



## Trial, Pilot or Deploy

Your options for best practice and success

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*The way in which a business assesses and adopts a fatigue monitoring technology can significantly influence the outcome in terms of workforce engagement, cultural change and meaningful safety improvements. This document provides some guidance as well as an in-depth and critical look at the options available.*

## Our recipe for success

Soon after seeing the benefits that Life by SmartCap can add to their fatigue risk management system, we see the very same request from each business we engage with – to conduct a field trial. Why? To test it out of course; or to see if it ‘fits’ with the operation; or to see if their workforce will embrace or reject the technology.

These are valid curiosities, however after a decade of successes, lessons learnt and the occasional disappointing result, we’ve discovered that the ‘trial’ may not deliver everything a business is looking for. Furthermore, a successful trial doesn’t always mean a smooth and sustainable deployment.

The SmartCap team believe that most of what a business needs to learn about a technology solution can be discovered with a desktop review, and that the first use on-site should be consistently referred to, and treated as, a **pilot**.

The difference might seem subtle, but it’s more than just a label. A trial is where you test the product, and a pilot is where you test the systems you put in place to make use of the product.

A well-planned pilot, with the appropriate workforce communications, can set up a business for future success in broader deployment while still offering the opportunity to rethink a decision before heavily investing.

Everything that follows details how we arrived at this conclusion, and why we believe that we are perfectly positioned to help make your deployment a success.



## A consistent language

The following terms are often used interchangeably, however may mean different things to different people. To avoid confusion, we distinguish each using the following definitions:

### TRIAL

A *trial* is a small-scale, time-limited use of a technology where a business is **testing the technology**. A typical trial will involve up to 10% of a fleet and/or workforce, and will have defined criteria for assessing the technology of interest.

### PILOT

A *pilot* is a small to medium-scale use of a technology that precedes a *deployment* for **testing the processes and procedures** of a business. A pilot is the first stage of a *deployment* with the primary purpose of assessing the systems to support the *deployment* on a manageable scale.

### DEPLOYMENT

A *deployment* is a **full-scale, permanent integration** of a fatigue monitoring technology into daily operations. Aside from installation and training, a *deployment* also includes the introduction of procedures to respond to risk alarms, and processes for escalated employee assistance and training.

## Why businesses trial technology

While a business may have unique motivations or desired outcomes, the most common questions being asked of the technology in a trial setting are as follows:

- Accuracy – does it work?
- Acceptance – does the workforce buy in to the initiative?
- Data – Do we have a fatigue problem?
- Results – Do we see it helping?
- We're Different – Does it work with our equipment/site?
- Reliability – Will it last and provide value for money?

These are valid questions, and each should be addressed. The question is whether a trial is the best place to assess each of these. Each of these questions is critically reviewed on the following page.

Separate to this, it is assumed that businesses typically trial a technology with the intent to deploy more broadly if the trial is successful. Depending on how the trial is communicated to the workforce, this can be problematic. During a trial, the business is showing scepticism and reluctance to commit, neither of which is inappropriate. That said, shortly after the business is communicating a total confidence in the system and requiring the workforce to adopt and embrace it, despite the recent scepticism and reluctance. Such mixed messages can be challenging to successful rollout.

## Challenging the trial motivations

The SmartCap team believe that technology trials without clear objectives and measures for success are wasteful. To provoke some critical thought, each of the motivations discussed will be challenged here.

### **ACCURACY – DOES IT WORK?**

With respect to accuracy, there is very little that can be done to assess this formally within a field trial. One approach of merit is to engage the services of academics or qualified consultants to conduct a formal study. By creating a somewhat artificial environment, however, this often impacts the user experience which likely is also being assessed.

As an alternative, sites often ask drivers/operators whether the technology measurements aligned with their own assessment. In cases where alignment is not observed, this might be due to:

- technology inaccuracy;
- that the technology is not intended to measure something aligning with “feel”;
- negative bias on the part of the operators in opposition to the initiative; and/or
- inherent inaccuracy of self-assessment.

