# FATIGUE AND DISTRACTION DETECTION TECHNOLOGY (FDDT)

Summary
2024

## OVERVIEW

**Note** – This document is a short summary of the Fatigue Distraction Detection Technology Good Practice Guidance Material. The full document can be found on the NHVR website at nhvr.gov.au/fatigue.

### Key areas:

1. **FDDTs detect possible fatigue and distraction events and assist with delivering better "fitness for duty" and thus safety outcomes.**
2. **The FDDT Good Practice Guidance Material (2024) is designed to provide information to assist transport companies to effectively implement and use FDDTs in their business.**
3. **A Community of Practice consisting of a forum of transport operators will meet quarterly to ensure the Guidance Material remains fit for purpose.**

### About the Guidance Material

The NHVR is seeking to work with industry and governments to improve road safety outcomes by supporting the heavy vehicle industry to adopt rapidly emerging FDDT.

The heavy vehicle industry pointed to lack of industry experience or knowledge of what good practice looks like for use of FDDT. Feedback highlighted that industry is seeking greater clarification on several key aspects, including:

- how to support an effective rollout of the technology amongst drivers and companies, and
- the regulatory responsibilities of companies responding in an effective way to FDDT alerts and data.

The Guidance is not meant to be a prescriptive, "must do", but rather is designed to provide a starting point on the good practice options to help manage challenges that might be encountered with FDDT introduction and use.

The Guidance Material includes a selection of processes and usable templates that are designed to be easily implemented in business operations. The examples provided have been adapted from transport companies who are currently using them.

Interviews with transport operators and technology providers were used to develop the Guidance Material.

The Guidance Material contains four chapters, including:

1. Deciding to Invest
2. Roll-Out
3. Set-Up and Maintenance
4. Usage and Monitoring

### What is FDDT?

Industry operators interviewed see FDDTs as a highly positive technology that when used effectively, can improve safety outcomes by reducing driver fatigue and distraction events.

The overwhelming majority of FDDTs used by those interviewed are in-vehicle cameras that monitor and analyse the driver's face to detect the signs of fatigue (e.g., eye closures) or distraction (e.g., looking away from the road) and produce an in-cabin alert to the driver. There was variation amongst industry in awareness of the responsibilities of companies in responding in an effective way to FDDT alerts and data.

An ideal outcome would see the following two steps occur when alerts are received:

**Step One:** Driver uses information in real time to make an informed decision about whether they can continue driving safely or whether other action is required. This decision is based on the circumstances, company policies and where practicable, with the support of their company.

**Step Two:** Company uses the processes it has put in place to implement realistic and transparent policies for appropriate remedial actions to support the driver with this decision making.

# CHAPTER ONE: DECIDING TO INVEST

### Key areas:

1. **The key driver identified in adopting FDDTs is the strong interest in improving safety outcomes.**
2. **Reliability and accuracy are key considerations for businesses. They may improve through trial and error during operation.**
3. **Majority of FDDT operations use alert and company response systems (alert to driver and back to company).**

### Reasons companies invest:

The companies interviewed identified three key areas as the reasons for investing in FDDT, including:

1. Improved safety outcomes: increased awareness of the need for fitness for duty throughout the shift, not just at the beginning.
2. Industry recommendation: benefits shared by industry leader or driver who has used it.
3. Customer/company requirement: a direction from head office or a contract requirement.

### Effectiveness and reliability:

The effectiveness and reliability of the technology are main factors transport companies considered when making their purchasing decisions.

While there are issues with false alerts, operators believe the safety benefits of FDDT far outweigh this and the reliability of the technology is rapidly improving through trial and error during actual operation, including reducing false positive and negative alerts (i.e., when the device allegedly does not provide an accurate alert; see Chapter Four).

As the technology evolves, technology vendors should provide more information on their devices, including how their FDDT has been proven to be effective.

