



GPS and TELEMATICS SYSTEMS

A GUIDE FOR ROAD TRANSPORT INDUSTRY USERS AND VENDORS

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Summary

GPS and telematics systems have broad operational management and compliance monitoring uses.

They are delivering numerous benefits to the road transport industry, but there are issues that transport operators should consider carefully when adopting GPS and telematics systems.

Some of these issues have been highlighted in recent significant cases that have gone to court.

The road transport industry was surveyed to ascertain its use and experiences in procuring, using and maintaining GPS and telematics systems.

The survey has informed the production of this guide, aimed at assisting the road transport industry in its procurement and use of GPS and telematics systems, and vendors selling and maintaining such systems for the industry.

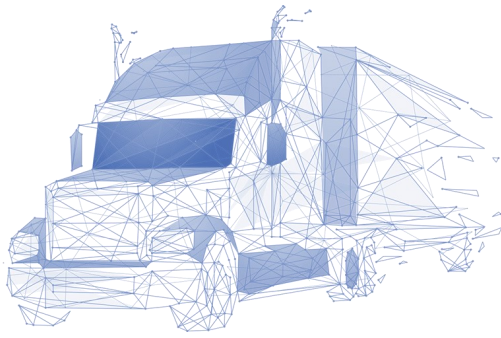
The survey respondents (transport operators) were very optimistic about operational management applications, with 79% also noting benefits in their compliance monitoring uses. However, they also expressed dissatisfaction with how suitable some GPS and telematics systems are for more demanding compliance monitoring tasks.

GPS and telematics systems are not all the same, and transport operators carry risks if the chosen system is not sufficiently reliable and accurate, but also in how their collected data is stored and accessed by others.

If you are considering using GPS and telematics systems in your road transport operations, a way to mitigate these risks is to:

1. Thoroughly assess why you want to use GPS and telematics systems, identifying explicitly the intended applications and your operational environment (existing systems and business processes).
2. Document your needs and engage with vendors to match your needs with the vendor systems' capability and capacity.
3. Agree with the preferred vendor on the training, ongoing technical and customer support that you require.
4. Ensure you fully understand all the costs for the life of the system and services.
5. Understand and agree on what telematics data is actually collected (not simply what data you are using), where it is being stored (including for how long) and who has or might be given access to this data, including recognising enforcement agencies' access post-incident.
6. Consider using GPS and telematics systems certified in Australia to ensure levels of accuracy and reliability that meet your needs without exposing your business to the risk of enforcement agencies' possible erroneous analysis of less accurate and unreliable systems and data.

The guidance for vendors comes directly from their road transport industry customers, with the hope that they will accept the challenge to improve in these areas.



Purpose of the Guide

This guide has been developed as a jointly funded project between the South Australian Road Transport Association and the Australian Trucking Association, working with Mr. Chris Koniditsiotis, Advisor and Consultant (Chris K Phronesis).

We surveyed the road transport industry to ascertain their use and experiences in procuring, using and maintaining GPS and telematics systems.

This cooperative work has led to the production of this guide, aimed at assisting the road transport industry in its procurement and use of GPS and telematics systems, and vendors selling and maintaining such systems for the industry.

The creation of this guide has been made possible by the inputs from transport operators using GPS and telematics systems, that is, the voice of the industry.

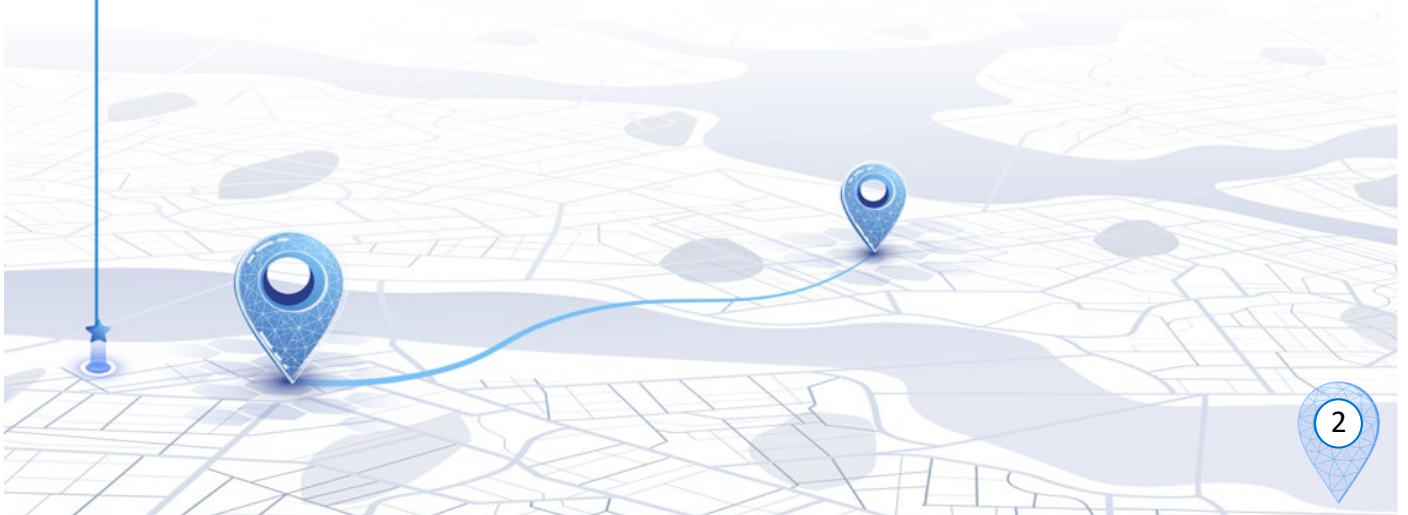
The guide contains:

