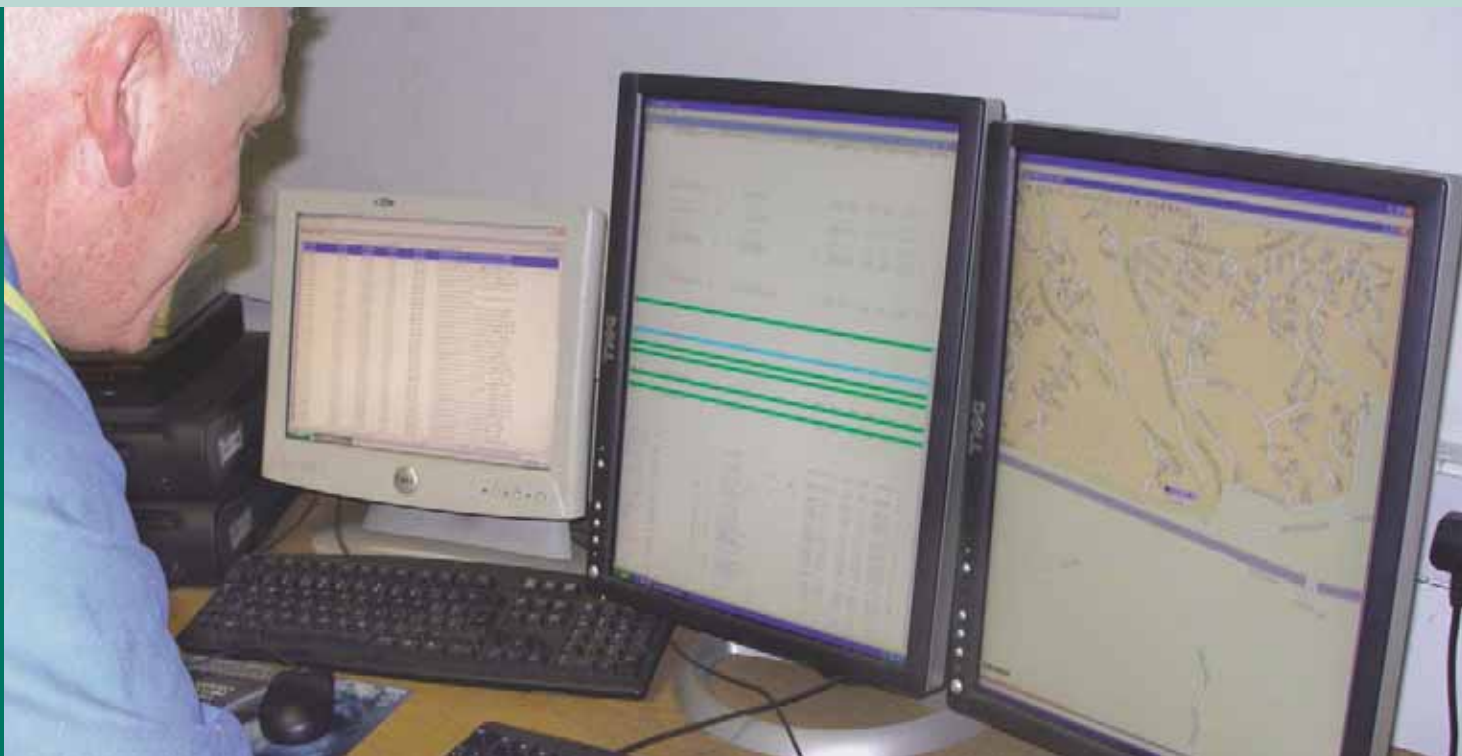


Information Technology for Efficient Road Freight Operations

Guide



Acknowledgements

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Bathstore

ARLA Foods Ltd

Transfloor

Foreword

Freight Best Practice is funded by the Department for Transport and managed by Faber Maunsell Ltd to promote operational efficiency within freight operations in England.

Freight Best Practice offers **FREE** essential information for the freight industry, covering topics such as saving fuel, developing skills, equipment and systems, operational efficiency and performance management.

All **FREE** materials are available to download from www.freightbestpractice.org.uk or can be ordered through the Hotline on **0845 877 0 877**.



Throughout this guide you will see this signpost - directing you to relevant publications from the Freight Best Practice programme.

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1 Guide Overview



1.1 Using Information Technology to Help You Work Smarter

This guide is intended to help logistics and transport professionals better understand a range of different IT systems that can be used within their operation, and offers practical advice to help them choose and implement a system.

1.2 What Is Information Technology and How Can it Help Your Operation?

Whether providing directions for drivers, developing more efficient route plans, or recording and monitoring fuel use, the important aspect of IT systems is that they exist to make tasks easier and improve efficiency. IT systems come in all shapes and sizes and can help your operation, whether large or small.

Section 2 of this guide details some simple but fundamental steps you can take when specifying, implementing, monitoring, and improving a new IT system for your organisation. It is divided into four main parts:

- ➡ **Identifying the Need** - before looking at the steps that you can take to select a system, decide whether a system is really needed. Conduct an audit of your current systems and look at whether you can improve or upgrade existing systems rather than investing in completely new ones
- ➡ **Selecting the System** - IT systems can have a significant impact on the efficiency of your organisation and it is important to devote sufficient time to choosing the most suitable system and supplier, and estimating costs and likely benefits
- ➡ **Implementing the System** - by their very nature, all IT systems will bring about changes to the way your organisation does business. Poor implementation of an IT system can create more problems than are solved. There are a number of key steps that can be taken to ensure successful implementation and to provide staff with necessary guidance. These steps include:
 - Setting objectives
 - Developing a plan
 - Selecting a project champion and training staff
 - Piloting the system
 - Rolling out the system
- ➡ **Monitoring and Improving the System** - an IT project should not end once the system has been successfully rolled out within a company. It is important to have in place an on-going process to monitor the performance of a system and measure longer-term benefits. All businesses change over time and it is also useful when systems can be adapted as and when necessary

1.3 Your Guide to Information Technology Systems for Road Transport Operations

Section 3 of this guide explains the range of IT systems available for road transport operations, focusing on how they work, their potential cost, and general issues to be considered before specifying or purchasing a system. It also describes the benefits offered by these systems to both small and large companies. As shown in Figure 1, operational efficiency depends on the effective management of six key areas - deliveries, vehicles, loads, drivers, fuel and products. Improvements in these areas can reduce costs and increase profitability.

Figure 2 overleaf shows how the specific systems examined in each of these key areas, as well as case studies, the concept examples section and page numbers are shown to allow you to skip forward to specific systems you may be interested in.



Figure 1 The Elements of Successful Fleet Performance



Figure 2 IT Systems, Case Studies and Concepts Relevant to Key Operational Areas



Case Studies and Concept Examples

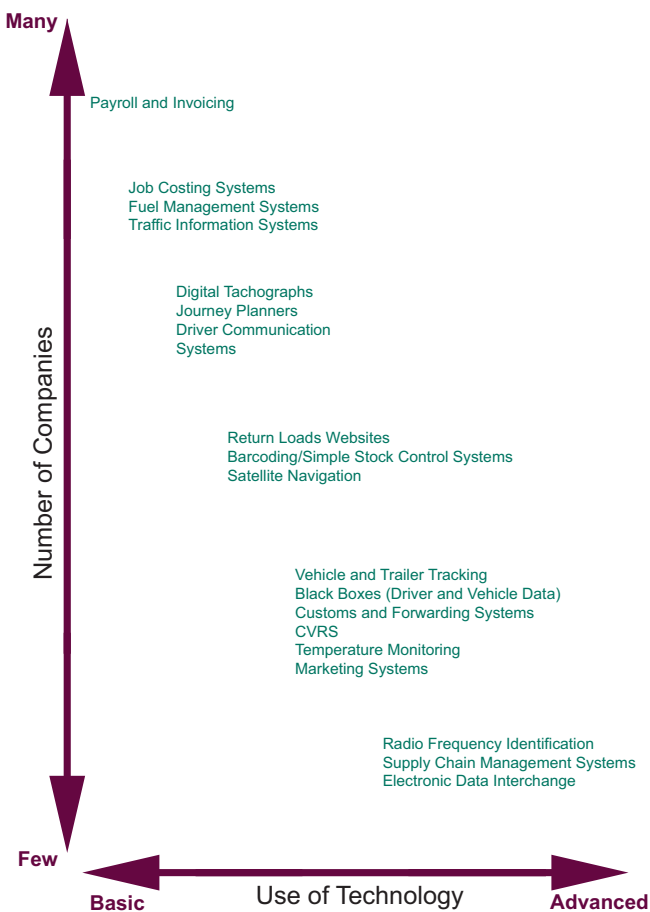
- CVRS: A Cautionary Tale p.6
- Using Telematics to Improve Customer Service: Bathstore p.18
- What Is Exception Reporting? p.27
- Improving Management of Drivers at ARLA Foods p.37
- Better Planning at Transfloor p.43
- Track and Trace Explained p.46
- ERP and EDI p.48

1.4 A Strategic View of Information Technology Systems

Figure 3 shows common IT systems arranged according to their relative complexity and the size of companies that most often use them. While the order of systems might change slightly for specific organisations, it is useful to understand where your organisation might be on this scale. Upgrading to a more advanced system may not be appropriate if your company only has basic supporting systems. For instance, it is difficult to measure the benefits of a vehicle tracking system without a system to record and report on fuel use.

In general, it is best to invest in IT systems that are appropriate to the size and type of your business. Start small and work up - IT systems involve change so avoid investing in a system that may be too complex for your current needs. Identify and target areas that could be improved and make incremental changes.

Figure 3 A Strategic Overview of Key Information Technology Systems



1.5 How Can Technology Help Me?

IT systems are important but remember that systems will be used in various ways by different people in your organisation. IT systems can assist operational staff to perform daily tasks (e.g. picking correct orders, finding the correct address and reducing delivery paperwork), whereas senior staff are likely to use IT tools to generate performance data to make strategic decisions (e.g. monitoring fuel use, improving driver performance and reducing transport costs). Consider the effect a paperless proof of delivery (POD) system could make on different groups within a single transport operation:

- ➡ Director: improved customer service and reduced administration costs. Improved cash flow through the creation of an automatic invoicing system
- ➡ Operations management: fewer delivery errors caused by incorrect paper-based information, and less troubleshooting and paperwork
- ➡ Operational staff: improved working environment and less stress through elimination of paper-based delivery notes

It is important to understand the effects that a new IT system will have on different staff within your organisation as their support and input will help to make the system work.



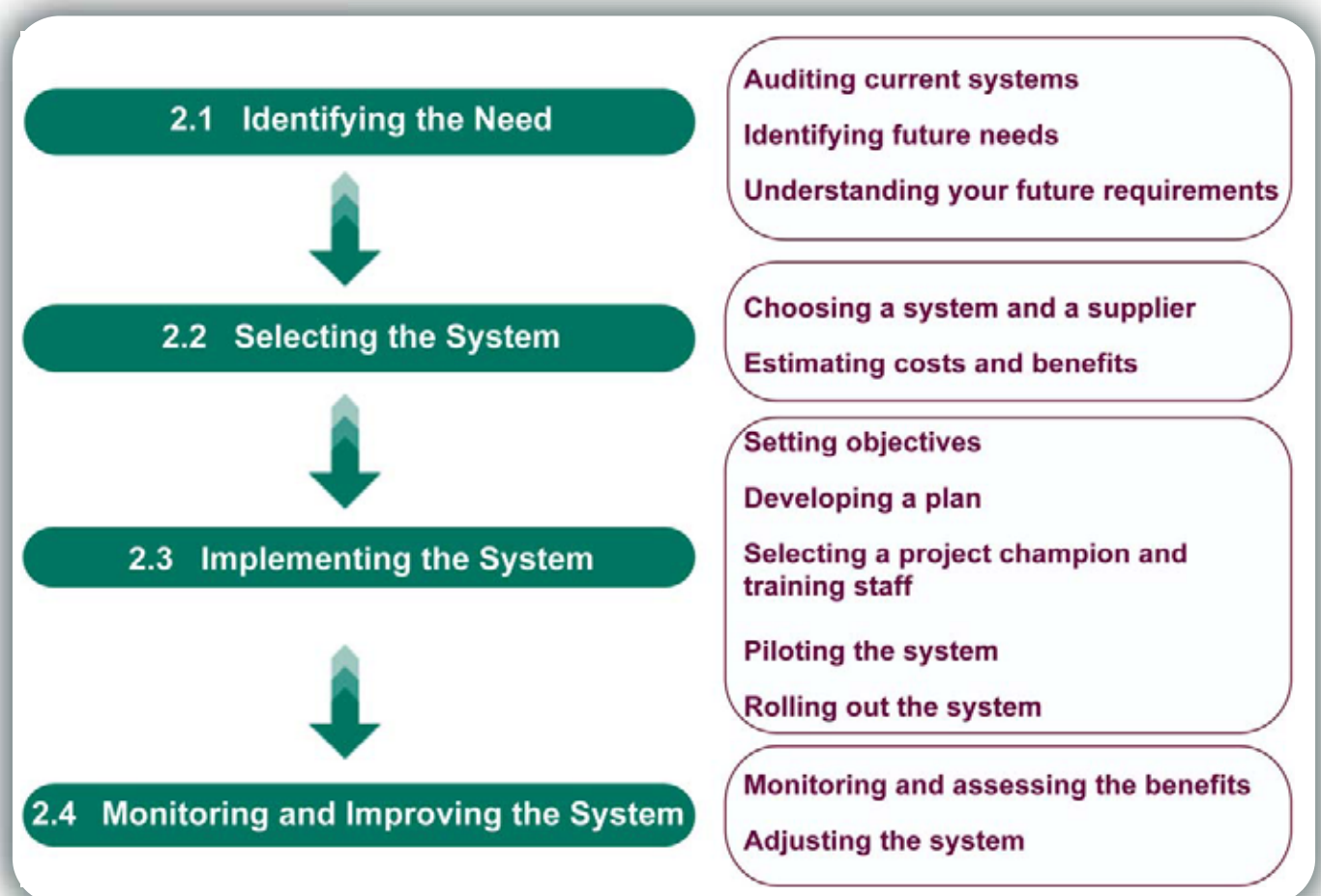
2 Evaluating, Implementing and Measuring the Success of an IT System

2.1 Introduction

If an IT implementation project is not managed properly it can make tasks more difficult, alienate staff and even have a negative impact on profitability and customer relationships. On the other hand, if careful thought is given to which system to invest in and the implementation is managed properly, it can provide a sustained return on investment, improve efficiency, and lower costs.