### What type of driving suits the use of FDDTs?

The majority of transport companies interviewed use FDDT for long linehaul tasks to better manage individual driver fatigue safety risks.

Some companies are undertaking trials looking at how relevant fatigue detection is in short distance driving. Some stakeholders have indicated that local work distraction incidents are more frequent during this type of work due to the nature of tasks undertaken i.e., constant mirror and other checks around the vehicle.

Most companies report that FDDT distraction alerts are approximately four times more frequent than fatigue alerts.

### What types of FDDT are available?

The majority of FDDT options use alert and company response systems (i.e., information is provided to the driver and back to the company). Some FDDTs allow for continual recording, whereas others only trigger a report and alert if a fatigue or distraction event happens (see Roll-Out section for further information).

Some technology companies are extending the capabilities of existing in-truck technology to include fatigue and/or distraction detection as well as other vehicle and driver performance functions.

### What type of cost and additional workload is involved?

The transport companies interviewed generally didn't identify cost as a major influencing factor. The savings from avoiding and reducing the risk of incidents and crashes far outweighs the costs.

The key costs associated with the FDDT include:

- Capital outlay (purchase of the equipment)
- Ongoing running costs (usually monthly fee)
- Maintenance capability (in house or third party)
- Off road time costs for maintenance
- Staff engagement and ongoing training and coaching for both drivers and leaders.
- The workload for administrative and/or supervisory staff.

Some FDDT vendors offer support services such as monitoring, communicating with drivers and trend analysis.

## CHAPTER TWO: ROLL-OUT

### Key areas:

1. **The shared responsibility concept (between company and driver) was recognized as the most critical feature in successful implementation of FDDT in a company.**
2. **Fitness-for-duty policies and procedures should explicitly empower a driver to stop driving if they reasonably believe it is unsafe to continue.**
3. **A staged roll-out approach results in more successful implementation of FDDTs.**

### Shared Responsibility Framework

The transport companies interviewed stressed the importance of putting effort in upfront to undertake meaningful driver consultation that includes building an understanding of the technology and its shared use and benefits for drivers

A successful shared responsibility framework would see companies actively partnering with drivers in the whole FDDT journey, and would ensure drivers are aware of the need to be fit for duty (i.e. not fatigued) throughout the shift including learning to identify any unsafe behaviours and take corrective actions.

Improving driver awareness of the possible signs of fatigue and distraction is seen as being critically important so they avoid receiving alerts and are therefore operating more safely. There are many cases of drivers who initially doubt the effectiveness of FDDTs but, are later surprised by footage showing them being woken from microsleep, which saves their life.

Company feedback shows that most FDDT incidents can be addressed in partnership with drivers who are not usually aware of the possible unsafe habit with very few requiring disciplinary action.

Refer to Figure 1. Shared responsibility Framework for more information.