- **Survey Findings**
- **Transport Operator Quotes**
- **Direct Guidance.**

Box 1 *Survey findings - survey details*

The survey represents an excellent cross-section of road transport operators, from owner-drivers to those with between five and 30 vehicles, as well as those with more than 130 to over 300 vehicles.

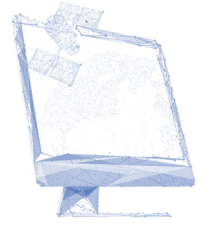
Approximately 40 per cent of the respondents operate within a single state, while 60 per cent have multi-jurisdictional or national operations.



The Broad Use of GPS and Telematics

GPS and telematics systems are now an integral part of the road transport industry.

What was once an emerging tool for large transport fleets has now been embraced by the industry, delivering a broad spectrum of applications and services.



The road transport industry's adoption and experience with GPS and telematics systems has significantly matured. Thirty years ago, larger fleet operators began adopting such systems from vendors to track and trace their heavy vehicle assets. Twenty years ago, Transport Certification Australia (TCA) was established, setting a technical standard for such systems and their providers to meet regulatory applications. Industry used such TCA type-approved and certified systems when seeking regulatory benefits.

Today, the broader industry has experience in GPS and telematics systems, including owner drivers and larger operators. Operators have matured their operations, leading to the upgrading of their systems existing systems or the procurement of new systems to meet their emerging needs. Furthermore, the survey found that over two thirds now use TCA type-approved or certified systems, irrespective of whether they need to benefit from a regulatory application.

Box 2 Survey findings – experience of transport operators

The transport operators had a significant level of experience in using GPS and telematics systems:

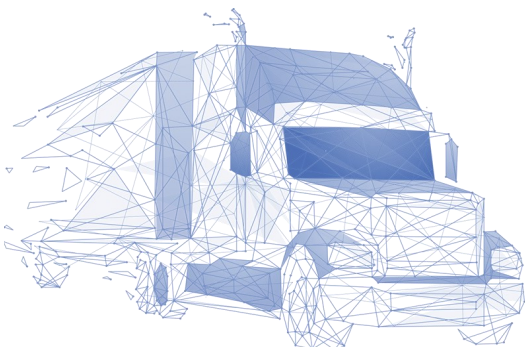
- Experience with 18 different systems, with approximately 70 per cent of transport operators having used at least two GPS and telematics systems
- Approximately 90% had at least three years of operational experience, while 65% had more than five years of operational experience
- 68% used Transport Certification Australia (TCA) type-approved or certified systems.

Box 3 Transport operator quote—use of GPS and telematics systems

'As a business owner it's a vital part of our operation. We have millions of dollars out there on the road every day, we hope our equipment is being looked after properly. On the other hand if something happens to our drivers, we want to support them as much as we possibly can, especially when a car see's an over-size load coming straight towards them or a car has to pass the truck, and they have no spatial awareness of how big we actually are. As an admin person it's also a vital part of our operation. I think it's a big part of the transport industry, old drivers need to embrace it as were not going back to "the good old days"

Box 4 Transport operator quote - use of GPS and telematics systems

'We have been using telematics for over 15 years - accuracy & reliability have improved greatly in that time - hopefully it will keep improving'





GPS and Telematics Services and Applications

Road transport operators use GPS and telematics systems for operational management and compliance monitoring purposes.

Transport operators were very optimistic about operational management applications, with 79% also noting benefits in their compliance monitoring uses. However, they also expressed dissatisfaction with how suitable some GPS and telematics systems are for more demanding compliance monitoring tasks.

GPS and telematics systems are not all the same. While the GPS satellite signals may be of the highest accuracy and quality, how these signals are received, processed, used and reported differ from one system to another. This is not surprising, as any technology is ultimately linked to its intended purpose. GPS and telematics systems are no exception; the transport industry is immersed in a variety of systems, making it critical to match the right one to deliver the operational management and/or compliance monitoring applications.