Cases where alignment between the technology and self-assessment are achieved are not necessarily a good indicator of technology performance, because of the same self-assessment inaccuracy. Put simply, testing whether a technology performs accurately cannot be established in a small-scale trial setting. As such, sites willing to investigate technology performance should seek independent, scientific validation performed by reputable institutions, as well as contact with reference sites.

### **ACCEPTANCE – DOES THE WORKFORCE BUY-IN TO THE INITIATIVE?**

Workforce acceptance again suffers from a similar bias. Positive acceptance may indicate a favourable view of the tool, but also may be the result of:

- Perceived pressure to provide favourable feedback to management, which is more commonly observed for contract operators; or
- Laissez-faire attitudes toward safety programs.

Alternatively, negative feedback from drivers/operators may highlight genuine concerns with the tool, however may also represent a veiled protest to the initiative due to concerns of management oversight or fear of personal issues coming to light (e.g. health issues). Again, and much like accuracy, operator acceptance is an important element however is difficult to accurately gauge in a small-scale trial. Establishing good rapport with participating drivers/operators and being genuinely open to honest discussion is necessary to fairly gauge acceptance.

### **DATA- DO WE HAVE A FATIGUE PROBLEM?**

Sites looking to establish the presence or severity of fatigue risk may be able to do so in a trial setting. That said, there are factors that are likely to result in the risk being poorly estimated. Firstly, operators participating in a trial that previously haven't been exposed to fatigue monitoring technology may feel the need to change behaviour to ensure they are fit for duty during the trial. This of course has its benefits, however underestimates the quasi-steady-state, pre-existing risk. Also, if trial participation is on a voluntary basis, bias may exist as to which operators volunteer. Finally, a more poignant concern is that some sites believe that revealing a low risk during trial negates the need for the technology. All shift workers are at risk, and a combination of the dynamic nature of fatigue risk and the confounding factors mentioned above means that a small-scale sample should never be used as a standalone measure of risk.

## RESULTS – DO WE SEE IT HELPING?

This can rarely be answered in a short period. Any technology vendor that reveals a dramatic safety improvement in a time-frame of days or weeks is likely to be providing misleading information or is being purposefully selective. In-cab alarms and other interventions certainly do provide immediate benefit, however the true benefit in risk reduction is bulk behavioural change in conjunction with medical intervention where needed. Both take time, and therefore the “does this help” question should not be a factor for assessment in a trial setting; instead it can be answered from longstanding reference sites if available.

## WE’RE DIFFERENT – DOES IT WORK WITH OUR EQUIPMENT/SITE?

The position of “we’re different” is valid in some cases, but largely irrelevant to the function of the technology. This question is pertinent if the working environment impacts on the primary measure of the tool, or where PPE requirements are unique to the site or working environment. An example would be where frequent head turns are part of normal operations which may impact the ability of a fixed camera-based system to detect facial features.

In such cases, a trial is valuable, and can be conducted on a very small scale with a short time frame to establish whether the technology is practicable.

A relevant factor for many operations is whether the site layout, geographical location(s) and/or infrastructure support real-time communications for the technology. If not, it’s important to understand how a technology will fare in an ‘offline’ setting, and whether this meets the needs of the business.

## RELIABILITY – WILL IT LAST?

This is the most relevant question for a trial setting. Not all technology is robust to industrial settings, and a trial is likely to reveal this promptly. A short-term trial cannot provide valuable information regarding metrics such as mean time between failure (MTBF) or mean time to repair (MTTR), however such statistics are likely available from the vendor, and verifiable from a reference site. The SmartCap business has built excellent, long-standing relationships with customers around the globe, and can provide contact details upon request.

### How different are you?

We see similar numbers regardless of country, industry, and size of workforce. That includes levels of acceptance, fatigue risk profiles, the proportion of high-risk individuals and even the spread of preferred headwear styles!