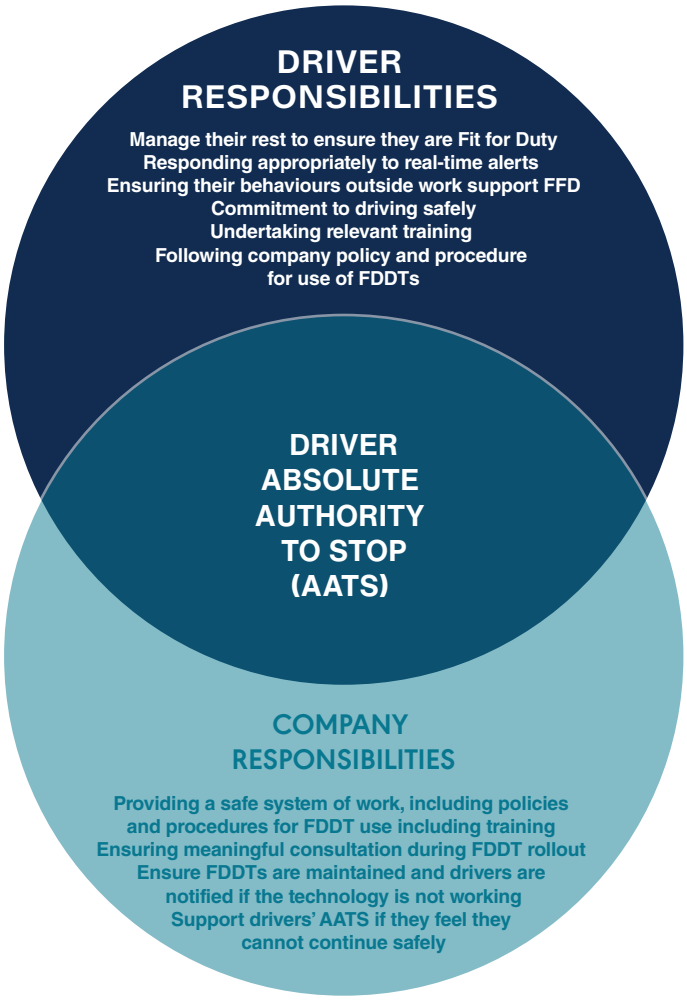



**Figure 1**. Shared Responsibility Framework

### Absolute Authority to Stop

To ensure successful use of FDDTs, drivers must feel and understand that they are empowered to exercise their absolute authority to stop driving if unsafe to continue for any reason including fatigue.

### Staged Roll-Out Approach:

Based on industry feedback, companies have more successful implementation of FDDTs in their business when they adopt a series of steps focused on consultation, training and education, addressing data and privacy and pilots.

A suggested roll-out approach is provided in Table 1, a more detailed version is provided in the full document.

### EXAMPLE TEMPLATES:

Example templates to support the effective roll-out of FDDTs are provided in the full report at nhvr.gov.au/fatigue.

The examples include:

- Driver FDDT Monitoring Policy
- Driver FDDT Data, Privacy and Confidentiality Policy
- Shared Responsibility Framework Policy