Box 5 *Survey findings – transport operator operational and compliance applications*

Transport operator identified operational management applications:

- *In-vehicle management and system reporting*
- *Aiding in protecting businesses and drivers against alleged offences*
- *Vehicle odometer for maintenance tracking*
- *Review of data for payroll purposes*
- *Knowing where the heavy vehicle and trailer(s) are for planning purposes (including driving plans)*
- *Verifying locations in transit (for customer notification)*
- *Use for the welfare of drivers*
- *Location of equipment (used to see where assets are at any given time)*
- *Refrigeration monitoring and reporting.*

Transport operator identified compliance monitoring applications:

- *Speed alerts linked to fatigue Issues*
- *Geofence speed in hot spots (e.g. monitor driver behavior around speed compliance running off hills)*
- *Compliance review of data for route compliance*
- *Fatigue Reporting - speed detection, rest breaks, tracking routes, driving hours, driver fatigue compliance, driver fatigue fit for duty,*
- *Cross-reference work diary entries for authenticity (e.g. check short rest breaks that are less than the 15 minutes recorded on work diary, use the analysis to assist with checks that scheduling is on point, check fueling not being recorded as a rest break)*
- *Permit compliance management*
- *Driver speed alerts*
- *Mass management and weight compliance*
- *Tracking of vehicle movements - route compliance*
- *Monitoring and stamping out mobile phone use (i.e. distraction monitoring).*

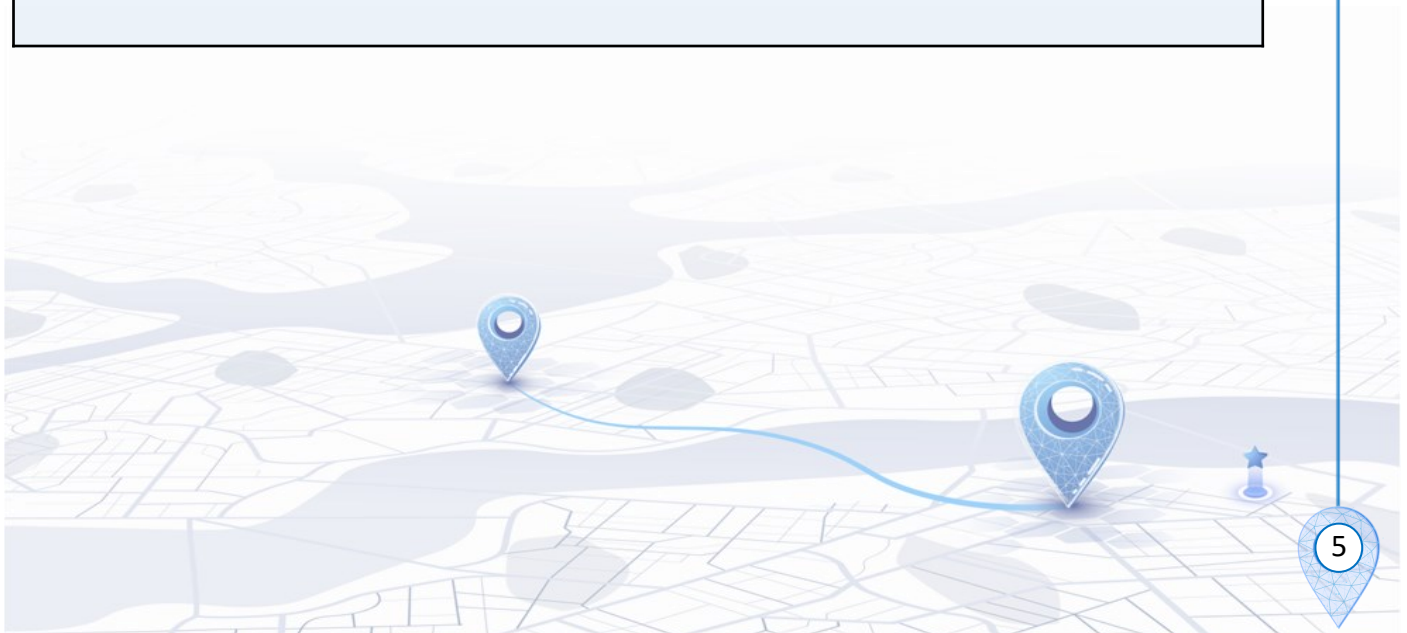
Box 6 Transport operator quote - experience with GPS and telematics systems

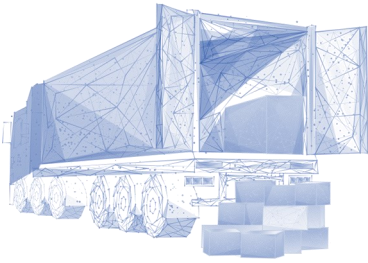
'We can see exactly where that truck was/is at a particular time of the day. We can see if the driver is still loading or if he has no phone service (or can't use a phone) we can see where he is. We also use it for Insurance purposes, to prove our truck was or was not in the vicinity at the time. We can also see how many times our drivers stop during the day, in a good or bad way, or suggest an alternate route next time they travel. We also have geofence sites set at a few locations. We use ours all the time, it's a big part of our small operation.'