Whether the system you are thinking about is large or small, purchasing and implementing new technology can be thought of simply as a 'project' involving a number of basic steps. These are shown in Figure 4 and each key stage is explored further in this section.

Figure 4 Information Technology Systems Implementation Process



Computerised Vehicle Routing and Scheduling: A Cautionary Tale

Two major regionally based furniture retail chains, company A and company B, both run fleets of 40 7.5-tonne rigid HGVs to deliver to customers in their counties. Managers at both companies are efficiency minded and decide to look at whether CVRS could help their business, but the two companies take very different approaches to evaluating the systems.



The Wrong Way

The manager of company A is busy and decides the most effective way to learn more about a system is to contact a CVRS supplier. The first company he speaks to offers to visit him and provide a demonstration, which he agrees to. Impressed by the demonstration, the manager agrees to purchase the system. After making the decision, the manager then tells his transport supervisor, who is very surprised he was not told about the system earlier and not involved in the process. Installation is carried out quickly and very little time is spent on training and managing input data. The system starts generating routes, but from the supervisor's own knowledge of congestion on certain roads in the area, he realises they will not work. Drivers become stressed, some customers miss their deliveries and the company's whole transport operation is thrown into chaos. After several weeks, a decision is made to return to the old system of planning. More training is required and after several months the company eventually gets the system working well. Several months later, the

manager sees that fuel bills have gone down, but only by half of the expected amount. This means that the three years' return on investment period projected by the sales person effectively becomes six years, which limits available capital for future improvements.

The Right Way

The manager of company B knows a little about CVRS systems and spends some time doing some research on the web to understand the benefits. He then speaks to a number of suppliers to get information and sets up meetings with two that have been recommended by a transport manager he knows well at another company. Having done some research for himself, he does not just rely on them to give him information, but asks a number of questions himself, on the costs, benefits and issues that might result from implementation. With some more detailed information, the manager then spends some time setting up a simple spreadsheet model to compare the costs and likely benefits to his business. Although salesmen at both CVRS companies tell him he can expect to save up to 10% in fuel, other information and reviews suggest that a figure of 5% is more realistic. After looking at the costs and benefits, it becomes clear that the predicted return on investment is relatively low, mainly because the company does not do sufficient mileage. He decides not to invest in the system and looks at other lower cost options that could improve efficiency, such as satellite navigation devices.

The Outcomes

While the above examples are fictitious, the good practice and project pitfalls are very real. One manager took a clear and structured approach to deciding whether or not to invest in a system, and eventually decided the system was not appropriate to his business at the time. The other manager was dazzled by a good sales person and did not spend enough time evaluating the costs and benefits. He neglected to involve key staff in the decision-making process, and implementation was problematic and did not produce the benefits he expected.

The following sections can give you some ideas on how you can avoid making similar mistakes.

2.2 Identifying the Need

Do

- ➡ Understand your existing systems and what they give you
- ➡ Understand the limitations of existing systems
- ➡ Understand the key processes that need to happen to give improved efficiency
- ➡ Consider how existing systems can be improved first, before investing in a brand-new system

Don't

- ➡ Don't buy a system just because you think technology equals efficiency - there may be other practical changes you can make to improve efficiency without bringing in an expensive new system

Before looking at the steps that you can take to select a system, the first decision should always be to ask whether a system is even needed at all.

Conduct an audit of your current systems and think about your future requirements. Sections 2.3 - 2.5 provide guidance on how you can select and introduce a new system into your operation. However, in many cases you will be upgrading existing systems rather than investing in completely new ones.

All too often companies invest in IT for the 'wow' factor and may not look at all of the alternatives available. Problems can often be solved by modifying business procedures. For instance, telematics equipment can help to improve the way you communicate with drivers, but could improved briefing and debriefing procedures do the same thing? In the following sections it is assumed that issues like this have been looked at and that it has been concluded that investment in a new type of IT system can best address the needs of your business.

2.3 Selecting the System

Do

- ➡ Carry out an initial evaluation through research
- ➡ Short-list a handful of companies that you wish to contact and get more details from them
- ➡ Ask short-listed suppliers to demonstrate their product to you
- ➡ Make sure you have a full understanding of the benefits of the product
- ➡ If possible, let one of your employees who will be using the new system try it out

Don't

- ➡ Don't buy the first system that you see
- ➡ Don't buy the product just because it has lots of features - many features may never be used, and could even complicate your operation
- ➡ Don't let the sales person just take you through the parts of the system they want to show off - ask questions about whether it can do what you want it to do

Choosing a System and a Supplier

Selecting the right system and supplier is essential if you are going to maximise return on investment.

Choosing a system and supplier is the first practical step you will probably take in any IT project. Although selecting a product and supplier may be a straightforward decision for a small system and company, it is always useful to shop around. For a larger scale project such as investing in a Computerised Vehicle and Routing System package for a major fleet of vehicles, you may need to spend several months deciding on a supplier and product because it will have a substantial impact on your organisation for many years to come.

Obviously, the price and system features will play a major part in any investment decision, and in many cases supplier and product selection will take place hand-in-hand with evaluation of costs and benefits (see next section). For simplicity, the process of selecting a product can be broken down into three key steps:

- ➡ **Initial evaluation** - this can be done through independent desk-based research before you even speak to any companies. Many IT suppliers have very good websites and doing some initial research will help you to feel more confident when you approach sales people
- ➡ **Short-listing** - decide on a handful of companies that you wish to contact and get more details from - the higher the potential outlay, the greater the benefits of shopping around and getting more quotes
- ➡ **Interviewing** - once you have decided on a short list of suppliers, speak to them directly to get a demonstration of the system and gain a better understanding of the costs and benefits

Ask for More Information than Just the Price

In almost all cases, price and basic features are the most important factors that will help you choose a system. However, there are many other issues you can also consider, particularly for more comprehensive types of system such as telematics. In particular, it is important to ask about the potential to customise the system to better meet the needs of your business. Look into whether there are any maintenance charges or other on-going costs not included in the initial purchase price. Many companies now use IT systems (particularly telematics) on a leasing arrangement. This can avoid the need for large initial outlays and ensures that software is updated regularly, but it might cost more over the life of the product. Look at and compare all available options and costs before making a decision (see Estimating Costs and Benefits section overleaf for more details).

Know What You Want and What You Need

For smaller types of system, evaluation can be straightforward and involve a simple comparison of price and features. For larger systems,

however, it is important to keep your requirements at the forefront of your mind - you may be tempted to spend extra money on additional features that you may or may not need. You might find that although you were originally interested in a wireless proof of delivery (POD) system, you suddenly end up with a comprehensive vehicle tracking system without realising it. This may be the right decision, but make sure that you are the one that makes this decision.

Support, Training and Adaptability Are Crucial

The importance of support, training and adaptability issues will be determined by the size of the system you are investing in. A basic satellite navigation system will probably be very easy to introduce into your operation. However, bear in mind that for larger systems support, training and the potential to modify the system in the future can be easily overlooked when you are eager to get it up and running. There is a series of questions you can ask suppliers to gain a better understanding of usability and adaptability, for example:

- ➡ How long does training take?
- ➡ What level of computer knowledge is required of staff that will use the system?
- ➡ What arrangements exist for annual maintenance?
- ➡ Can the system adapt and keep pace with the transport operation developments within the organisation?
- ➡ Is the system capable of readily interfacing with other IT systems in use?
- ➡ Is the IT system being continually developed and enhanced?
- ➡ How frequently are updates issued and how are they distributed?
- ➡ Is support from the IT system provider available 24 hours a day?
- ➡ Is support available on-line?
- ➡ Does the supplier provide a manual?
- ➡ How comprehensive are the 'help' screens?
- ➡ What proportion of the supplier's client base is using extensively customised systems?

Finding More Information

The Freight Best Practice publications highlighted in the following sections of this guide provide you with more information. A list of organisations that can help to get you started is shown in the Appendix. You can also find details of suppliers by carrying out a web search on the area you are interested in.

Comparing Costs and Benefits Is Essential

IT systems vary considerably and are often tailored to meet the specific needs of the business, and this means there is no universal approach for calculating costs and benefits. However, it is essential to spend some time trying to evaluate these, even if you are introducing a relatively simple system.

In general, costs are easier to measure than benefits. IT suppliers will provide you with these, however, it is important to understand the costs beyond the initial purchase – i.e. installing, running and upgrading the system in the future. Most suppliers should be able to give you an estimate of these other costs, but do not rely on them to tell you without being asked! For the purpose of projecting costs and benefits for major systems, allocate costs into two groups – set-up costs (or project costs) and annual costs. Set-up costs can include developing interfaces with existing company systems, gathering data, training staff and other administrative costs. Purchase costs can also be included as a set-up cost, but for large-scale investments you may want the initial system value to be depreciated over several years.

Estimating benefits tends to involve some guesswork because you will not be able to truly measure benefits until you have installed the system! However, you should:

- ➡ Make an initial estimate of how much a system might save you, even if you have to make a number of assumptions
- ➡ Have a system in place to allow you to quantify the benefits after you have made a decision to go ahead, so you can evaluate an investment in the longer term

Suppliers can give you a broad idea of how much you could expect to save from the system. For major systems such as CVRS and telematics,

suppliers will often quote a percentage reduction in operating costs. The benefits of IT systems can be oversold, creating what can be called an ‘expectation gap’. It is advisable to use a conservative figure in your calculations. For example, some suppliers of telematics systems suggest savings of 10% can be achieved, however, it is probably wiser to base your estimates on 5% initially. The table below shows an example of an estimate of likely costs and savings for a CVRS system.

Figure 5 A Cost Benefit Evaluation from ‘Computerised Vehicle Routing and Scheduling (CVRS) for Efficient Logistics’

Organisation details	
Current annual transport spend	£1,500,000
Fleet size	25 vehicles
Depreciation period for CVRS project	3 years
Project costs	
Set-up	
Hardware (PCs, printers, interface)	£3,000
Software	£30,000
Implementation	
Training	£2,000
Data verification and cleansing (3 man weeks @ £1,500)	£4,500
Project management (10 days @ £500)	£5,000
Total project costs	£44,500 (A)
Annual costs	
Depreciation (1st, 2nd and 3rd years)	£11,000 (B)
System updates and maintenance (2nd and 3rd years)	£3,000 (C)
Retraining (2nd and 3rd years)	£2,000 (D)
Total year 1 costs (implementation plus depreciation)	£55,500 (A+B)= G
Total year 2 and 3 costs (recurring costs only)	£16,000 (B+C+D)= H
Cost saving year 1 (8% of transport spend, equivalent to two vehicles) @ 50% (assuming six months to implement project, followed by six months in operation)	£60,000 (E)
Annual cost savings year 2 onwards (8% of transport spend, equivalent to two vehicles)	£120,000 (F)
Net financial benefit in year 1	£4,500 (E-G)
Net financial benefit in year 2	£104,000 (F-H)
Net financial benefit in year 3	£104,000 (F-H)

Good Preparation Paves the Way to Success

To estimate benefits before purchasing a system and to quantify them after installation, you should have a system in place for measuring and monitoring your business costs. Again, this should be guided by the size and complexity of the system. A single £200 satellite navigation device should not require a detailed exercise to measure the benefits! For larger systems, though, a more formal approach can be useful. For instance, if a key benefit of a telematics system is that it will save you fuel, then you need a system in place beforehand to measure and monitor fuel use.

2.4 Implementing the System

Do

- ➔ Clearly define your objectives, and make sure they are measurable
- ➔ Develop a plan and break large jobs into smaller tasks – this will save you time and money
- ➔ Make sure you set a clear timeframe to help the project stay under control
- ➔ Select a project champion and give them sufficient authority and responsibility
- ➔ Depending on the size of the project, set up a project team at the outset
- ➔ Ensure sufficient training is included in your implementation plan
- ➔ If possible, pilot a system first on a small area of the business in order to measure success and obtain feedback from staff
- ➔ Ask for staff feedback to give them more involvement in project objectives, leading to greater success in the implementation process

Don't

- ➔ Don't start implementation without first producing a plan
- ➔ Don't fail to communicate effectively with staff
- ➔ Don't brief staff inadequately, as it may lead to a lack of employee support for the project

Setting Objectives

Failure to set clear objectives can cost you time and money.

Defining objectives is important when setting up a new system, especially when this involves a team of people. If everyone can clearly see what is to be accomplished, your IT project is much more likely to succeed. For instance, if investing in a wireless proof of delivery (POD) system, your administration staff and drivers should understand that the purpose of the system is to reduce paperwork and improve customer service, not just that you are 'investing in a new POD system'.

Make your objectives specific and measurable but, more importantly, realistic. For major systems, think initially about:

- ➔ The overall timescale you will need to make changes
- ➔ How much you are willing to spend to achieve your objectives
- ➔ How you will measure the outcomes of the project

Even if they seem obvious to you, it is worthwhile to document the objectives of your project before you do anything else. IT projects can be lengthy and complicated and it is often easy to lose sight of the broader objectives of what you are doing.

Developing a Plan

Every hour spent planning can save you time and money during implementation.

Planning can often feel like a waste of time, particularly when you are fairly sure about what you want to do. Detailed planning will not always be necessary for smaller systems, but experience over many years has shown that large IT projects can go over-time, over-budget and often fail to deliver promised benefits. Developing an implementation plan is critical. It is estimated that as much as 80% of project problems can be solved at this stage – good planning will ultimately save time and money.

Large Jobs Are Easier when Broken Down into Smaller Tasks

In its simplest terms, an IT project plan for the introduction of a major system can be thought of as a 'to do' list. The task of evaluating and implementing a system can seem daunting, but it is much easier when broken down into smaller and more manageable pieces. Special project management computer programs exist to help you to do this. However, paper or simple spreadsheet-based project plans can easily be developed.