## Table 1. Staged roll-out approach

| Step | Action | Description |
|---|---|---|
| 01 | Consultation prior to implementation | Commence consultation prior to FDDT implementation process to allow enough time for workers to provide input into the decision-making process including the implementation, and usage of FDDT.<br>According to participants, the value of good, effective, and early meaningful consultation with drivers cannot be overstated in a successful FDDT implementation journey. Meaningful consultation before FDDT implementation increases the likelihood that drivers will better understand and support FDDT use.<br>In this sense, communication and consultation are different. The former is when workers are told about changes (like implementing FDDT). On the other hand, consultation is an active process where workers are involved and encouraged to give meaningful feedback before and during the process.<br>Extended consultation periods have been associated with improved uptake and acceptance, particularly among drivers.<br>***Refer to shared responsibility framework policy (pg 14 FDDT good practice guidance material).*** |
| 02 | Data, Privacy and Confidentiality | Data privacy has been identified by companies as being very important to drivers. Every company interviewed indicated that drivers had raised this issue, and that there were beliefs that the technology would be used as 'Big Brother.'<br>Data privacy is particularly important when the data produced is identifiable (e.g., video footage of the driver's face). Companies outlined that their procedures clearly state that this data is limited to key staff and is not shared without permission from the driver unless required to do so legally (e.g., at police request).<br>Industry feedback strongly suggests that specifically targeting data privacy and surveillance issues during the consultation process results in improved driver uptake and acceptance.<br>Good practice could include clearly describing what data will be collected, who will have access to the data, whether data will be continually collected, and what level of 'surveillance' there will be in the cab (i.e., can a supervisor log in and 'see' the driver at any time, or does the technology only record when an alert is triggered).<br>***Refer to data, privacy and confidentiality policy template. Companies will need to amend the template as required to ensure it meets confidentiality, privacy and workplace surveillance obligations (pg 13 FDDT good practice guidance material).*** |
| 03 | Training and Education | Training, education, and ongoing coaching is important to ensure drivers and others understand the technology and are on board with its use. The amount required depends on how complex it is, how much drivers need to directly interact with it, and what processes and procedures are needed. For example, if drivers must set up and connect the device when they drive, the training might be more extensive.<br>Training should be provided to drivers and other stakeholders a) when FDDT is implemented, and b) during induction for new drivers and other users. Training will also be required for leaders (e.g., safety managers, data-users) who interact with FDDT as part of their role. Some technology providers supply training material or undertake training activities.<br>Training and education could include:<br>• Training and education on the benefits and use etc. for drivers and others (e.g. supervisors, managers, executives, directors, drivers' family members[1]).<br>• Technological capabilities (i.e., what the system can and cannot do).<br>• Reason/s for company investment in FDDT as outlined above.<br>• Potential safety outcomes. |
| 04 | Introduce FDDT in stages as a pilot | Interview participants strongly recommend the introduction of FDDT in stages. This might mean trying it out with a small group of drivers as a pilot before broader introduction.<br>Drivers who have tried FDDT during this phase are reported to be overwhelmingly positive about it and encourage others to use it. It is also helpful to identify 'champions' – supporters who can help address any concerns from other drivers while supporting the wider implementation. |
| 05 | Consultation during implementation | Giving drivers and other stakeholders the opportunity to provide feedback during the roll out process can establish trust in FDDT and encourage drivers to use it properly. This process may include informal and formal feedback, such as 1-1 conversations, anonymous written feedback, forums, having an open-door policy, team check-ins, and information provided to health and safety representatives. |
| 06 | Ongoing consultation post implementation | Ideally, drivers would be able to provide feedback on how FDDT is being used in an ongoing way – beyond the formal consultation and implementation period. This could be done formally or informally.<br>***Refer to monitoring policy (pg 12 FDDT good practice guidance material).*** |
| 07 | Advise clients of FDDT | Under the current Chain of Responsibility (CoR) framework, responsibility for safety extends beyond the driver and includes parties across the supply chain. This means drivers, companies, and clients share responsibility for managing fatigue. Because of the CoR framework, some clients now require contractors to install and use FDDT to undertake contracts.<br>These guidelines offer a chance for companies and clients to agree on FDDT use. Clients can be given these guidelines to assist building understanding of the systems in place and the possible results of using FDDT.<br>For example, clients may need to be aware and accept potential delays if driver fatigue is identified by FDDT. Companies may choose to specify that certain delays are 'safety delays' – which may occur when responding to information provided by FDDT. If you use sub-contractors, you could do the same thing (i.e., ensure that they align with these guidelines for how they use FDDT). |

1 Some companies report that having support and buy-in from family members can be highly effective in promoting support for FDDT use in drivers.

# CHAPTER THREE: SET-UP AND MAINTENANCE

### Key areas:

1. **FDDT should ideally be set-up to fit all or the majority of drivers.**
2. **Ongoing support and maintenance is required for FDDT and availability of vendor support should be considered.**
3. **Calibration and checking of FDDT should be undertaken as part of pre-start checks.**

### How should I set-up my FDDT?

Industry stakeholders generally indicated that transport companies are responsible for managing and maintaining their FDDT. This must be done in accordance with manufacturer's specifications.

Where possible, FDDTs would ideally either be set up to fit all (or the majority of) drivers or should be easy to adapt to new drivers if vehicles are shared.

To avoid technical problems while driving, pre-start procedures (by a driver, in addition to at an organisation level) should be used to check that the FDDT is working and that the FDDT is properly set up for the driver.

### How should I calibrate FDDT alert settings?

Many FDDTs identify fatigue based on the number of seconds a driver is not looking at the road. Based on feedback, it would be unusual for FDDT detection settings to be:

**>2.5 seconds for eyes closed alerts**

**>4 seconds for eyes off road alerts**

**<25km/h for technology activation.**

Depending on the technology, companies may have the capacity to select the number of seconds after which an alert occurs.

