe location following a Level 4 alarm. The response plan, sometimes referred to as a trigger action response plan (TARP), should be referenced by or included in the Fitness for Duty documentation.

Responsibilities

Clarity should be provided as to who is responsible for ensuring SmartCap is used, and also who is required to use it, typically recognising an operator's responsibility to manage their alertness throughout each shift. It is advisable to keep this information as generic as practical to avoid revisions if your SmartCap user base expands. For example, rather than indicating that "heavy mobile equipment operators" should use SmartCap, which excludes operators light vehicles, consider "operators trained in the use of SmartCap when operating equipment fitted with SmartCap". This provides flexibility for expanding your SmartCap deployment to other equipment or members of the workforce.

Keep change to a minimum

While SmartCap sites can expect to benefit from dramatic improvements in safety and reduction in fatigue related events, it is not necessary to overhaul your Fitness for Duty policy. SmartCap works most effectively in conjunction with your existing strategies, and the adoption process is often more successful if only necessary changes or additions are made.

As an example of keeping change to a minimum, one SmartCap customer simply defined a SmartCap alarm event as the equivalent of an operator self-reporting a fatigue risk (i.e. indicating the need for a break). All processes that followed remained unchanged. This approach meant that workforce and supervisor training was more straightforward, and that SmartCap would be seen by the workforce as simply "putting your hand up for you".

Responses to Alarm Events

The response to alarm events during shift is one of the most visible changes to a Fitness for Duty policy that incorporates SmartCap. This is also often the most debated change, in an attempt to find a sustainable balance between safety benefit and operational interruption. The most important thing to remember when implementing a policy is that SmartCap is a decision support tool, and is not intended to replace the driver putting their own hand up when they feel fatigued.

One of the world's largest mining companies have had great success with integrating SmartCap into their daily operations by taking the following approach to SmartCap alarms:

- First Level 4 alarm:** Operator to park at the nearest safe location, and update their "Take 5" risk review, recognising the added risk of elevated fatigue. After identifying additional controls to get through the shift safely, the operator is to contact their supervisor to confirm they have performed the required action.
- Subsequent alarms:** Operator to park at the nearest safe location, contact their supervisor and request a face-to-face fatigue assessment. Supervisors are to document the intervention, and use judgement as to the appropriate course of action. Actions arising may include returning to work, a short coffee break, or being given alternate duties for the remainder of the shift.

Note: It is not always practical to for an operator to stop work after receiving alarms. SmartCap is intended to be used in conjunction with practical interventions that are entirely dependent on the usage scenario. As an example, one company that uses SmartCap to monitor bus drivers between the site and camp has a policy that the driver pulls over to “stretch their legs” if they receive a SmartCap fatigue alarm.

Ongoing patterns of concern

If particular individuals demonstrate an ongoing struggle with fatigue management through repeated and/or numerous SmartCap fatigue alarms, it is advisable to be prepared to assist such individuals with clearly defined processes.

Based on what a number of SmartCap customers have deployed, some options to consider at different stages of ongoing concern include:

1. Completing a Fatigue Management Assessment with a Supervisor;
2. Completing a Personal Fatigue Management Plan, with a signed commitment from the operator to make genuine efforts to adhere to the plan;
3. Formally, with a Record of Conversation, informing operators of any assistance programs available through or outside your organisation;
4. Referral to relevant health professionals for assistance and/or assessment;
5. Provide allowance for paid or unpaid leave; and
6. Ensure that company Return to Work and Rehabilitation processes are clearly communicated.

Sunset Clause

If the management of ongoing patterns of concern includes keeping record of a count of events, it may prove useful to consider criteria for which the count is “reset”. Members of the workforce that at one time struggled to effectively manage fatigue tend to be discouraged by being “permanently labelled”, or forever under the scrutiny of a Performance Management Plan. One SmartCap customer included a sunset clause under which management intervention was relaxed for operators demonstrating a pattern of reduced events for one month.

Consultation & Legislation

The relevant legislation associated with operational Fitness for Duty policies vary across countries, territories and states. It is important that sites seek independent legal advice prior to changing Fitness for Duty criteria.

Whether required under legislation or not, it is important to recognise the impact on and consult with all stakeholders in the SmartCap deployment. Consultation should include operators, supervisors, union representatives and management.

Privacy Provisions

While unlikely to be specific to SmartCap, it is important to ensure that all processes associated with SmartCap data adhere to data usage and privacy policies and legislation. This may necessitate the limiting of access to SmartCap data, which should be reflected in the action plans and responsibilities identified in your Fitness for Duty policy.

When reviewing privacy policies, a commonly raised question is the classification of SmartCap with respect to medical information. For clarity, it is often useful to ensure your Fitness for Duty policy and related documents clearly outline the storage and interpretations of SmartCap data. The following text may be used:

Although EEG is used by SmartCap to estimate an individual's ability to resist sleep, **no EEG information is recorded by the SmartCap system**. Once calculations are performed, **all EEG information is discarded**. EEG information is never stored by the SmartCap system. Also, no EEG information is ever sent by Bluetooth to the SmartCap Display.

The SmartCap Fatigue Processor Card does not contain any data storage memory. Data sent from the Processor Card to the Display via Bluetooth is sent in packets which contain only the following information:

- Time
- System Status (e.g. Fatigue Level 2; Cap requires adjustment)
- Battery Level
- ID information (Headwear ID and Processor Card ID)
- System Diagnostics (Calculation status and Processor Card status)

Using non-retained EEG measurements, the SmartCap produces an estimate of an individual's ability to resist sleep, which represents an estimate of risk of unintentional microsleep. The cause of heightened or lowered ability to resist sleep is not determinable by the SmartCap tool, nor from its output.

The SmartCap information **cannot be used to determine the health or current activity of an individual** aside from a binary determination as to whether the SmartCap system itself is in use.

The SmartCap system is intended as a decision support tool for users in the assessment of fatigue-related risks in an operational environment where the ongoing resistance to sleep is safety critical.