Producing a Programme Plan

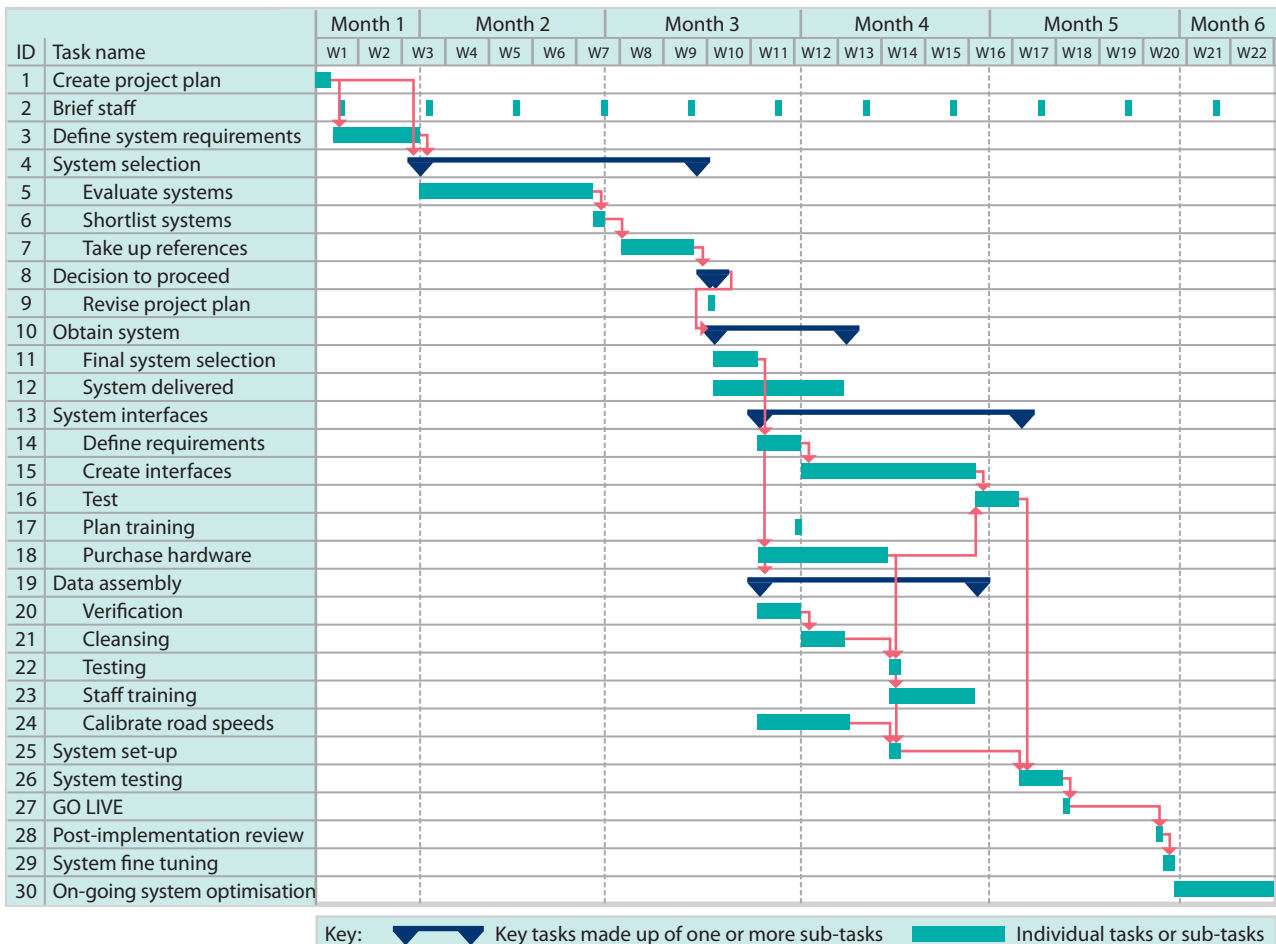
The example below of a Gantt chart is simply a 'graphical task list' or a way of showing a sequence of activities and their relationships to other tasks. Gantt charts are useful because they allow you to see how your project is progressing. Project changes and their impact on the overall deadline are much easier to see when illustrated graphically.

Set a Clear Timeframe and Help the Project Stay under Control

Estimating time is an important part of this planning process. It may be difficult to estimate the exact amount of time you will need to spend implementing a system until you have consulted with suppliers and learnt more about the system you will invest in. However, it is useful to establish an overall timeframe for your actions, particularly if it is a large project. This can always be adjusted as you move forward and learn more about the system. Seasonality can be an issue for many freight operators, so it is important to identify any periods where installation of a new system could cause disruptions. Inaccurate time estimates can have a significant impact on installation and training costs.

How can you go about estimating time? Think about 'person days' or hours required and then translate these onto the calendar. Take account of how many productive hours can be spent on the project each day, and how many days each week

Figure 6 Example of a Gantt Chart from 'Computerised Vehicle Routing and Scheduling (CVRS) for Efficient Logistics'



your staff will be available for the project. It is best not to schedule people for 100% of their time as employees will have other duties to perform. It is also very important to build training time into the schedule, as this is a vital part of any larger project.

Selecting a Project Champion and Training Staff

The project champion is an important part of successfully managing the introduction of a new IT system. For smaller investments this will probably be the person that purchases the system. A more structured approach may be necessary for more complex systems. A champion must have sufficient authority and responsibility to ensure that the programme is successfully implemented.

The project champion will be required to drive the project and, among other things, will need to develop the plan, resource it and ensure it is properly implemented. Even when other business priorities divert senior management attention, the project champion should ensure that the business never loses sight of the programme's objectives.

Depending on the size of your fleet, the project champion may be required to spend a significant amount of time on the project if it is to be successful. This can take the champion away from performing other duties, but the financial benefits which can arise from an organised and well-implemented IT project should make it a very worthwhile use of management time and energy.

Training Ensures that People can Make Systems Work

Without adequate staff training, benefits are likely to be reduced, and this is true of any system whether large or small. It is the end-users who will be working with the equipment on a day-to-day basis, so it is imperative that the users of the system are trained properly in order to gain the maximum potential from the IT system. Training should reflect the different ways in which the end-users will be using the technology, as the staff will need to know how to use the equipment in the context of their work. Training can take many forms, including a simple one-to-one session with a driver, through to more detailed

training offered by a training agency. If a new system is not expected to have a significant impact on existing work processes, then a less direct approach may be appropriate, such as 'drip-feeding' information to employees via email, posters etc. Irrespective of what type of training you might implement, it is important that all necessary materials are developed in advance of making any changes to your business. As the IT system progresses and updates are carried out, the staff will need to be re-educated on these updates. Where necessary make training an on-going process.

Piloting the System

Unless a system is very small, it is almost always a good idea to defer major investment decisions until you have trialled the system. It is always worth asking suppliers if they can provide a free demonstration of hardware/software to enable you to try their product. It is important that a pilot study is led by the project champion and involves staff who are positive about the project and likely to be involved in the longer term. Start off by using a system at a 'good' depot. Keeping a trial small scale can make a new system more manageable, and it will be easier to measure the benefits and check whether the supplier quoted figures are attainable. Feedback from staff involved in the pilot is vital. Hold a formal debriefing for staff involved because they are the ones that will use the system and will give you practical information on how to get the best out of it.

Rolling Out the System

Roll-out is a major process and this is where the project plan becomes really important, especially for larger systems. The pilot should give you a better idea of how long it will take to install the system company-wide. System-wide implementation can cause considerable disruptions to business. Set a clear and structured plan and communicate the plan throughout your organisation. After the pilot you will probably need to revise your original project plan, or even develop an entirely new plan with different timescales from your original estimate. This is to be expected and is the reason a pilot should be undertaken, as the timescale for

implementation cannot be established until you have trialled the system and trained some potential users.

The way a system is rolled out will depend on the impact it will have on your business. A system that might affect how information is transferred between many different parts of your operation (e.g. supply chain system) may require installation across all sites at the same time, whereas other systems that operate independently at the depot level (e.g. telematics) could be installed on a site-by-site basis. Whichever approach you take, it is essential that staff are fully trained prior to implementation.

Rolling out a major IT system across an organisation requires communication and consultation. Keep employees in the picture and make sure they understand exactly what is expected of them, and who to contact if they experience any difficulties.

2.5 Monitoring and Improving the System

Do

- ➔ Ensure there is a monitoring process in place after the system has been rolled out
- ➔ Track your performance by monitoring what is happening versus what was predicted
- ➔ Identify a specific set of key performance indicators that relate to your business objectives
- ➔ Monitor the performance of the new system and ensure it has on-going positive impacts

Don't

- ➔ Don't just forget about the newly implemented system once it is in place, expecting it to automatically run smoothly
- ➔ Don't assume the system will necessarily increase efficiency – if the system is not used properly efficiency may not improve. Monitoring is vital

An IT project should not end once the system has been successfully rolled out across the organisation. Like other decisions in the purchase and set-up process, the scale of evaluation will be determined by the amount you are investing. Even for smaller systems, having a fuel management programme in place can help you understand the benefits of new initiatives. Regular tracking of fuel use and operating costs will help you to identify trends and understand how new systems and new operational practices affect performance (see the Managing Fuel section on page 39 for more details).

For larger projects, it is important to have an on-going process in place to monitor the performance of a system and measure longer-term benefits. All businesses change over time and it is important that systems can be adapted as and when it is necessary.

Performance indicators can be used to measure system performance. Customer service systems could be assessed in terms of the number of missed deliveries, while systems to save fuel can be measured in miles per gallon (MPG). Ideally, you will have developed a reasonably good understanding of the potential benefits during the pilot phase, but it is important you have a wider system in place to collect key performance indicators (KPIs) before and after the roll-out. It might seem pointless to review performance after you have made the decision to invest and roll out a system, but it is necessary to discover whether the system is working properly and benefiting your business in the way you anticipated. If you find the benefits are not as great as expected at a particular location or part of your business, it may signal problems with implementation and training. Monitor the performance of a new system and make sure it has on-going positive impacts on your KPIs.

For more information about KPIs, see the Managing Performance section on page 49 or visit www.freightbestpractice.org.uk

3 Your Guide to Road Freight Transport Information Technology Systems

3.1 Introduction

Information Technology systems can help you to improve the efficiency of your operation and increase profitability, but not all systems are appropriate for every company. The diagram below shows the six key areas that will lead to effective performance management.



How Do You Discover which IT Systems Can Benefit You?

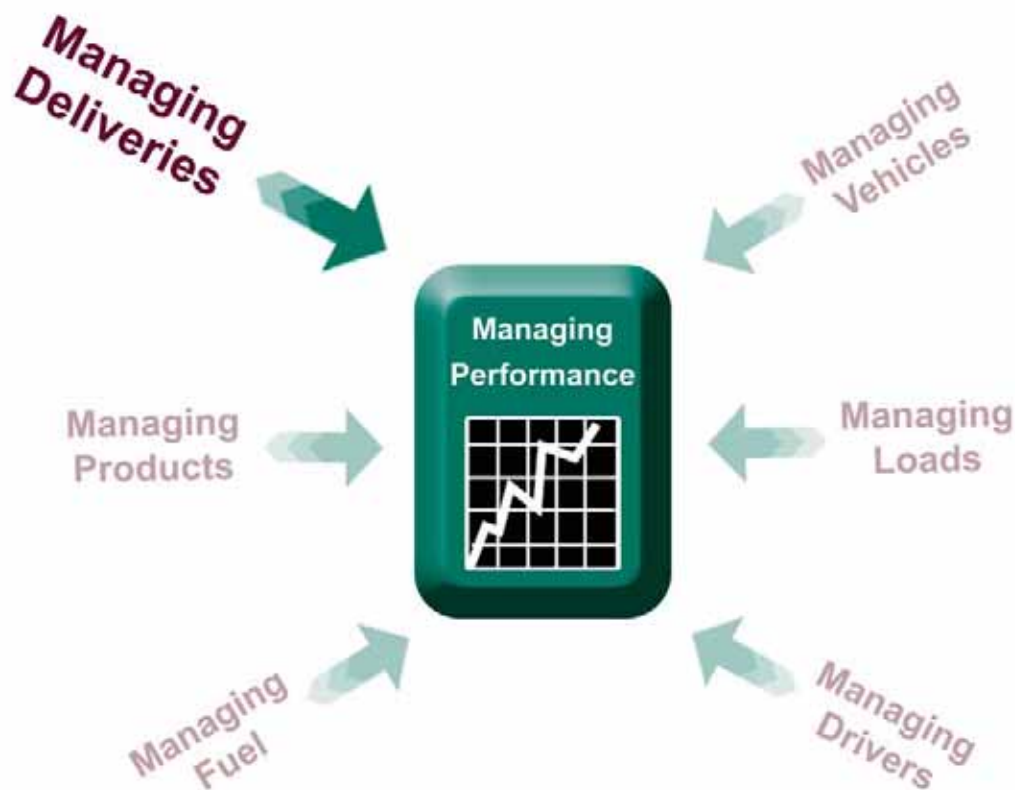
The following sections examine a range of systems organised in seven key areas. It is worth remembering that many IT system suppliers and manufacturers create integrated packages that incorporate one or more of the systems that are discussed in the following sections. For example, vehicle tracking systems are often integrated with other functions to allow communication with drivers and paperless proof of delivery. In many cases it may be appropriate to invest in systems with multiple capabilities but, for simplicity, systems are explained separately in this guide.

Your Guide to Road Freight Transport Information Technology Systems

What are they and how do they work?		A basic summary of what the system can do and how it works.
What are the benefits?		Key operational benefits.
How much is it likely to cost?		It is difficult to provide precise costs for IT systems because they will depend heavily on the size of your organisation and specific product features. However, a general indication of possible cost is provided.
Issues to consider		Some potential issues and problems which you should consider before investing.
Who will benefit?	Larger companies	Relevance for companies operating 50 or more vehicles.
	Smaller companies	Relevance for small and medium-sized companies operating fewer than 50 vehicles.
Further information		Some signposts to help you find more information.