## The desktop review

One interpretation of the previous section might be: “don’t bother trialling a technology, you can’t learn anything”. This is not the intent, however isn’t too far from the truth. A more accurate statement would be:

“While you can learn things from a field trial, much more can be learnt from reference sites and an in-depth and sceptical desktop review”

### TECHNOLOGY SELECTION

There are many technologies on the market that address the operator fatigue problem. As you wade through the plethora of claims and testimonials, you’re likely to discover that the core function of each technology can be categorised as one of the following:

- A mathematical model that forecasts when an individual will be impaired;
- A screening tool to assess an individual’s fitness for duty;
- A tool that detects the onset of an unintended sleep event (microsleep); or
- A tool the measures alertness and/or the imminent risk of an unintended sleep.

***Understanding the purpose and capability of each technology, and identifying how that purpose aligns with business objectives, is critical in the selection process.***

Another factor relevant to technology selection is the legislative environment with respect to individual privacy and data collection. As an example, some jurisdictions do not allow video recording of employees without written consent. Others require that auditable processes be in place to ensure the timely deletion of related video data upon cessation of employment by the individual. Privacy laws can also impact the choice of wearable technology, depending on whether the primary measure is both captured/recorded and is biometric in nature.

### REFERENCE SITES

When contacting a reference site, it is useful to prepare some specific questions to make clear what insights you are looking for. Examples of such questions include:

- What was the reason you decided to use this particular technology?
- Has equipment reliability been a concern? If so, to what extent?
- All things considered, are you satisfied with your technology choice?
- Has the vendor been responsive and supportive?
- What have been your greatest challenges?

### INDEPENDENT VALIDATION

We’re not all scientists, yet fatigue monitoring technologies are founded in science. Unfortunately the uncontrolled nature of field trials doesn’t allow for valid tests to assess how well a tool measures fatigue or sleep. Reference sites can provide valuable feedback, however the truest tests of accuracy are thorough, scientific validation studies.

If reviewing formal reports, it’s important to determine if the authors are truly independent of the technology vendor. In addition, it is valuable to understand the scope of the studies, and whether the tests are meaningful to your purposes. Given the technical nature of studies and reports, businesses often find value in engaging the services of a technical contractor or subject matter expert to review the available information and present their findings in a business-focussed, plainly-worded form.

## Best practice for pilots

*"It's funny how obvious and oblivious are so close!"*

### **SAFETY LEADERSHIP**

While workforce acceptance is often being assessed in a trial/pilot, it's important for a business to decide whether its management is taking a stance in safety leadership, or alternatively is asking the workforce to determine what initiatives it employs. If a desktop review and suitable reference site check proves the value of a solution, it is difficult to justify non-adoption because of limited acceptance in a pilot phase. As a more safety-focussed alternative, gaining real insight into the underlying objections or points of concern from workforce members will inform management to possible changes needed in the policies, procedures or workforce training/education required.

In our experience, the most common objection is not directly related to the product itself, but rather to misconceptions of how it is to be used. Put simply, employees and contractors may feel that the business will employ a "you're tired, you're fired" approach. In other words, the concern is that the introduction of monitoring technology will lead to discipline or dismissal for those individuals that are identified as struggling to manage fatigue. This apprehension is rarely allayed with verbal reassurance, and is significantly heightened if previous initiatives or monitoring tools have been used in such a manner.

### **PUT COMMITMENTS IN WRITING**

Given that the primary potential concern amongst drivers/operators centres on discipline and dismissal, it is important that management communicate its position on this topic in writing. We recommend a commitment stating that individuals will not be disciplined based on Life by SmartCap measurements or alarms, and that this commitment be from a senior member of the business (e.g. General Manager).

Such a commitment doesn't hinder an organisation's ability to discipline for misuse, non-use or vandalism, however clearly establishes that the primary purpose of the initiative is to improve safety.