Box 7 Survey findings - observations concerning compliance monitoring applications

Transport operator observations concerning compliance monitoring applications and use:

- GPS is more of an operational tool
- Problems with time zone determination, especially in South Australia and Western Australia (and their transitions)
- Only use a certified system, as others do not produce the reporting required
- Accuracy depends on what GPS polling intervals are set, and they need to be linked to the compliance monitoring requirements
- Speed monitoring cannot always be relied on
- Basic cross-checking is undertaken, but at times this is not good enough
- While 68% of transport operators who have drivers with written National Work Diaries, cross-check them against their GPS and telematics systems, only half found that their systems were sufficiently accurate
- Some systems are not suitable for compliance checking – 'I use a certified system where the vendor is very strict with its guidelines around installation and associated operational reporting'
- Do not have any form of GPS in the truck (including the one that comes with the truck) without a certified GPS designed for compliance also installed.



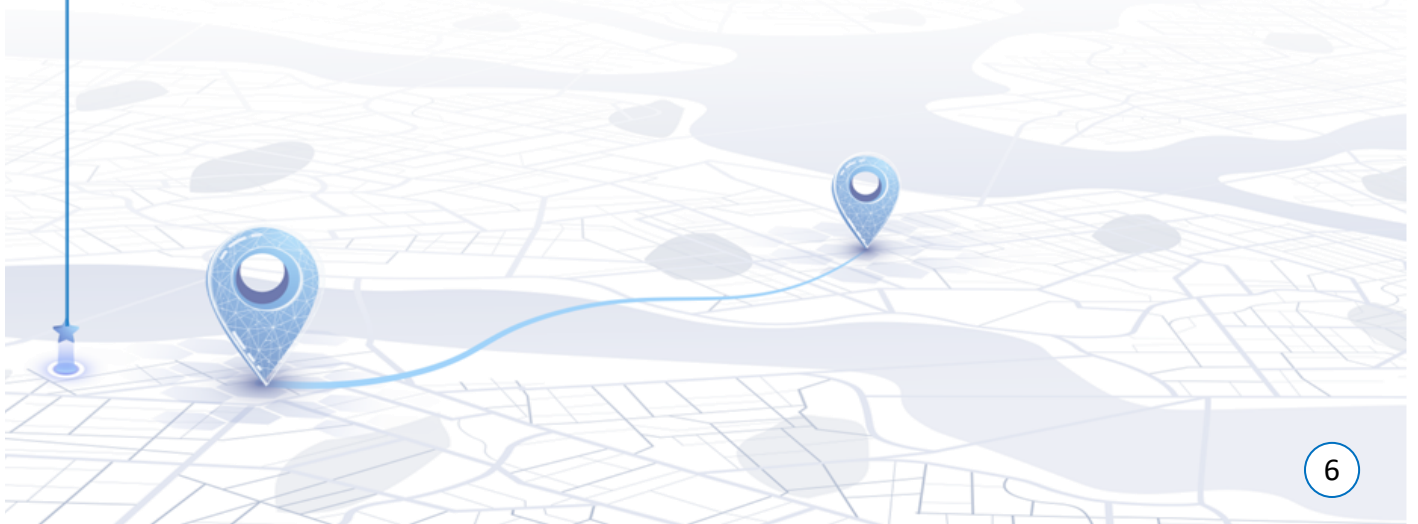


Box 8 **Transport operator quote - experience with GPS and telematics systems**

'It's a real concern how police are now using GPS for enforcement, and from what I've read they are getting it badly wrong. I'm thinking of pulling my telematics out of my trucks'

Road transport operators need to ensure the chosen GPS and telematics system is fit for their intended purpose, including:

- Thoroughly assessing why they want to use GPS and telematics systems, identifying explicitly the intended operational management and/or compliance monitoring applications and services.
- What products and services are they buying (that is, what is included and not included)?
- When is telematics data actually collected (i.e. is it collected from when the heavy vehicle is turned on, when it is only moving, or continuously)?
- What is the telematics data polling frequency, and how may this impact the system and operational management and compliance monitoring applications and services?
- Understanding what telematics data is actually collected (not simply what data they are using), but what additional data is collected, where it is being stored (including for how long) and who has or might be given access to this data.
- Understanding what reports will be provided, ensuring they match and deliver to the required operational management and compliance monitoring applications. For example, ensuring a national work diary cross-checking application is accurate, including reporting that reflects the driver's home base time.
- Understanding their existing operational environment and the applicable compatibility and interoperability issues that they must address to ensure successful integration with their existing systems and business processes.
- Considering using systems certified in Australia by TCA to ensure levels of accuracy and reliability that meet their needs, thereby avoiding the risk of enforcement agencies' possible erroneous analysis of less accurate and unreliable systems and data.