3.2 Managing Deliveries

Using vehicles more productively can allow you to make more effective use of resources and significantly reduce the costs of your operation. For instance, haulage pricing tools can be used to provide a more accurate estimate of business costs, while planning backloads can generate extra revenue for a journey you have already planned. Planning deliveries can be an extremely complicated task, even for small transport operations, and IT is used by companies to utilise vehicles more productively and reduce administration.



- ➡ Paperless Manifest/POD Systems
- ➡ Online Freight Exchanges
- ➡ Traffic Information Systems
- ➡ Simple Journey Planning Tools
- ➡ Computerised Vehicle Routing and Scheduling Systems

Paperless Manifest/POD Systems

<p>What are they and how do they work?</p>	<p>A wireless proof of delivery (POD) system allows orders to be sent to drivers electronically and is made up of a fixed cab display screen or a cab cradle-mounted personal data assistant (PDA). The PDA may be linked to an on-board computer that has a GPS-based vehicle tracking system. Manifest information is uploaded into the POD system, either at the beginning of the day using a PC when the vehicle is at its base or 'dynamically' throughout the day through a telematics-based communication system.</p> <p>Delivery schedules can be generated from a stand-alone system or an integrated computerised vehicle routing and scheduling package (see Computerised Vehicle Routing and Scheduling Systems on page 22). Drivers confirm that the work has been completed on the PDA and an electronic customer signature is captured. This information is then uploaded or sent back to base to provide an electronic record of delivery.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Reduced administration and paperwork – Reduced data entry, delivery and invoicing errors – Provides consignment tracking and delivery status capabilities – Improved customer response times to enquiries 				
<p>How much is it likely to cost?</p>	<p>The cost of POD systems is usually combined with other systems. Low-cost, easy-to-use real-time POD systems running on standard PDAs are available from £15 per unit per month. There are additional fees, from around £12 plus network costs.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Full staff training before the system is implemented – Contingencies in the case of system failure – Flexibility to cater for system alterations and upgrades 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="185 1223 395 1317"> <p>Larger companies</p> </td> <td data-bbox="402 1223 1476 1317"> <p>In general, paperless manifest/POD systems are most beneficial for larger multi-drop operations.</p> </td> </tr> <tr> <td data-bbox="185 1326 395 1478"> <p>Smaller companies</p> </td> <td data-bbox="402 1326 1476 1478"> <p>For companies making deliveries to a small and regular base of customers, paperless manifest/POD systems may not offer much value, but it is worth keeping in mind the positive benefits they can have in reducing administration costs.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>In general, paperless manifest/POD systems are most beneficial for larger multi-drop operations.</p>	<p>Smaller companies</p>	<p>For companies making deliveries to a small and regular base of customers, paperless manifest/POD systems may not offer much value, but it is worth keeping in mind the positive benefits they can have in reducing administration costs.</p>
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<p>Further information</p>	<p>Freight Best Practice - Telematics Guide</p>				



Using Telematics to Improve Customer Service: Bathstore

Bathstore is the largest specialist bathroom supplier in the UK and part of the Wolseley Group. One of the key selling points used in support of its products is the home delivery service offered to customers. The company has over 100 showrooms across the UK. Customers can place an order and provided it is received before 5pm, delivery can be guaranteed in 2-4 days from one of the company's five depots.



Bathstore has increased its level of customer service through the introduction of the Datatrack system, which incorporates vehicle tracking, satellite navigation for routing and PODs. Each driver has a PDA giving the company order details for all its deliveries. The vehicle tracking system allows customers to find out the exact location of their delivery via the Internet. The paperless manifest, using a wireless POD system, speeds up the order process significantly. Following delivery the customer signs the PDA to confirm delivery of the order, including any amendments. This means that any damaged products or order errors are transmitted back to the company's order system immediately.

System Implementation and Challenges

The PDAs and satellite navigation and tracking system were implemented gradually across the fleet, and during this time the system was trialled. Meanwhile, paperwork was still filled in manually. At first some drivers resisted the new technology, especially the satellite navigation feature, as often they felt they knew the best route. However, Bathstore's Hackbridge Distribution Centre Manager, Roger Davies, said, "...even the most sceptical drivers have found that they have saved time through using the on-board sat-nav, and the

ability for the PDAs to flag up extra information about customers has made the job much easier for drivers."

However, Roger pointed out, "It hasn't all been plain sailing, as there have been problems with the Bluetooth technology linking the PDAs to the sat-nav system, and so currently the drivers are still taking out paperwork for the customers to sign, as the paperless system cannot be 100% relied upon at the moment." Once these issues have been ironed out, a customer's signature on the PDA screen will automatically begin the invoicing process. Another aspect has been that of damage to the PDAs. Roger feels the slim-line 'businessman' style PDA may not have been the best choice for use by delivery drivers, and that a larger, more robust box might have been more appropriate for a home delivery-style operation.

The Benefits

The sat-nav system has offered efficient routing and increased fuel savings for Bathstore. Drivers do not require geographic knowledge of routes, which helps new employees. The vehicle tracking system offers customers real time visibility of order status at any time on the Internet. The paperless manifest and POD system allows the driver to manually update the order system, reporting any damages or incorrect orders. Driver updates result in automated invoicing of the customer.

The system can also show, for each driver, the number of successful deliveries, any failed orders, the time spent at customers' premises and on the road, breaks and miles travelled. The transport manager is able to search to find each driver's routes for the past week, which is useful for checking drivers' hours and can also produce driver-related key performance indicators (e.g. time worked, breaks) etc.



Online Freight Exchanges

What are they and how do they work?	An online freight exchange is a system that allows consignors to post loads they need to move, and then matches these with relevant hauliers who are seeking loads or backloads. These systems match buyers (those with goods to be transported) with sellers (those who have vacant vehicle space).	
What are the benefits?	<ul style="list-style-type: none"> – Saves time and money for both consignors and hauliers – Improved vehicle fill – Enhanced backloading opportunities – Ready access to a wide customer base 	
How much is it likely to cost?	Charges vary between exchanges. Some sites charge a subscription fee (usually between £5-£10 per week) and others can charge 'credits' to access an offer from sites (between 5p and 65p per advertisement received). Other sites are free for both the consignor and the haulier.	
Issues to consider	<ul style="list-style-type: none"> – The site subscribed to may not generate business (although compared to the costs associated with empty running, subscription costs are likely to be very low) – There can be risks associated with dealing with unknown or new customers – Care should be taken to ensure customer service standards are not sacrificed over price 	
Who will benefit?	Larger companies	For companies with large distribution networks, on-line freight exchanges can help to improve vehicle utilisation and reduce empty running.
	Smaller companies	On-line freight exchanges may not benefit companies with only a small number of vehicles operating in a well-defined area. However, for a national or international operation, they can be a useful way to obtain backloads and reduce empty running.
Further information	Freight Best Practice – Make Back-loading Work for You	



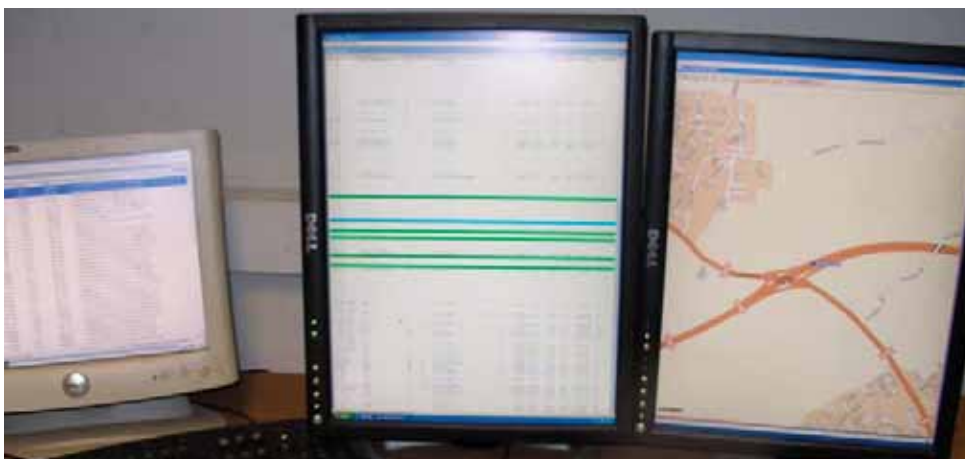
Traffic Information Systems

<p>What are they and how do they work?</p>	<p>Traffic information systems are networked systems that provide detailed live and up-to-date travel/traffic information. These services can plan routes in real time, and provide advice based on predictive, historical, live and incident traffic information. There are free systems available over the Internet. While this information may not be easily accessible for a driver, it can be relayed from the company's traffic office. There are several traffic information providers that charge an annual fee and provide information about alternative routes via GPS-based mobile communication devices.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Helps to avoid or at least minimise the potential disruptions of traffic congestion – New routes can be planned at short notice 				
<p>How much is it likely to cost?</p>	<p>Web-based services from the Highways Agency and other Government bodies are generally free. In-vehicle systems cost from less than £100 up to £800, with additional annual fees for updates.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – How you use the information. (Knowing there is congestion ahead is not particularly useful unless you are in a position to avoid it.) – Trialling of products before making a full order – Routing systems will not identify weight, width and height restrictions – On-going burden on traffic office workload 				
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<p>Further information</p>	<p>Highways Agency Traffic Information http://www.highways.gov.uk/trafficinfo/ http://www.trafficradio.org.uk/map.htm</p> <p>Traffic Information on Direct Gov http://www.direct.gov.uk/TravelAndTransport/TrafficManagement/fs/en</p> <p>TransportDirect Traffic Information http://www.transportdirect.info/</p>				



Simple Journey Planning Tools

<p>What are they and how do they work?</p>	<p>A journey planner is a software package containing a digital road network, with roads defined by a range of categories and speeds. It can calculate the best route between any two given locations and devise a route that includes any number of call points. The principal purpose is to calculate time, distance and cost for individual journeys. However, simple journey planners cannot incorporate information on delivery constraints, such as time windows, vehicle capacity, etc (see Computerised Vehicle Routing and Scheduling Systems).</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Identification of efficient routes – Increased journey reliability – Decreased travel time – Printed directions and maps – May link to live traffic information – Low cost 				
<p>How much is it likely to cost?</p>	<p>Simple tools capable of planning a route between two or three locations are available free via the Internet. More advanced versions, which can plan routes with more than three stops, are available via the Internet or on CD-ROM, and prices usually range between £10 and £60.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Journey planners generally do not take into account freight-specific information, such as the whereabouts of low bridges and weight-restricted roads – Most journey planners calculate travel time based on fixed speeds on different categories of roads, and hence do not allow for congestion or other delays 				
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<p>Further information</p>	<p>Freight Best Practice – Computerised Vehicle Routing and Scheduling (CVRS) for Efficient Logistics</p>				



Computerised Vehicle Routing and Scheduling Systems

What are they and how do they work?	<p>A computerised vehicle routing and scheduling (CVRS) system combines customer location data, such as postcodes, with delivery or collection data, such as product type, weight and quantity, to create the most efficient schedule for a fleet of vehicles and drivers.</p>				
What are the benefits?	<ul style="list-style-type: none"> – Substantial reductions in planning time – Greater fleet utilisation may facilitate fleet rationalisation – Can integrate with order processing and invoicing systems – Can incorporate customer delivery conditions such as an inability to accept certain sized vehicles or deliveries at specified times – Can identify incompatible loads – Can be used to model and test delivery scenarios 				
How much is it likely to cost?	<p>Systems are generally tailored to meet the specific needs of an organisation, with costs dependent on functions required, number of system users, size of vehicle fleet to be routed and scheduled, number of depots within the organisation, and the number of customers and calls to be routed. A single user system to plan the work for a fleet of 20 - 25 vehicles typically costs in the region of £25,000 - £30,000, with on-going licences and support likely to cost around £3,000 per year.</p>				
Issues to consider	<ul style="list-style-type: none"> – Compatibility with other systems – Route scheduling systems can be complicated for operators to learn how to use – The initial set-up can be time-consuming, as all addresses need to be input into a master file, with information on delivery windows, and vehicle restrictions and capacities in relation to the different product sizes and weights 				
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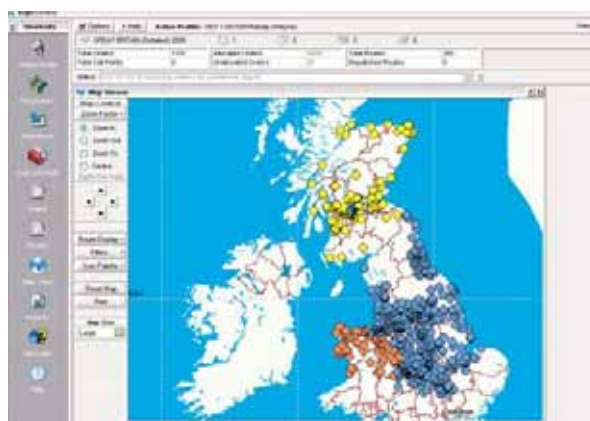


Photo provided courtesy of DPS International

Haulage Pricing Tools/Job Costing Systems

Although many organisations with larger fleets are likely to have defined rate structures and systems for costing jobs, this is by no means the industry standard. Many organisations still price work by 'gut feel'. Such organisations often find it is not easy for managers and customers to identify where savings could be made. A robust job-costing system is one of the keys to a profitable road haulage operation. Cost models allow you to provide a price for a job that bears a direct relationship to the costs involved, by quantifying the cost of your operation at an individual vehicle level.

There are a number of ways that you can use IT to improve the way you price your services. The simplest and often most effective approach is to set up your own spreadsheet. General accounting packages can also provide you with accurate and usable information for job costing. A more advanced option would be to use a CVRS system to help you develop a better understanding of your distribution costs and make improvements to your network (see page 22 for more details). You can also use Fleet Management Systems to give you an insight into the wider costs of your operation (see page 50 for more details).