### How will I maintain my FDDT?

Transport companies indicated that maintaining an FDDT system requires ongoing support and resourcing either from within your company or via external sources. Ongoing vendor support is necessary for some FDDT systems, either for operational use or for maintenance. Companies should consider technical support and maintenance availability in regional and remote areas, particularly if vendor technicians are needed. If you can, an option is to haveyour company's technicians trained to handle the installation and maintenance of FDDT.

### What if my FDDT stops working?

Overall, companies reported few maintenance issues with their FDDT, however calibration and checking processes need to be followed.

Some FDDTs do not indicate to a driver whether the FDDT is working. Driving with a non-functional FDDT can introduce additional uncontrolled safety risk, particularly if the driver does not know that the technology is not working. Drivers should manage their fatigue and not wait for FDDT to alert them.

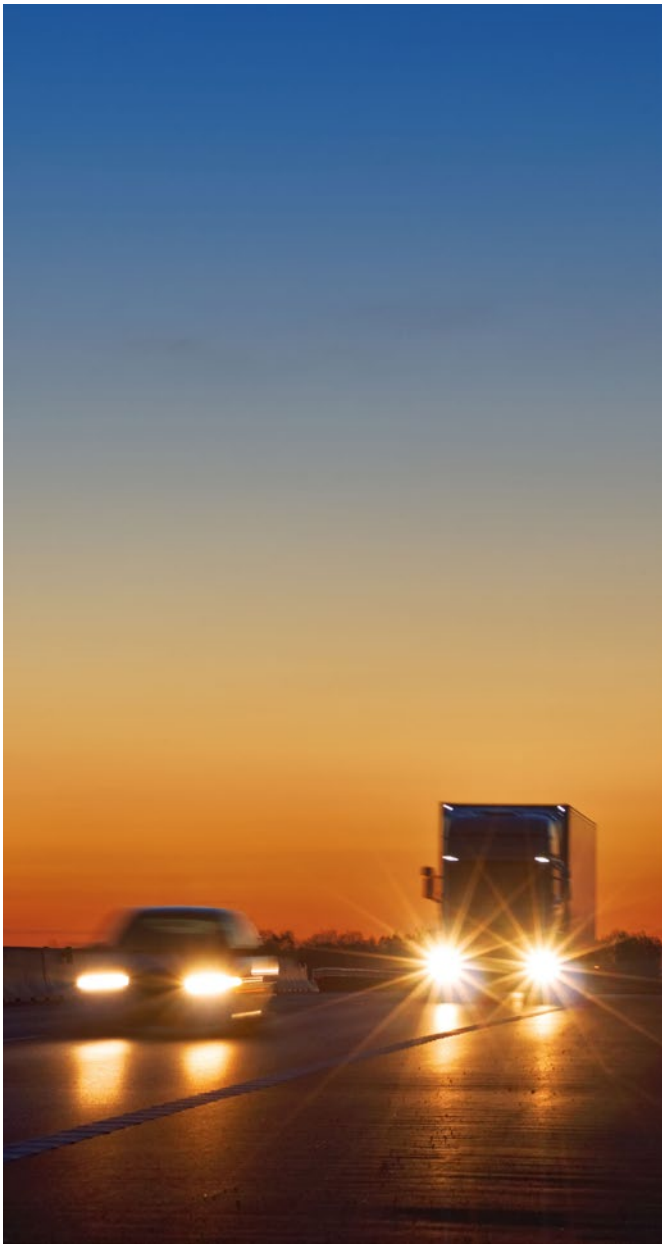
### What should I do if a FDDT device isn't working?