Transport Operator Procurement Experiences with Vendors



Transport operators shared their experiences with the procurement of their GPS and telematics systems. Key experiences were not so much about what they knew or were informed of, but rather what they were unaware of at the time of purchase.

Box 9 Survey findings – transport operator procurement experiences

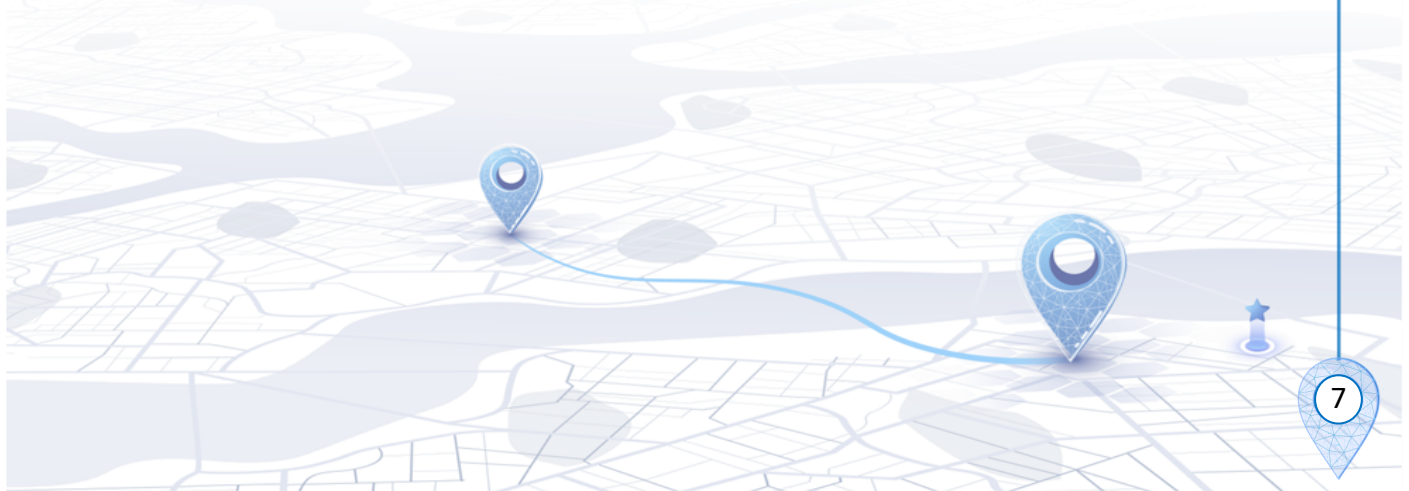
Transport operators advised that when they purchased their GPS and telematics system, they were not aware of some issues.

The responses and their rating are as follows (operators could choose more than one issue):

- *Whether records of GPS and telematics will be provided to authorities, and under what circumstances* **63%**
- *What additional reports were available to the transport operator or other parties (like Authorities)* **47%**
- *What routine reports were available* **47%**
- *Any limitations on the system ability to provide accurate location and time data* **32%**
- *What initiates the start and end of a recording period (i.e. does it record from when the vehicle is turned on, when it is moving or all the time)* **21%**

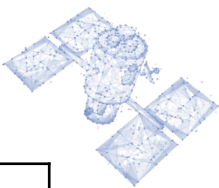
Transport operators need to ensure they have an appreciation of pricing, including:

- Recognising that GPS and telematics systems and associated services may involve a vendor and multiple providers. Understanding who is selling the systems, who developed or manufactured it, who will install and repair it and who provides the application services and reports.
- Understanding the cost implications of having multiple GPS and telematics system types, including a lack of integration and interoperability between these systems and their existing systems and business processes, plus the possible impact on operational growth.
- Understanding all the costs for the life of the GPS and telematics systems and associated services, including:
 - ◇ Procurement cost of systems, the cost of the monitoring and the individual applications, including lock-in periods and exit clauses
 - ◇ Costs associated with installation, uninstallation and reinstallation when heavy vehicles are traded and upgraded
 - ◇ Ongoing costs of communications connectivity (i.e. SIM card, satellite) and ensuring the right plan is set for each operation.