Concise Guide to Computerised Routing and Scheduling

This guide can help you determine whether you need CVRS, and what will be involved in purchasing and setting up a system.

Computerised Vehicle Routing and Scheduling for Efficient Logistics

The full guide explores how you can introduce CVRS to your operation and outlines the likely costs and benefits. Information is provided to help you find the right supplier for your operation and case studies are included on systems used at Menzies Distribution, West Country Fine Foods, Alstons Cabinets, DW Weaver, Silentnight Beds and G & P Batteries.

Make Back-loading Work for You

This Freight Best Practice guide provides practical advice to help integrate and increase back-loading within your business in order to improve profitability and operational efficiency. The guide contains detailed sections on what back-loading involves and its benefits, how to obtain back-loads, overcoming constraints and barriers, and whether back-loading is right for your business.

An Introduction to Job Costing for Freight Operators

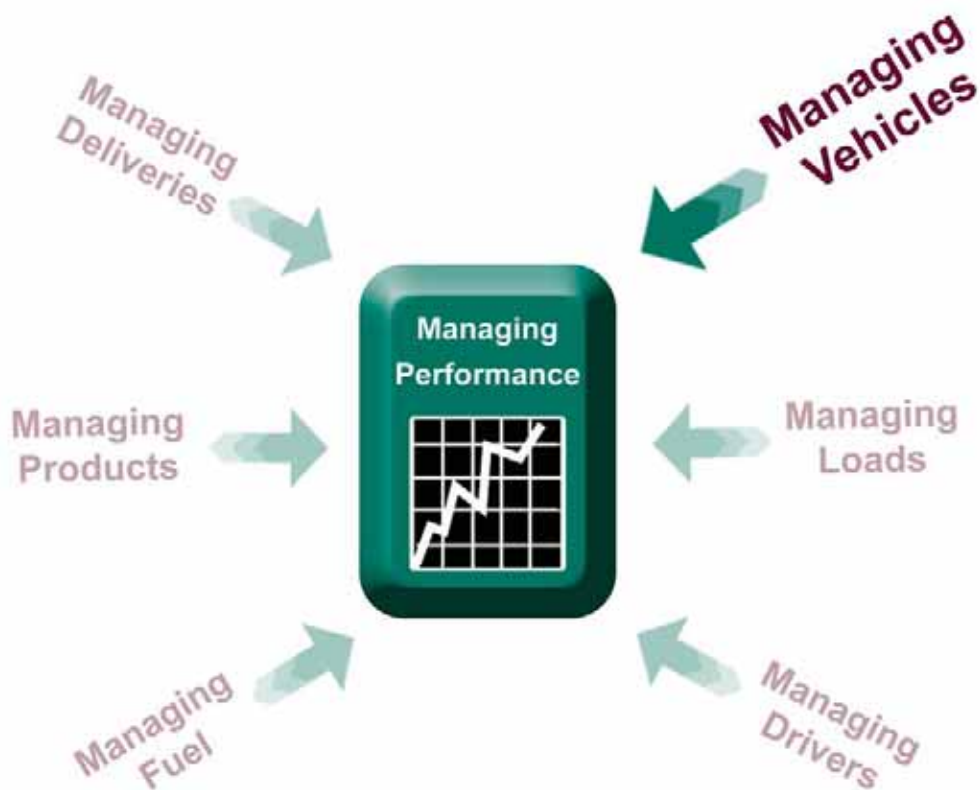
Accurate pricing of transport jobs can help to ensure your business returns a profit. This guide is designed to help you understand the principles of job costing and implement your own robust cost model system.

A full list of the **FREE Freight Best Practice** publications can be obtained from the Hotline **0845 877 0 877** or by visiting the website at **www.freightbestpractice.org.uk**

3.3 Managing Vehicles

The IT systems available for managing vehicles are often referred to collectively as telematics. Telematics can help to track assets, allow you to communicate with drivers and better manage delivery paperwork and vehicle maintenance, and provide information on the performance of vehicles and drivers. Appropriate use of telematics can lead to significant improvements in fleet productivity and efficiency, and reduce fleet mileage, costs and fuel consumption. Telematics can also reduce the environmental impact of truck operations and improve safety.

The valuable financial and customer service benefits that are available through the proper use of telematics are not in doubt, however, the list of claimed benefits need to be fully evaluated. Remember, it is important to keep in mind that telematics systems are not a substitute for careful fuel management and driver training (though they are usually complementary).



- ➡ In-cab Communication Systems
- ➡ Vehicle Tracking Systems
- ➡ Satellite Navigation Systems
- ➡ Vehicle Diagnostics Systems

In-cab Communication Systems

<p>What are they and how do they work?</p>	<p>In-cab communication systems are often available as part of a wider vehicle tracking system. Since tracking systems require an on-board computer to send back information to base, it is relatively easy to build in a messaging system that allows information (usually text messages) to be sent the other way. There is a wide range of messaging systems now available for communicating with drivers, including simple dash-mounted LCD screens, personal data assistants (PDAs) or even data terminals with miniature keyboards.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Reduces the costs of communicating with drivers via a mobile telephone – Improved communication can reduce possible instruction errors resulting from verbal conversations with the driver 				
<p>How much is it likely to cost?</p>	<p>Systems are usually combined with a more comprehensive vehicle tracking system. The outright purchase costs for a telematics system are discussed in the previous section and leasing costs usually range from £30-£70 per month per vehicle.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Potential unfamiliarity of computers to drivers and fleet managers means that communication systems need to be intuitive and easy to use – Ensuring users fully understand how to use the system before it is rolled out on a large scale, as it will not be fully utilised unless you and your staff are trained to use the equipment 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="194 1039 395 1151"> <p>Larger companies</p> </td> <td data-bbox="402 1039 1469 1151"> <p>Companies that are required to communicate with a large number of drivers can benefit greatly from in-cab communication technology. The systems can also reduce communication for international operations</p> </td> </tr> <tr> <td data-bbox="194 1160 395 1310"> <p>Smaller companies</p> </td> <td data-bbox="402 1160 1469 1310"> <p>The benefits of in-cab communication technology will probably need to be measured against your current expenditure on telephone calls to drivers while they are away from base. If you run a small local operation then in-cab communication may not result in any significant cost savings.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>Companies that are required to communicate with a large number of drivers can benefit greatly from in-cab communication technology. The systems can also reduce communication for international operations</p>	<p>Smaller companies</p>	<p>The benefits of in-cab communication technology will probably need to be measured against your current expenditure on telephone calls to drivers while they are away from base. If you run a small local operation then in-cab communication may not result in any significant cost savings.</p>
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<p>Further information</p>	<p>Freight Best Practice – Telematics Guide</p>				



Photo provided courtesy of Volvo Trucks

Vehicle Tracking Systems

<p>What are they and how do they work?</p>	<p>A vehicle tracking system is usually made up of an on-board computer, a satellite global positioning system (GPS) receiver and a communications device, which are normally combined into a single device hidden within the vehicle. The GPS receiver passes information about the vehicle's position to the communication device, which relays the information to a central computer usually situated at the company's base. A transport manager can then see exactly where the vehicle is on a computerised map and information (usually text messages) can usually be sent back to the vehicle (see page 25 for more detail on In-cab Communication systems).</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Helps transport managers control vehicles more effectively and improve fleet utilisation – Provides information about how well vehicles are utilised – Transport managers are informed when something goes 'wrong' with a vehicle (see What is Exception Reporting?overleaf) – Provides a better understanding of drivers' activities (e.g. reduce private mileage use) and valuable information for reporting purposes (e.g. whether customer service targets are met) 				
<p>How much is it likely to cost?</p>	<p>The outright purchase costs for a vehicle tracking system generally start at around £400 per vehicle, but can reach £3,000 depending on the level of system sophistication. However, as an alternative payment method, many suppliers now offer equipment leasing arrangements (which include communication network costs) that range from between £30-£70 per month per vehicle.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Take time when selecting a system, as suppliers may overstate the benefits of vehicle tracking systems – It is important that you only get the features that will be useful to your business – Drivers may view telematics as a 'big brother' system and feel under threat, so it is important to involve them in the decision-making process and make it clear that the system will help 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="185 1464 405 1594"> <p>Larger companies</p> </td> <td data-bbox="405 1464 1476 1594"> <p>Vehicle tracking technology can help to make fleet management easier for companies operating a large number of vehicles and can significantly reduce operating costs.</p> </td> </tr> <tr> <td data-bbox="185 1594 405 1756"> <p>Smaller companies</p> </td> <td data-bbox="405 1594 1476 1756"> <p>It may not be worthwhile for companies with just a handful of vehicles to invest in tracking systems, but the increasing affordability of telematics technology means that medium-sized transport operators with ten or more vehicles are now using and benefiting from them.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>Vehicle tracking technology can help to make fleet management easier for companies operating a large number of vehicles and can significantly reduce operating costs.</p>	<p>Smaller companies</p>	<p>It may not be worthwhile for companies with just a handful of vehicles to invest in tracking systems, but the increasing affordability of telematics technology means that medium-sized transport operators with ten or more vehicles are now using and benefiting from them.</p>
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<p>Further information</p>	<p>Freight Best Practice – Telematics Guide</p>				

What Is Exception Reporting?

Telematics and other IT systems used for transport operations provide so much data that it is not feasible to try to review it all. 'Exception reporting' is the idea that a system only tells you when something goes wrong, as opposed to going right; for instance, missing a delivery, exceeding the speed limit or an engine idling for longer than necessary. This can make it much easier to know what to look for when you invest in a new system that may seem complicated – understand how to look for exceptions first of all, then think about ways to use other data once you are more comfortable with the system.



The Freight Best Practice Telematics Guide

The Freight Best Practice Telematics Guide offers essential information on telematics systems and provides a basic technological overview, analysing on-board hardware, data transfer and management software. It outlines a range of different telematics applications that can help your business, such as:

- Vehicle and driver data systems
- Vehicle tracking systems
- Trailer tracking
- Text messaging
- Paperless manifest/proof of delivery
- Traffic information systems
- On-board navigation

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Satellite Navigation Systems (sat-nav)

<p>What are they and how do they work?</p>	<p>Sat-nav systems use an in-cab GPS device and display screen (usually contained in a single unit) to replace the need for a paper road atlas or an A to Z. Satellite navigation (sat-nav) systems enable drivers to plan their route and receive guidance en route. Systems provide detailed maps and are expandable to include additional city and street maps. Points of interest such as hotels, restaurants, fuel stations, distribution depots and retail parks can also be found.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Eliminates the need for drivers to obtain detailed directions to their next destination – Improves drivers' concentration because the system automatically guides the way – Sat-nav systems can reduce planning time and lost running as well as decreasing overall travel times – Some systems can also advise drivers of traffic delays and assist re-routing decisions – Helps to decrease fuel consumption, increase vehicle utilisation and improve customer service 				
<p>How much is it likely to cost?</p>	<p>Depending on specific requirements, sat-nav prices range from £150 for a simple stand-alone system to £1,500 for built-in cab systems. The more expensive systems include additional fitting charges, which vary depending on the truck manufacturer or distributor. Average cost is approximately £400 per unit. Mapping data and information are usually supplied with the system via CD or DVD, but as this information evolves there are additional costs for subscription services that provide the latest mapping data. If satellite systems are combined with real-time map and traffic information systems, the prices start at £250 per annum (single country), depending on the service provider.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – The less familiar a driver is with a delivery address, the greater the contribution a sat-nav system could make to operational efficiency – Be aware that most current systems are designed mainly for use in private motor vehicles and not for lorries, so mapping information generally does not take into account bridge height/weight restrictions, road width restrictions, etc – Maps can go out of date quickly and there are additional costs for the latest updates – Care should be taken to ensure that devices do not distract drivers while they are on the road 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="185 1697 405 1827"> <p>Larger companies</p> </td> <td data-bbox="405 1697 1476 1827"> <p>In general, the benefits of using sat-nav will be determined more by the type of your operation than the size. Sat-nav is most useful for multi-drop operations where drivers are travelling to unfamiliar destinations.</p> </td> </tr> <tr> <td data-bbox="185 1827 405 1955"> <p>Smaller companies</p> </td> <td data-bbox="405 1827 1476 1955"> <p>Sat-nav systems can be very useful for drivers in smaller operations that involve multi-drop operations in unfamiliar areas. These systems have become very affordable and can be bought off the shelf in most electrical retailers.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>In general, the benefits of using sat-nav will be determined more by the type of your operation than the size. Sat-nav is most useful for multi-drop operations where drivers are travelling to unfamiliar destinations.</p>	<p>Smaller companies</p>	<p>Sat-nav systems can be very useful for drivers in smaller operations that involve multi-drop operations in unfamiliar areas. These systems have become very affordable and can be bought off the shelf in most electrical retailers.</p>
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<p>Further information</p>	<p>Freight Best Practice – Telematics Guide</p>				

Vehicle Diagnostics Systems

<p>What are they and how do they work?</p>	<p>Vehicle diagnostics systems connect to the engine control unit (ECU) of a vehicle to help identify components and systems in the vehicle that are faulty and need repair. For companies that conduct maintenance in-house, vehicle diagnostics systems can avoid the need to take the vehicle to dealers to interpret fault codes.</p>	
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Avoiding considerable cost associated with sending your vehicle back to the manufacturer for a fault to be diagnosed – Reduced need for major maintenance works as faults are identified prior to serious damage. This increases vehicle productivity 	
<p>How much is it likely to cost?</p>	<p>Diagnostics systems vary enormously in price depending on their sophistication. They range from £700 - £6,000. In addition, upgrade software packages are available (some suppliers provide these without charge).</p>	
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Although diagnostics systems are extremely efficient, you will have to ask if the purchase and maintenance fees are comparable to your fleet costs – Operators with their own maintenance departments will undoubtedly benefit from these products, however, smaller companies could use a private garage, as diagnostic tools have become widespread in commercial garages. – Some systems will have limitations (i.e. be unable to identify all fault codes), but original equipment manufacturers' (OEM) systems can identify all fault codes 	
<p>Who will benefit?</p>	<p>Larger companies</p>	<p>These systems may not be relevant for large companies that have established purchasing fleet maintenance agreements directly with manufacturers or major vehicle dealers.</p>
	<p>Smaller companies</p>	<p>For small companies operating a diverse fleet of vehicles with workshops in-house, vehicle diagnostics systems may reduce maintenance costs by avoiding having to spend time taking vehicles to dealers in order to understand problems.</p>



3.4 Managing Loads

The load carried by a vehicle gives rise to a need for information across a range of different areas. Trailer tracking, temperature control, load weighing and load and vehicle security systems can help you to protect your assets and loads and ensure legal compliance.