### **GENUINE CONSULTATION**

It is imperative that all stakeholders be genuinely engaged, including workforce representatives and relevant unions. Fatigue monitoring technologies provide incredible benefit if deployed well, however also give rise to concern and distrust.

There is real value in genuine consultation. Not only can stakeholders share requirements, concerns and suggestions before business processes are written, but inclusion also facilitates a sense of combined purpose which is invaluable to organisational change.

### **DATA PRIVACY**

This should be addressed upfront, and not in response to the expression of concern or filing of a complaint. It is also important to openly communicate what information is being stored, who has access to data, and what controls are in place.

While unlikely to be specific to Life by 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 Life 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 LifeBand does not contain any permanent data storage memory. Data sent from the LifeBand to the Life 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 LifeBand 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.

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

The Life 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.

#### DEFINE SUCCESS CRITERIA

Whether trialling or piloting a technology, this should not be an arbitrary, box-ticking exercise. It is important to establish measurable criteria, and ensure the scope will allow adequate assessment of the product or the associated systems. Examples might include:

- Does the equipment function reliability in our working environment?
- Does the technology provide sufficient information to allow the business to intervene prior to incident?
- Has the training provided empowered our workforce and management to make full use of the technology?
- Has the vendor demonstrated expertise and responsiveness as expected?

#### COMMUNICATE RESULTS, DECISION AND RATIONALE

Following a trial or pilot, a business decision is made. Often participating staff are left in the dark regarding what, if any, decision was made. Communicating the results and decision rationale is good practice, and will facilitate goodwill for future initiatives.

## FATIGUE TRAINING

Technology is not a silver bullet. Pairing a technology deployment with fatigue training has several benefits, including:

- showing that the business doesn't think the product is a silver bullet;
- demonstrating a genuine intent to mitigate the risk of fatigue, as opposed to introducing more management oversight;
- providing practical suggestions for making change if the technology indicates the need for change; and
- reinforcing the need to arrive and maintain fitness for duty.

## Diving into deployment

Some businesses don't want to wait – they want to act now and deploy a technology immediately. Such an urgency can be the result of an informed management team taking a leadership stance, yet at times can be an over-reaction to a recent fatigue-related safety incident.

In either case, a rapid deployment can be accommodated. That said, we strongly advise that a staged deployment occur to provide for a first (pilot) phase to ensure that the supporting systems are suitable and scalable to the operation. The staged deployment approach can be abbreviated, with the first phase occurring alongside a full fleet installation.

Regardless of the timeframe for a deployment, it is our experience that this is a critical time to ensure frontline supervisors are engaged and supported. Though important, workforce acceptance is not the most decisive element for long-term deployment success; instead, the key seems to be supervisor acceptance.

Supervisors play a crucial role in operations, and also represent the first tier of safety leadership. If supportive of a technology initiative, supervisors have the ability to encourage adoption amongst resistant members of the workforce. Alternatively, supervisors not supportive of a technology can rapidly and irreversibly disrupt the initiative.

If policies associated with technology deployment include additional supervisor workload (e.g. face-to-face interactions with drivers/operators receiving fatigue alarms), it is important to recognize the need to find workload offsets. Alternatively, dedicated resources can be used to ensure supervisors do not become overworked.

Since behavioural change and risk reduction take time, the greatest workload is in the early days of a deployment, which is the time during which acceptance and adoption are most volatile. Deployment plans should factor this in, and should include sufficient quality engagement with supervisors to ensure success.

## Concluding Remarks

Choosing the right technology can seem difficult. The decision is made easier by clearly articulating the objectives of your business and identifying via desktop evaluation which technologies align with this. Once a decision is made, although it is tempting to go through the motions of a small-scale trial, it is our experience that little is learnt from the exercise and the long-term outcomes can be negatively impacted. Instead, a well-designed technology pilot allows you to refine your processes on a small scale while demonstrating to the workforce your confidence and surety in the technology choice.

The SmartCap team is committed to helping your business through every aspect of the pilot and deployment process, and to making your initiative a total success.