1. Understand how your FDDT reports problems or how drivers or management can identify them in a timely way.
2. Tell the driver as soon as possible that their FDDT is not working and drivers should tell operator
3. Implement additional risk controls if necessary for that trip.
4. Ensure that you book the device in for maintenance as soon as is reasonably practicable.
5. Ensure that the FDDT is repaired within a reasonable timeframe. What is reasonable will depend on your geographic location and the availability of your technician.

### EXAMPLE TEMPLATES:

Example templates to support set-up and maintenance are provided in the full report at www.nhvr.gov.au/fddt.
The examples include:

- FDDT Installation checklist



# CHAPTER FOUR: USAGE AND MONITORING

### Key areas:

1. **The approaches used to respond to FDDT alerts should be documented, no matter how simple.**
2. **False positive and negative alerts may occur and should be addressed.**
3. **Fatigue and distraction safety risks should be assessed following FDDT alerts.**

### Is there a difference between fatigue and distraction alerts?

FDDT is generally designed to detect both fatigue and distraction. It is important to differentiate between fatigue and distraction alerts. This is because the way a driver and company will respond to each type of alert will likely be different. It is worth noting that distraction is now the most frequent driver-related cause of serious incidents on road.

Most FDDTs can change the type of alert based on whether it has detected fatigue or distraction.

### Responding to alerts

Transport companies use both informal and formalised approaches to monitoring and responding to FDDT alerts. Approaches should be documented, no matter how simple they are.

Ideally, FDDT would be used to help drivers to make better decisions about when they are able to drive safely or need to rest, and to be empowered to make this decision with the support of their company.

Companies will use systems where a driver and/or company can use the information provided to them by the FDDT system to make an informed decision about additional controls needed or to stop driving.

### Assessing risk when alert is triggered

When responding to an FDDT alert, it is important to assess the driver's fatigue and distraction safety risk. This decision, made by the driver and/or company, would ideally be based on the FDDT alert as well as other information i.e. driver's prior work history and how much sleep they have had and how long ago.

Distraction alerts, while may seem a less immediate risk than fatigue, also contribute to risk because the driver is not focusing on the road.

Fatigue alerts generally indicate that the driver is at an increased likelihood of being fatigued and as a result, generally warrant an immediate response.

### Managing false alerts:

Companies reported that FDDT will alert in line with its settings, and this is sometimes referred to as false positive alerts. What a driver or company sees as a false positive might not be the same as what a vendor considers it to be. All alerts should be assessed to see if a problem exists.

False negatives occur when the driver is experiencing fatigue, but the FDDT does not detect it. False negatives are generally caused by a driver not displaying characteristics signs of fatigue, or the technology is not working. Drivers should be encouraged to report when they have experienced fatigue but the device hasn't detected it.

### Legal implications of installing FDDT?

An improved understanding of legal obligations regarding FDDT use is needed. While there have not been many legal cases, companies may consider:

- The possibility that FDDT data might be used by enforcement and/or regulatory agencies.
- Show that reasonable steps have been taken in how well it fits into your company and how you use it including policy and procedures.
- Ensure equipment has been implemented correctly, appropriately maintained, and that alerts and faults are being responded to in a reasonable manner.

### EXAMPLE TEMPLATES:

Example templates to support usage and monitoring are provided in the full report at www.nhvr.gov.au/fddt. The examples include:

- 5 (a) Responding to alerts - Supervisor response model
- 5 (b) Responding to alerts - Supervisor response model
- 5 (c) Responding to alerts - no supervisor monitoring
- 6 (a) Fatigue risk assessment - with post event review
- 6 (b) Fatigue risk assessment
- 6 (c) Fatigue risk assessment
- 7 Pre-Start Fitness for Duty
- 8 (a) Standard Operating Procedures - Fatigue alerts
- 8 (b) Standard Operating Procedures - Distraction alerts
- 9 (a) Driver Discussion Summary - Fatigue alerts
- 9 (b) Driver Discussion Summary - Distraction alerts
- 10 Fatigue incident report