- ➡ Trailer Tracking Systems
- ➡ Telematics-based Temperature Control Monitoring Systems
- ➡ Vehicle Weighing Systems
- ➡ Security Systems

Trailer Tracking Systems

<p>What are they and how do they work?</p>	<p>Like a vehicle tracking system, a trailer tracking system is usually made up of an on-board computer, a satellite (GPS) receiver and a communications device. The system allows for the transport manager to locate a trailer on a computerised map. The fundamental difference between trailer and vehicle tracking systems is the way in which they are powered. Most systems on the market today are robust and self-contained and can power themselves for long periods without an external power source; indeed, many are now solar-powered.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Tracking systems can help transport managers control trailers more effectively and provide valuable information about trailer utilisation – Improved utilisation of trailers allows you to reduce the size of your trailer fleet because the system can help to locate stolen or lost loads – Linking tracking systems with other IT systems allows consignments or loads to be tracked by customers or triggers an alarm when the loads leave a specified area (see Security Systems on page 34) 				
<p>How much is it likely to cost?</p>	<p>Outright purchase costs for vehicle and trailer tracking systems range from £500 to several thousand pounds per trailer, depending on the level of sophistication. Many suppliers now offer financing arrangements (which include communication network costs) that range from £40 to £60/month per trailer.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – These are most beneficial to operations involving high-value perishable goods and should be viewed as a long-term risk reduction tool – Careful thought should be given to the level of features required. Sophisticated features such as instant messaging might look impressive but need to be justified by the value they add to your business 				
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<p>Further Information</p>	<p>Freight Best Practice – Telematics Guide</p>				



Telematics Based Temperature Control Monitoring Systems

<p>What are they and how do they work?</p>	<p>Temperature control monitoring systems monitor the consistency of trailer temperature, providing alerts to problems that may jeopardise perishable loads. Temperature recording systems are fitted as standard on most new refrigerated units, but can be implemented as an extra feature of trailer tracking systems (see Trailer Tracking Systems on page 31 and Vehicle Tracking Systems on page 26). Systems can provide an alert when problems occur and transmit output data which can be used to generate reports and subsequently prove that the correct temperature conditions have been maintained.</p>	
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – When implemented as part of a telematics package, a temperature monitoring system can alert the driver or transport manager to a temperature fluctuation or even a breakdown of a fridge motor in real time, and thereby improve the quality of deliveries and reduce the potential for stock loss – Systems can also provide reports that are sent electronically to customers, and this could reduce administration and improve customer service levels 	
<p>How much is it likely to cost?</p>	<p>Temperature control monitoring systems now come as standard on most new refrigerated units. However, if you have an old refrigerated unit in which you would like to implement a telematics-based temperature monitoring system, then prices are approximately £1,000 plus £15 per month per vehicle for a 12-month contract. However, some suppliers give better rates when there is a longer contract (e.g. five-year daily rates of £2 and three-year daily rates of £3).</p>	
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Systems are most valuable to operations involving high-value perishable goods – Undertaking a comprehensive cost benefit analysis before making any long-term investment decisions 	
<p>Who will benefit?</p>	<p>Larger companies</p>	<p>The benefits of telematics-based temperature monitoring systems are useful for large operations that involve high-value perishable goods.</p>
	<p>Smaller companies</p>	<p>The benefits of telematics-based temperature monitoring systems are also useful for small operations that involve high-value perishable goods.</p>
<p>Further information</p>	<p>Freight Best Practice – Telematics Guide</p>	



Vehicle Weighing Systems

<p>What are they and how do they work?</p>	<p>For some load and product types it is vital to monitor the load weight to avoid overloading. Axle weighing technology creates an easy solution. There are several different methods of weighing your vehicle: axle weighbridges, on-board weighing systems and portable and semi-permanent equipment.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Prevention of axle overloading – Maximisation of payloads – Compliance with legislation and improved operational safety – Longer vehicle life 				
<p>How much is it likely to cost?</p>	<p>Weighbridges are dynamic axle weighing systems that cost around £5,500, which generally includes manufacture of platform, dynamic weighing indicator and printer</p> <p>Portable weigh pads cost around £3,500, which generally includes two pads, indicator and printer</p> <p>On-board weighing systems cost £2,000 - £4,000 per vehicle</p>				
<p>Issues to consider</p>	<p>Careful consideration needs to be given to the extent of the system sophistication. Only companies which have large fleets need to use a static weighbridge, whereas the on-board weighing systems are better suited to small operators.</p>				
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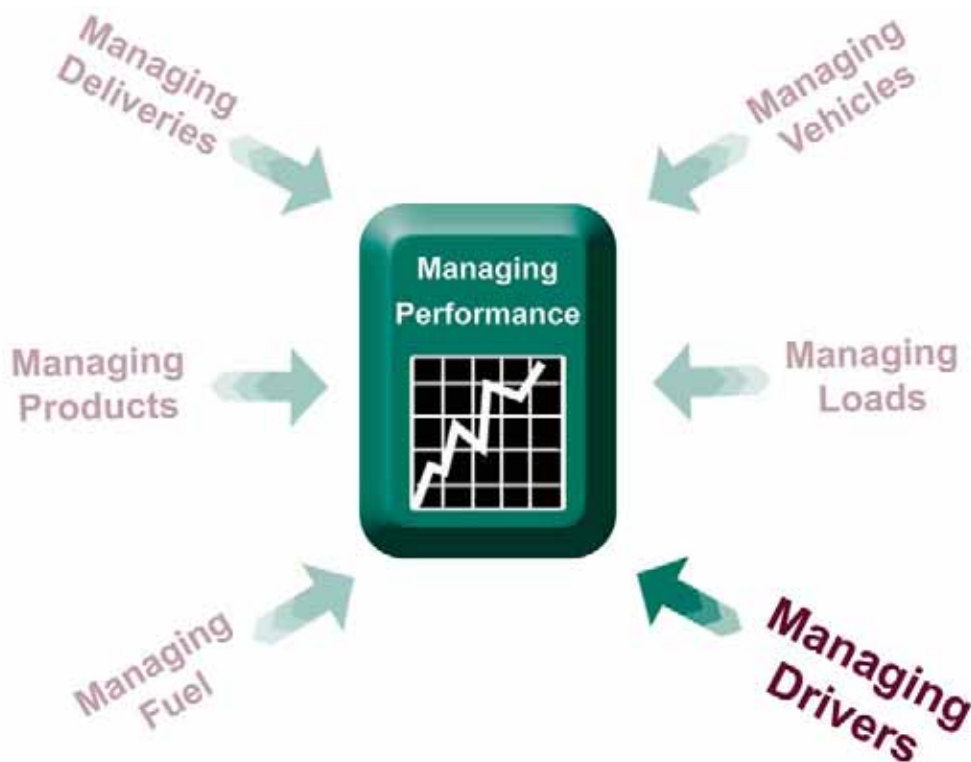
Security Systems

<p>What are they and how do they work?</p>	<p>The telematics industry is now selling more security-related equipment and systems than ever before, as customers demand greater peace of mind for their products and drivers as they travel about the country. Many systems have the capability to send messages or alarms to specific mobile phones belonging to managers or members of staff, alerting them to a breach of security. The systems can also provide alerts to private security firms. Geofencing can ensure a vehicle remains within a defined area otherwise an alarm will be activated, producing a data alert.</p>	
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Reduced load and lorry theft – Reduced insurance claims – Lower insurance premiums – Greater service reliability – Enhanced customer service 	
<p>How much is it likely to cost?</p>	<p>Prices vary between different suppliers and they also depend on the types of vehicle that you have in your fleet and the level of sophistication of the system. Security is often a functionality of a trailer/vehicle tracking system, and rarely comes as a single entity (see Vehicle Tracking Systems on page 26).</p>	
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Levels of security protection required – Insurance incentives – Integration with other systems 	
<p>Who will benefit?</p>	<p>Larger companies</p>	<p>As with other forms of technology for managing loads, the usefulness of security systems will depend more on the nature of your operation than its size. However, improved systems can be useful for large operations that pay high insurance premiums.</p>
	<p>Smaller companies</p>	<p>If you have a small operation but security and theft issues are important, then modest investment in improved security systems can reduce the risks associated with vehicle and cargo theft.</p>



3.5 Managing Drivers

The best vehicle technology in the world is limited if the driver - the person who can really make a difference to service delivery and fuel consumption - is not properly managed. By managing your drivers effectively and productively, you can realise improvements in the efficiency of your business. Not only can profits be increased, but your fleet's whole life cost can be reduced. IT systems can also help you to comply with drivers' hours regulations.



➡ Driver Information Systems

➡ Digital Tachographs and Hours Compliance Tools

Driver Information Systems

<p>What are they and how do they work?</p>	<p>Systems that collect vehicle and driver information are often referred to as 'black box' technology. A computer system is connected to one or more electrical inputs, for example, from the tachograph, rev counter, CAN (Controller Area Network) bus or fuel meter. A black box can provide data on a range of variables. Driver and vehicle data can provide general information about fuel consumption trends, compare fuel use between drivers (which can be used to set up league tables), monitor occurrences of idling, over-revving, speeding and harsh braking, and evaluate the impact of fuel-saving initiatives.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Enhanced monitoring and management capability – Improved fuel efficiency – Can measure impact of training and other initiatives – Reduced maintenance costs – Increased road safety – Lower insurance premiums 				
<p>How much is it likely to cost?</p>	<p>Outright purchase costs for telematics systems which provide tracking information as well as vehicle and driver performance data generally start from around £400 per vehicle, but can go up to £3,000 depending on the level of sophistication. Many suppliers now offer financing arrangements, which range from £30 to £70/month per vehicle.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Fuel meter accuracy can vary markedly from one type of vehicle to another. This means that fuel consumption data are best used for analysis of overall trends rather than making detailed comparisons between different vehicles – Driver data and comparisons should be undertaken in a positive manner, offering incentives rather than penalties 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="185 1308 389 1442"> <p>Larger companies</p> </td> <td data-bbox="389 1308 1471 1442"> <p>For large companies with numerous drivers, driver information systems can help to reduce operating costs and highlight problems that might exist in the operation.</p> </td> </tr> <tr> <td data-bbox="185 1442 389 1585"> <p>Smaller companies</p> </td> <td data-bbox="389 1442 1471 1585"> <p>Driver information systems are also beneficial for small companies. They can provide information that is difficult to collect via other means and can help to measure the impact of training initiatives and other interventions.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>For large companies with numerous drivers, driver information systems can help to reduce operating costs and highlight problems that might exist in the operation.</p>	<p>Smaller companies</p>	<p>Driver information systems are also beneficial for small companies. They can provide information that is difficult to collect via other means and can help to measure the impact of training initiatives and other interventions.</p>
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<p>Further information</p>	<p>Freight Best Practice – Telematics Guide</p>				



Increasing driver efficiency at Arla Foods



Arla is the UK's largest supplier of retail milk and has a strong branded portfolio which includes Lurpak, Anchor and Cravendale. It

has high quality processing assets, truly national distribution and strong technical resources. In the UK, the company has a workforce of almost 3,500 and processes 1.9 billion litres of milk each year at nine sites. The UK fleet consists of around 450 motor vehicles and 470 trailers, and uses approximately 50,000 litres of diesel each day.

The company has always taken an interest in general efficiency initiatives and has looked at a wide range of areas such as double-deck trailers, aerodynamics, and draw bars and swap bodies. It has always been very proactive in terms of driver management and has two regional driver trainer managers overseeing 18 driver trainers, who in turn manage the training and development of the company's full time drivers and regular agency staff. Each regular driver has a refresher training session every six months. Over the past few years, the company has invested heavily in ERF's STACC telematics system to support its driver training initiatives and improve fleet performance.

The system allows depot managers to see where vehicles are in real time and enables them to communicate with drivers through text messages.

However, it is the basic weekly summary reports which provide them with the most valuable information. Each week, depot managers can generate a report showing average MPG and percentage of idling time, green band driving and standing time broken down by individual vehicles and totalled for the whole fleet.

Improving MPG and Reducing Excessive Engine Idling

Weekly reports help managers to target problems and train more effectively. For instance, a training requirement was identified when a report highlighted one driver had a large number of harsh braking incidents. Following training on how to improve the use of the exhaust brake, the

driver's fuel use improved by 23% and as an unexpected result, there was a reduction in journey time.

According to the National Fleet Compliance Manager, Michael Selby, the system has also helped to reduce the amount idling across Arla's fleet.

"The telematics system has helped us identify instances of idling and allowed us to target education initiatives accordingly. We educated drivers about the efficient use of tail-lifts, and in particular that these can operate for up to 30 minutes without the engine on."

Since the initiative the average idling time has been reduced to about 4% while fuel use has gone from an average of around 6.8 MPG to an average of 7.4 MPG - an improvement of around 9%. This equates to an annual saving of just under £20,000 and a reduction in carbon dioxide emissions of over 70 tonnes per year.