Transport Operator Operational Experiences with Vendors and Systems

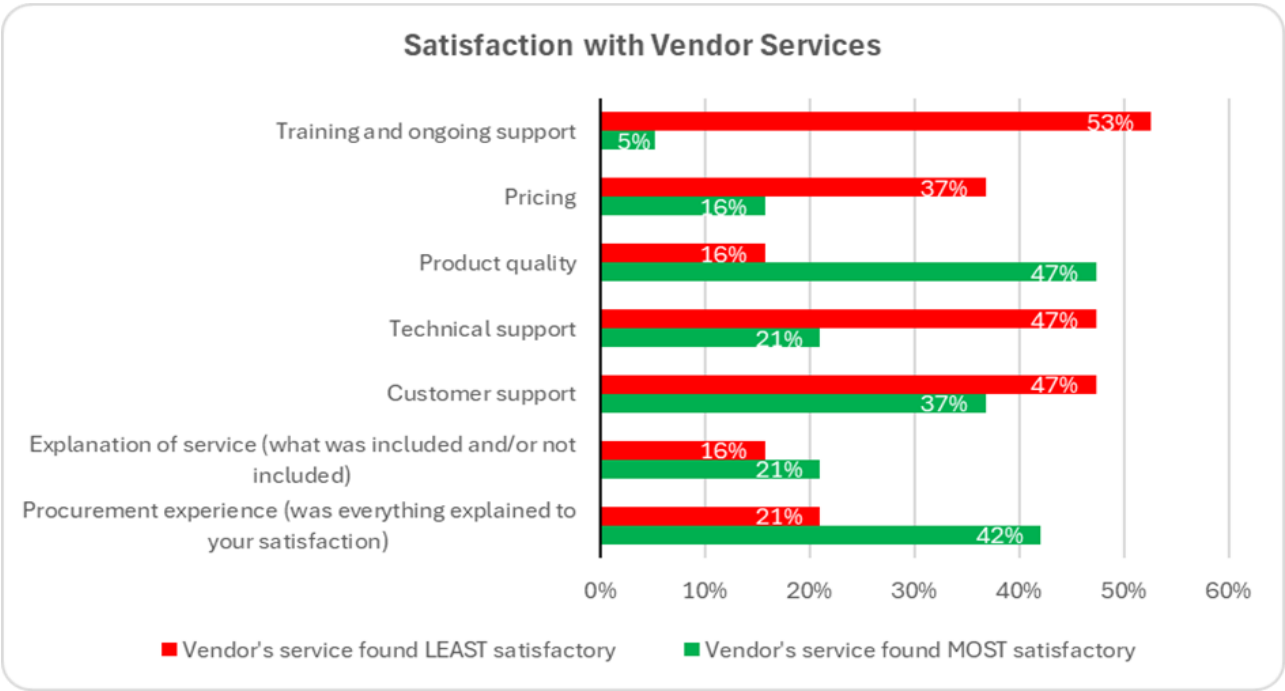
The survey found that 68% of transport operators were satisfied and 5% were very satisfied with their GPS and telematics vendor. However, 58% of transport operators also reported encountering challenges while dealing with their vendor.



Box 10 *Transport operator quote - experience with service delivery*

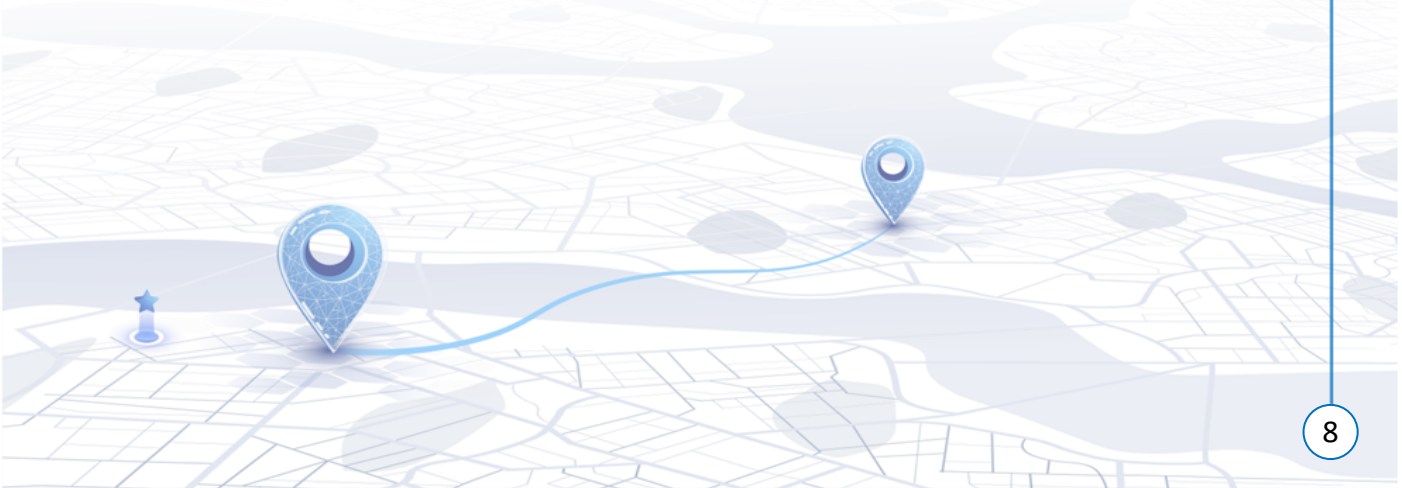
‘Telematics systems should be regulated to ensure consistency of product operation and integrity of data, and why should we have to lock in for 3 years and have monthly service charges for inadequate data.’