Resolving Problems

The telematics system also provides the company with a tool for capturing other operational information and improving working practices. For instance, the system can provide depot managers with a better understanding of waiting times at regional distribution centres (RDCs), and allows them to see when drivers go off route. According to Michael, "The system can show areas for drivers improvement as well as highlighting areas where they are performing particularly well. For instance, the system was used recently to have a speeding ticket overturned for one of our drivers. The driver approached the depot manager and asked him to retrieve the data, and when we were able to show police he was in a different location, he didn't have to pay the fine and avoided attracting points to his driving licence"



Digital Tachographs and Hours Compliance Tools

<p>What are they and how do they work?</p>	<p>Digital tachographs were introduced for all new HGVs and coaches in May 2006 as a replacement for analogue tachographs. A digital tachograph consists of a vehicle unit (VU) located within the driver's area of the cab and connected to a speedometer. The VU is the essential part of the system. It is able to store data on different drivers who use the vehicle and information on vehicle speeds for a period of at least 365 days. These data can be accessed by VOSA or the police during roadside checks. Drivers, company representatives, technicians (i.e. those qualified to calibrate vehicle units) and enforcement officers each have their own smart cards to enable them to use or gain access to the data contained in the VU. Driver cards can store information for at least 28 days and are downloaded into a central system for analysis and monitoring of working times.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Simplifies process of recording hours for drivers – Simplifies process of managing and analysing driver information – Can integrate with other company systems, for example, payroll 				
<p>How much is it likely to cost?</p>	<p>Vehicle units cost £400 - £600 each. Company and driver 'smart' cards can be purchased from the DVLA for £38. Cards are valid for five years, but if lost the replacement costs £19.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – The vehicle unit is set to 'Universal Time Co-ordinated' (UTC = Greenwich Mean Time) and all records will be set against this time. If making manual entries, drivers need to be made aware that stored records will be an hour behind during British Summer Time – Company cards obtained from different DVLA offices will have separate identities and, hence, information is only downloadable with cards associated with particular depots – It is illegal to drive a vehicle fitted with a digital tachograph without a smart card 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="188 1290 392 1447"> <p>Larger companies</p> </td> <td data-bbox="402 1290 1452 1447"> <p>Digital tachographs will provide benefits for all types of operation and will affect all companies across the industry. Larger companies should give careful thought about the timing and implementation of digital tachographs and ensure they are fully prepared before purchasing new vehicles.</p> </td> </tr> <tr> <td data-bbox="188 1456 392 1585"> <p>Smaller companies</p> </td> <td data-bbox="402 1456 1452 1585"> <p>For smaller companies it is important to be aware that your drivers must have a smart card before they can drive a vehicle with a digital tachograph (see 'Issues to consider' above).</p> </td> </tr> </table>	<p>Larger companies</p>	<p>Digital tachographs will provide benefits for all types of operation and will affect all companies across the industry. Larger companies should give careful thought about the timing and implementation of digital tachographs and ensure they are fully prepared before purchasing new vehicles.</p>	<p>Smaller companies</p>	<p>For smaller companies it is important to be aware that your drivers must have a smart card before they can drive a vehicle with a digital tachograph (see 'Issues to consider' above).</p>
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<p>Further information</p>	<p>http://www.digitaltachograph.gov.uk/ - The official UK site for digital tachographs. http://www.eu-digitaltachograph.org/home.asp - The official EU site for digital tachographs.</p>				

Free Freight Best Practice publications for drivers

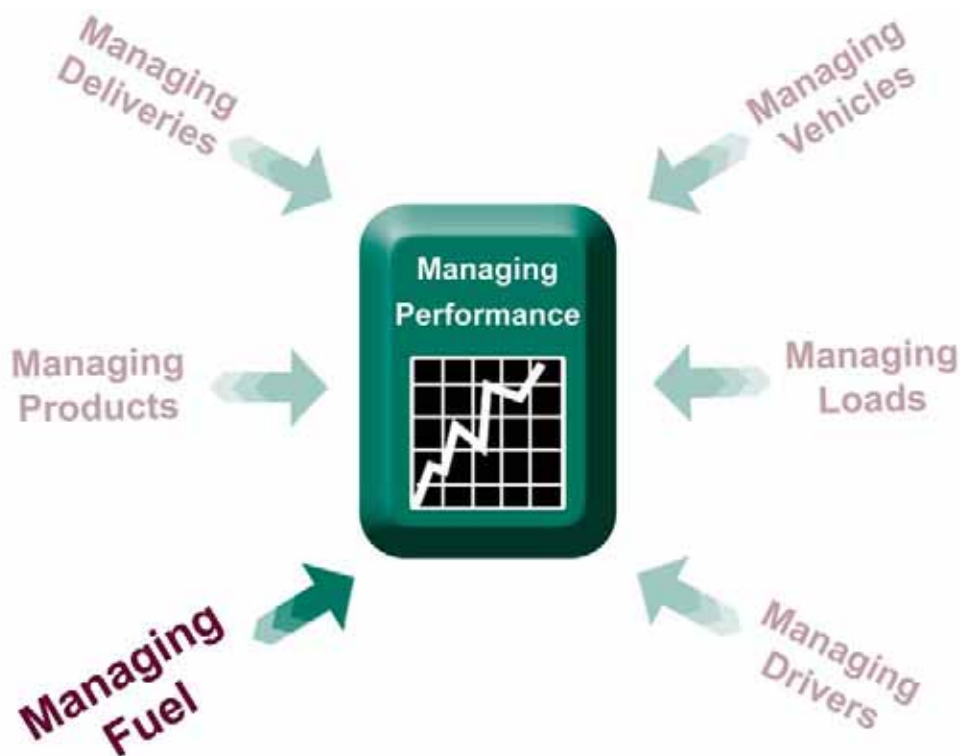
SAFED for HGVs: A Guide to Safe and Fuel Efficient Driving for HGVs

Safe Driving Tips

A full list of the **FREE Freight Best Practice** publications can be obtained from the Hotline **0845 877 0 877** or by visiting the website at www.freightbestpractice.org.uk

3.6 Managing Fuel

Fuel use represents a major overhead to any fleet operation. A small percentage saving in this area can represent a large annual saving. A fuel management programme needs to explain important issues such as raising the profile of fuel as a precious resource and managing it from purchase/receipt, through storage and issue to drivers, to the management of vehicle usage. This can be extremely beneficial as it will enable effective monitoring of fuel and reduce the amount of fuel a company uses, not only saving money but also reducing the effects on the environment.



➔ Fuel Recording Systems

Fuel Recording Systems

<p>What are they and how do they work?</p>	<p>Fuel recording systems monitor the use of fuel when the driver refuels the vehicle. These systems can take many forms including fuel cards, electronic keys, driver keys, PIN numbers and fingerprint identification. An electronic device fitted inside the vehicle links up with the smart card issued to drivers. When the ignition is turned off, the system automatically records the odometer reading and vehicle registration to the fuel system's smart chip. This allows the system to capture accurate information on distance travelled against the specific driver and during every refuelling.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Cost savings (up to £2,000 per year per vehicle) – Accurate performance management information, allowing monitoring and target setting – Facilitates benchmarking – Reduces pilferage – Reduces manual data input – Identifies impact of driver training and other initiatives 				
<p>How much is it likely to cost?</p>	<p>Costs will depend on the size of the company and what additional technology is used with the fuel card. Most accounts allow the purchase of a pre-specified volume of fuel per month or operate on a pay-on-usage principle. Generally, prices include an annual system cost as well as report charges and bunkering fees.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Different fuel recording systems record different data – Training requirements (although the latest systems eliminate any manual input from drivers) – Restrictions on how many sites the equipment can run 				
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<p>Further information</p>	<p>See Freight Best Practice publications below.</p>				

Free Freight Best Practice publications for fuel



Fuel Management Guide



Fuel Saving Devices



In-fleet Trials of Fuel Saving Interventions for Trucks

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3.7 Managing Products

Better product management helps reduce transport costs. More efficient product management can improve the movement of goods into and out of warehouses and ensure better movement of raw materials and goods between suppliers and end-users. This can help reduce inventories, order errors and the need for return, as well as more general administration and handling requirements.



- ➔ Warehouse Management Systems
- ➔ Voice Picking Systems
- ➔ Product Scanning and Tracking Systems - Radio Frequency Identification (RFID)
- ➔ Supply Chain Planning and Management Systems

Warehouse Management Systems

<p>What are they and how do they work?</p>	<p>Warehouse Management Systems (WMS) can be thought of as the 'command centre' of a warehouse that links together different systems such as computerised vehicle routing and scheduling packages and integrated supply chain systems. WMS monitor incoming goods, customer orders and stock levels. They incorporate mobile transaction recording devices (either hand-held or mounted on mechanical handling equipment) to record picking and packing activities.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Automated stock replenishment – Reduced labour costs – Increased throughput and storage capacity – Reduced inventory levels – More responsive customer service – Reduced paperwork 				
<p>How much is it likely to cost?</p>	<p>The cost depends on the number of modules required, the level of modification and the number of interfaces with other systems or the Internet. Systems typically cost between £25,000 (basic pallet warehouse system) and £1,000,000 (fully automated warehouse system).</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – There are inherent risks in relying solely on a WMS. If the system fails or develops a bug, then warehouse operations can be severely affected – Adequate support services are required (possibly round the clock) – Flexibility is needed to allow for upgrades in the future – Systems should be compatible with other IT systems within the operation 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="201 1281 392 1442"> <p>Larger companies</p> </td> <td data-bbox="399 1281 1471 1442"> <p>A WMS may be expensive, but it can deliver significant savings for a company with major warehousing operations. Even minor reductions in incorrect orders can result in sizable savings. A WMS can also make tasks easier for operational staff, improving motivation and retention.</p> </td> </tr> <tr> <td data-bbox="201 1451 392 1576"> <p>Smaller companies</p> </td> <td data-bbox="399 1451 1471 1576"> <p>A large-scale WMS may exceed the requirements of smaller companies. However, it is beneficial to look at ways of improving warehouse operations, such as barcoding products or developing a database to monitor stock levels.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>A WMS may be expensive, but it can deliver significant savings for a company with major warehousing operations. Even minor reductions in incorrect orders can result in sizable savings. A WMS can also make tasks easier for operational staff, improving motivation and retention.</p>	<p>Smaller companies</p>	<p>A large-scale WMS may exceed the requirements of smaller companies. However, it is beneficial to look at ways of improving warehouse operations, such as barcoding products or developing a database to monitor stock levels.</p>
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<p>Further information</p>	<p>Freight Best Practice - Working Together to Improve the Operational Efficiency of Regional Distribution Centres (RDCs)</p>				



Better Planning at Transfloor



Order Process - Foxpro

Transfloor, a nationwide distributor of carpets and flooring, uses a bespoke version of the Foxpro program to run its order processing. Several screens take the user through the order process. The 'Pick screen' shows all of the orders on the system, plus weight and other details about each carpet. The orders are sorted into predefined postcode areas, enabling the route planner to assign orders to vehicles. Once routes are finalised, the driver's paperwork and pick-sheets for each route are printed. Product locations within the warehouse are shown, and can be picked in delivery order and subsequently loaded onto the vehicles. The 'Debrief screen' is accessed after the deliveries have been completed, and administration staff check driver paperwork and confirm delivery of each product on the system. If products are not delivered, the



reason is selected from a drop-down box, and receivers can be charged if the fault lies with them. This process also automatically prices and invoices the receiver or manufacturer.

The main benefits of the system to Transfloor have been:

- ➔ An organised and efficient order management system
- ➔ Carpet manufacturers can place their customer orders on the system, which are then put in a pick-file and downloaded by Transfloor to organise routes
- ➔ Increased product visibility through the system, including a full history of orders
- ➔ A remote access system so that orders can be placed from other locations

Overall, Transfloor feels that the system has provided value for money and the next stage is to introduce hand-held terminals for the drivers, replacing paperwork.

Product Tracking - Minorplanet

Transfloor also uses the VMI - Minorplanet system to track its fleet of 24 vehicles. Each vehicle is fitted with a transponder and is tracked round the clock, allowing the transport manager to check the progress of individual deliveries. It is also possible to print out a journey summary with a step-by-step record of the vehicle's route, enabling the mileage and fuel efficiency to be calculated. The journey reports can continuously follow the journey, giving a diary report, and are an effective deterrent to excessive engine idling. Transfloor has found this system useful in determining whether or not a vehicle was present at an accident scene, thus reducing the cost of false insurance claims, where previously it had been the HGV driver's word against the claimant.

Voice Picking Systems

<p>What are they and how do they work?</p>	<p>Voice picking technology uses speech recognition and synthesis to allow workers to communicate directly with a warehouse management system instead of using printed lists. It is made up of a wireless headset and a microphone which can communicate with a Warehouse Management System (WMS) via a radio frequency Local Area Network (LAN). A typical pick operation starts with the picker hearing instructions for the next location. The picker confirms the location is correct and is then told the quantity to be picked, verbally responding when the task is completed.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Increased picking accuracy and productivity – Removes the need to make trips back to the assignment desk, re-keying order amendments and picking confirmations – Real time feedback and stock updates – Safer hands-free and eye-free working environment 				
<p>How much is it likely to cost?</p>	<p>The cost will depend on what technology the company already has. Voice units range from £5,000 to £10,000 per unit, including installation and training.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Speaker dependent systems (which store instructions based on the user's voice) are more expensive than speaker independent systems (instructions are issued using a standardised voice for all users), but can reduce problems associated with different languages and regional accents 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="194 1124 395 1281"> <p>Larger companies</p> </td> <td data-bbox="402 1124 1476 1281"> <p>Voice picking systems can be integrated into a broader WMS and other IT systems and can therefore improve overall throughput and productivity. They can also reduce training costs and improve staff retention by making tasks easier.</p> </td> </tr> <tr> <td data-bbox="194 1290 395 1415"> <p>Smaller companies</p> </td> <td data-bbox="402 1290 1476 1415"> <p>Voice picking is probably most useful in situations where there are a large number of product lines, problems with incorrect orders or high levels of warehouse staff turnover.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>Voice picking systems can be integrated into a broader WMS and other IT systems and can therefore improve overall throughput and productivity. They can also reduce training costs and improve staff retention by making tasks easier.</p>	<p>Smaller companies</p>	<p>Voice picking is probably most useful in situations where there are a large number of product lines, problems with incorrect orders or high levels of warehouse staff turnover.</p>
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<p>Further information</p>	<p>Freight Best Practice - Working Together to Improve the Operational Efficiency of Regional Distribution Centres (RDCs)</p>				



Product Scanning and Tracking Systems - Radio Frequency Identification (RFID)

<p>What are they and how do they work?</p>	<p>Radio Frequency Identification (RFID) technology is a means of identifying products and assets. RFID uses a computer chip 'tag' with a mini antenna that transmits/receives information via radio waves. Large amounts of information can be scanned at the same time. Instead of counting or scanning each item in a roll cage, an entire cage of tagged products can be read. RFID tags can store various amounts of data, and can be read from varying distances, depending on the design of the system.</p> <p>There are two main tag types:</p> <ul style="list-style-type: none"> – Active tags - which are rewritable, and require a battery – Read-only passive tags, used for tracking returnable assets and low-value items, are powered by the radio waves transmitted from the reading device 				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Allows assets and products to be tracked as they move through the supply chain – Can link to a track and trace system allowing customers to track products (see Track and Trace Explained on page 46) – Reduces loss or theft in transit – Reduces incorrect orders (e.g. alarm will sound when tote is moved into wrong lorry) – Faster loading and unloading - individual items do not need to be checked 				
<p>How much is it likely to cost?</p>	<ul style="list-style-type: none"> – Active tags cost around £15 each – Passive tags cost from 30p if purchased in large quantities – Tag readers (or read-writers) cost from £1,000 (basic hand-held unit) to £20,000 for a large gate-type system 				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – RFID technology is still developing and relatively expensive – RFID systems tend to be customer-led, i.e. large companies mandating suppliers to invest in the technology. Tensions can arise if suppliers feel that they are forced to bear many of the costs of the system without getting the benefits 				
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<p>Further information</p>	<p>Freight Best Practice - Working Together to Improve the Operational Efficiency of Regional Distribution Centres (RDCs)</p>				

Track and Trace Explained

Track and trace is based on the concept of a product or a unit of distribution, such as a tote or roll-cage, having its own unique identity, usually in the form of a number shown on a barcode or stored in a radio frequency identification tag. When the item is moved from one point to another, for instance, from a warehouse into a trailer, this ID number can be scanned or read into a computer system which can effectively 'track' the item. If linked with a mobile technology system such as telematics,

it is possible to know the exact location of the item and exactly how far away it is from the customer. These types of system are commonly integrated into company websites to allow customers to see where their deliveries are at any given time. Track and trace systems are also useful for ensuring that returnable assets do not get lost.