The satisfaction with vendor services is presented graphically below.



The highest satisfaction was recorded against the actual quality of the product (47%), followed by experienced transport operators in their procurement experience (42%).

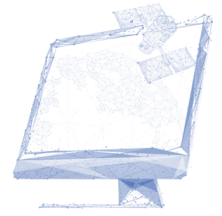
Transport operators found the least satisfactory experiences in training and ongoing support (53%), followed by customer support (47%), technical support (47%) and pricing (37%).



Box 11 *Survey findings – transport operators encountered technical difficulties*

While benefiting from their investment in GPS and telematics systems, 79% of transport operators encountered technical difficulties related to their systems, including:

- *GPS issues and connectivity (including the correct location of the GPS antenna and communications aerial)*
- *Reliability of technology to ensure that it is operating as expected, with operators spending too much time fixing issues*
- *Communications connectivity as the system could not be upgraded post-3G network shutdown, with no plans to upgrade as yet*
- *Electronic work diary (EWD) system driver counting errors.*



Transport operators need to engage with vendors to understand and have documented their specific needs and requirements about:

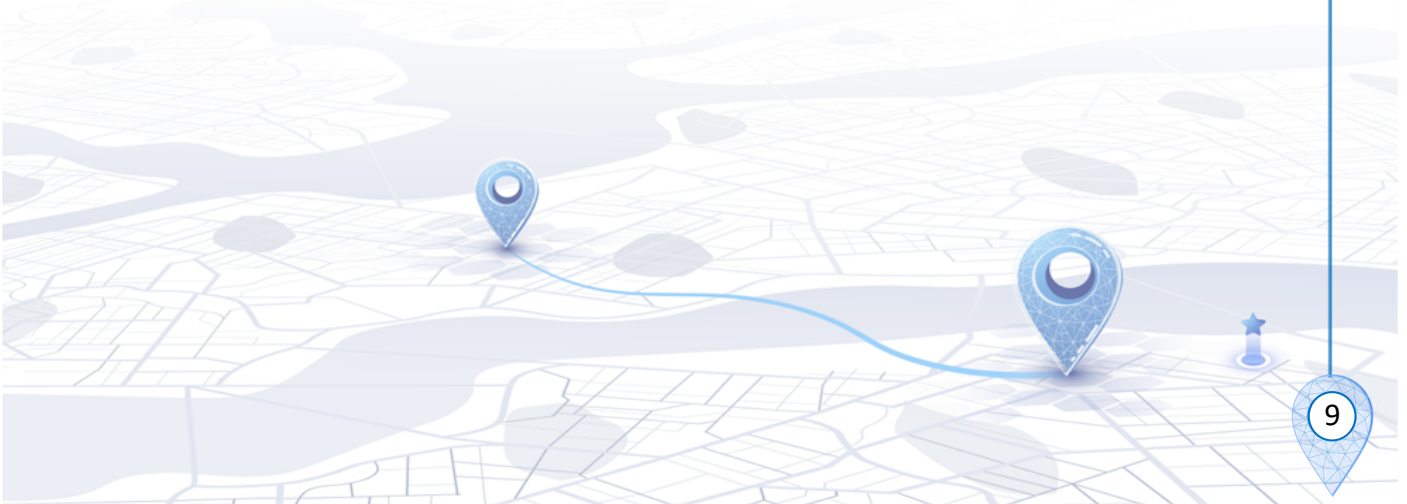
- **Training and the associated level of ongoing support**
- **Technical support expectations**
- **Customer support expectations**

and how pricing arrangements impact these.

It is not simply about accepting what is on offer; instead, it involves understanding the GPS and telematics products and services required and taking the initiative to specify the training and support expectations that the vendor will supply. This includes GPS and telematics system performance levels to meet the application and service requirements, as well as the vendor's responsiveness to technical issues and the level of support.

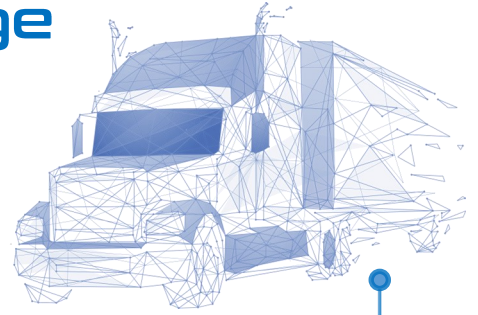
Box 12 *Transport operator quote - experience with service delivery*

'Therein lies the dilemma for operators wanting to go down the path of technology. What to select, what will it produce, what will it expose them too, what are the operators legal rights, lack of technicians, availability of products in timely manner, no training, confusion re maker of product, seller of product, provider of maintenance and technical support - smoke and mirrors and why this guide and buyer beware product is important and must be made available to operators.'



Transport Operator Change Management

Transport operators who have adopted GPS and telematics systems have learnt that it is essential to manage the implementation with their staff and contractors (especially the drivers) as initially there may be some reluctance or even suspicion on the part of some drivers.

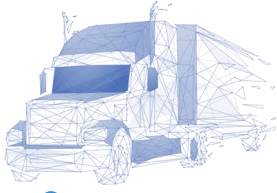


Introducing GPS and telematics systems into a transport operation is not just a technical upgrade; it is a cultural shift. To ensure successful adoption, transport operators need a structured change management approach that addresses both operational processes and human factors.

The broad change management tasks for introducing GPS and telematics systems include:

1. Defining clear objectives (i.e. why the adoption) and what success looks like (i.e. setting KPIs)
2. Stakeholder engagement (drivers, dispatchers, fleet managers, maintenance teams, contractors and executives) and communication
3. Driver training (how the system works and what data is collected), manager training (reporting and interpreting data) and ongoing support
4. Process redesign for (integrating GPS and telematics systems and the operational management and compliance monitoring applications into transport operators' daily operations)
5. Pilot program (roll out to a subset of vehicles or drivers – finding champions) and getting feedback to what is working and what is confusing.
6. Addressing cultural and privacy concerns early (i.e. transparency about what is collected and how data is used)
7. Monitor adoption and adjust as necessary.





Guidance to Vendors

Ultimately, the objective of a vendor is to establish a trusted partnership with transport operators by demonstrating how GPS and telematics systems, along with the operational management and compliance monitoring applications, can enhance operational efficiency, safety, compliance, and profitability.

There is guidance for vendors, which comes directly from their transport industry customers, captured in the guide. Through this guide, vendors and more broadly, GPS and telematics system developers are being made aware of the experiences, concerns and successes of the collective customer base. The opportunity provided by these insights is invaluable as they permit vendors to access their offerings and how they engage with existing and prospective transport operator customers. In doing so, we hope that they will accept the challenge to improve in these areas.

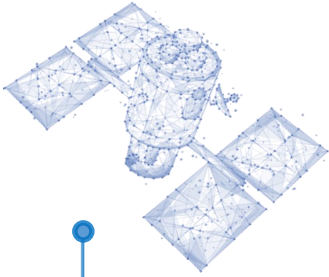
Box 13 *Survey findings - improvements vendors could make to enhance their service*

Transport operators were asked to suggest what improvements vendors could make to improve their service. The responses and their rating are as follows (operators could choose more than one improvement):

- *Better training and resources* **63%**
- *Better technical support* **53%**
- *Improved explanation of the storage and use of collected telematics data* **47%**
- *More competitive pricing* **47%**
- *Improved explanation of how the telematics system works* **42%**
- *Improved customer support* **42%**
- *Enhanced product features* **31%**

The key specific areas of improvement identified by transport operators were:

- Providing better training and resources for their transport operator customers on the use and operation of their systems is a priority issue.
- Providing better and more responsive levels of technical and ongoing support.
- Ensuring an accurate and robust product and associated service.
- Fully explaining how their customers' telematics data is stored and accessed by anyone other than the immediate customer.
- Being transparent about pricing.



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Chris Koniditsiotis has 40 years of experience in the broad industry sectors of infrastructure, transport, energy, and digital transformation. His expertise lies in implementing public policy and private sector initiatives into sustainable operational practices.

Before entering the consultancy world, Chris held several corporate executive positions, including Chief Executive Officer of Transport Certification Australia (TCA), Director of the World Bank's automated road monitoring services initiative for the Indonesian Government, Project Director Roles at Austroads and the National Transport Commission, and General Manager at the Australian Road Research Board.

Chris has a wealth of experience in the GPS and telematics environment, establishing and serving as the national approver (TCA) for such systems and vendors on behalf of governments, regulators and the industry. Chris has also presented as an expert witness in court.



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Steve Shearer has served as the longstanding Executive Officer of SARTA since 1994, providing more than three decades of leadership in South Australia's road transport sector.

With a background as a qualified biologist, Steve brings a distinctive analytical perspective to transport policy and advocacy. He continues to be an influential voice for safety, regulation reform, and collaboration within the industry.

Steve has also held roles beyond SARTA's leadership, including serving as a board member of the South Australian Skills Commission, and as Chair of the Transport and Manufacturing Industry Skills Council. Previously, he worked as a Senior Commonwealth Public Servant focused on national security and veterans' affairs.

In recognition of his significant contributions to the heavy vehicle transport industry and community sport (notably through his long-standing involvement with the Burnside Hockey Club), Steve was awarded the Medal of the Order of Australia (OAM) in the Queen's Birthday Honors List of 2014.