Working Together to Improve the Operational Efficiency of Regional Distribution Centres (RDCs)

This Freight Best Practice guide has been designed to help encourage a greater understanding and increased take-up of good practice in operating RDCs in an efficient and sustainable way. The guide provides information for various parties directly and indirectly involved in RDC operations, and highlights actions that can be taken to improve efficiency and meet customer service obligations while at the same time reducing the environmental impact of operations.

A full list of the **FREE Freight Best Practice** publications can be obtained from the Hotline **0845 877 0 877** or by visiting the website at **www.freightbestpractice.org.uk**

Supply Chain Planning and Management Systems

<p>What are they and how do they work?</p>	<p>Supply chain planning and management systems create visibility across the entire business, including the customer base. They integrate various systems to allow customer service staff to access the warehouse computer. With these systems it is possible to respond quickly to changes in supply and demand.</p> <p>The two main systems are Enterprise Resource Planning (ERP) and Electronic Data Interchange (EDI). ERP attempts to integrate the departments and functions across a company into a single computer system serving all the different departments, and enabling them to communicate and share information. EDI is the transfer of data between an application running on the computer of one organisation and that running on the computer of another organisation, with no manual intervention.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Reduced operating costs – Integrated processes across the enterprise – Increased 'visibility' throughout the supply chain 				
<p>How much is it likely to cost?</p>	<p>Costs depend on the size of the operation, the sophistication of the system and the company's requirements. Every system is unique and is tailored to match the needs of the business. The more sophisticated systems represent a multi-million pound investment.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Planned approach required to evaluating and installing systems – Backing from staff - these systems represent a set of new practices for performing different duties – System changes can be costly and require testing before implementation 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="194 1214 391 1339"> <p>Larger companies</p> </td> <td data-bbox="391 1214 1465 1339"> <p>In general, these systems are most likely to be useful for large manufacturing companies with complicated supply chains spread over different regions or countries.</p> </td> </tr> <tr> <td data-bbox="194 1339 391 1473"> <p>Smaller companies</p> </td> <td data-bbox="391 1339 1465 1473"> <p>These systems may not offer much value for smaller companies unless complicated production processes are involved or they supply larger companies that use specific supply chain planning and management systems.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>In general, these systems are most likely to be useful for large manufacturing companies with complicated supply chains spread over different regions or countries.</p>	<p>Smaller companies</p>	<p>These systems may not offer much value for smaller companies unless complicated production processes are involved or they supply larger companies that use specific supply chain planning and management systems.</p>
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<p>Further information</p>	<p>Freight Best Practice - Working Together to Improve the Operational Efficiency of Regional Distribution Centres (RDCs).</p>				



Enterprise Resource Planning (ERP) and Electronic Data Interchange (EDI)

Many large contract logistics and transport companies use ERP and EDI to communicate and exchange information with their customers. For a small transport company, the order process usually involves the customer contacting the company, by either phone or fax, and providing it with details about the load and its destination. This process works well for small or individual loads, but is not as suitable if, for instance, it is necessary to transport many thousands of different automotive components to hundreds of dealers in various parts of the country. ERP and EDI solve this problem by providing an electronic link between suppliers to help move supplies and products from one point to another with little or no human interaction.

The relationship between car manufacturers, logistics companies and car dealers can provide an example of this. If a car is taken to a dealer for repair and a new headlight is required, the mechanic scans the headlight and the dealer's computer sends an order via EDI to the manufacturer to replace it. This item is picked at

the manufacturer's warehouse, and the manufacturer's system then sends an order through to its logistics provider to transport the item to the dealer (the order may be grouped with other orders). When the item is delivered, the system confirms the delivery, a notice is sent to the manufacturer via EDI and an invoice is automatically generated and sent.

ERP is a slightly different concept to EDI and can be considered as the overriding system controlling the communication between the different groups. In the above example, ERP might be used to manage much more complicated processes, for example, monitoring sales of vehicles at a car dealer, predicting the number of cars that need to be produced to meet future demand and translating the production requirements into orders for specific parts with suppliers. The system controls the whole process of manufacturing and distribution and allows everyone in the supply chain to trace developments at all the different stages.



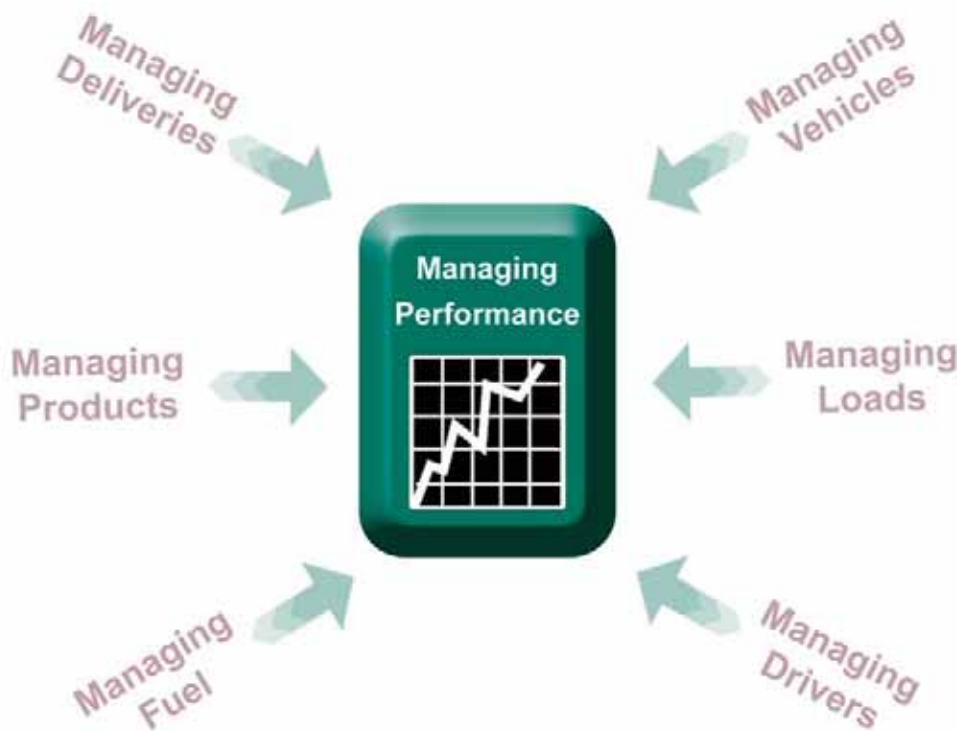
3.8 Managing Performance

The importance of performance measurement in any commercial operation cannot be overstated. Unless you accurately measure the resources you use in delivering services, it is very difficult to identify areas that can be improved or assess the impact of any changes you make.

Benchmarking, targeting, monitoring and reviewing are the 'glue' that binds initiatives together and allows you to build on the positive changes you make to your operations. The IT systems discussed in the previous sections will help you to collect information that is vital in understanding clearly the performance of your business. Certain types of system, such as telematics, will be capable of generating key performance indicators (KPIs) automatically in

standardised reports, whereas other types of system might require you to generate output data that need to be fed into another system.

It is very important to understand what information your IT systems can provide to help you manage performance. For large organisations using many different types of IT system, it may be necessary to set up a centralised database to enable better management of information. There are a number of fleet management systems available on the market which can help in managing different processes (i.e. everything from vehicle maintenance to fuel use) and provide performance-related information on a range of operational areas. An overview of these systems is provided opposite.



➡ Fleet Management Systems

Fleet Management Systems

<p>What are they and how do they work?</p>	<p>Fleet management systems are essentially advanced database applications that can help you manage the day-to-day administration necessary to keep vehicles on the road (keeping track of when vehicles need to be inspected, when MOTs are due, etc), and help you manage information about your fleet over time which you can use to generate reports and KPIs on a wide range of operational areas (including fuel use, accidents, maintenance costs and service history). Fleet management systems are generally made up of a number of modules or database tables on different operational areas, such as vehicles, drivers and the workshop, and these are all tied together to allow you to generate information on your fleet activity as a whole.</p>				
<p>What are the benefits?</p>	<ul style="list-style-type: none"> – Improved compliance through better tracking and management of all maintenance needs – Reduced administration and the ability to better understand your fleet maintenance costs – Reduced fleet costs through improved control and the ability to generate KPIs – Ability to add extra modules for areas that might be important to your operation 				
<p>How much is it likely to cost?</p>	<p>Costs will vary according to the number of features and modules on offer, but starting prices for basic packages typically range from £1,000 to £2,000, excluding annual licence fees. Prices will generally be much higher for systems that can be networked.</p>				
<p>Issues to consider</p>	<ul style="list-style-type: none"> – Make sure the system will fit in with the way you run your workshop. Speak to other fleet managers for advice – Look for systems that let you design the reports you want, rather than producing only fixed or standard types – Be wary of packages that charge you a lot for support - if the system works well you should not need much support! 				
<p>Who will benefit?</p>	<table border="1"> <tr> <td data-bbox="201 1384 395 1507"> <p>Larger companies</p> </td> <td data-bbox="403 1384 1476 1507"> <p>Fleet management systems store a great deal of detailed information about your fleet, so the more vehicles and drivers you have, the more time you can save.</p> </td> </tr> <tr> <td data-bbox="201 1518 395 1641"> <p>Smaller companies</p> </td> <td data-bbox="403 1518 1476 1641"> <p>Fleet management systems are affordable for companies of all sizes, though if you have only a small number of vehicles it may be possible to develop your own system or use a smaller-scale fleet management programme.</p> </td> </tr> </table>	<p>Larger companies</p>	<p>Fleet management systems store a great deal of detailed information about your fleet, so the more vehicles and drivers you have, the more time you can save.</p>	<p>Smaller companies</p>	<p>Fleet management systems are affordable for companies of all sizes, though if you have only a small number of vehicles it may be possible to develop your own system or use a smaller-scale fleet management programme.</p>
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<p>Further Information</p>	<p>Freight Best Practice - Fleet Performance Management Tool (FPMT) (see overleaf).</p>				





The Freight Best Practice Fleet Performance Management Tool (FPMT)

This Freight Best Practice guide is a PC-based spreadsheet tool which is designed to help small to medium-sized fleet operators improve their operational efficiency through the management of key performance indicators.

Information about the tool structure and the spreadsheet is supplied with the guide, together with any data input requirements and what to do with results. Essentially, this guide helps operators implement a structure within their business that enables them to keep track of relevant factors that affect the profitability of the company.

Although you will not need any other systems in place before you start using the tool, it can also take information from other systems you may already have set up, such as the fleet management packages discussed above.



Other Free Freight Best Practice publications for managing performance

Performance Management for Efficient Road Freight Operations

Key Performance Indicators for Non-Food Retail Distribution

Key Performance Indicators for the Food Supply Chain

Key Performance Indicators for the Pallet Sector

Small Fleet Performance Case Study - A1 Paper Plc

Small Fleet Performance Management Tool helps A1 Paper improve efficiency

A full list of the **FREE Freight Best Practice** publications can be obtained from the Hotline **0845 877 0 877** or by visiting the website at **www.freightbestpractice.org.uk**

4 Good IT Practice Checklist

This guide has provided information on IT systems that can help you improve operational efficiency. Effective fleet management depends on the following key areas:

- ➔ Managing Deliveries
 - ➔ Managing Loads
 - ➔ Managing Fuel
- ➔ Managing Vehicles
 - ➔ Managing Drivers
 - ➔ Managing Products

Improvements in these areas can help you reduce costs and increase profitability. There are many different types of IT systems that can help you do this, whether your operation is large or small.

No matter what type of system you might be thinking of, there are some general steps you can take to ensure you make the right decisions and get the most out of an investment. While not all questions may be relevant to your organisation, the table below shows some important questions to help you assess your current needs, and to select, implement and manage a new IT system.

	Key Questions	✓ or ✗
Identifying the need	Do you understand your existing systems and what they give you?	
	Do you understand the limitations of existing systems?	
	Do you understand the key processes that need to happen to give improved efficiency?	
	Have you considered how existing systems can be improved first, before investing in a brand-new system?	
Selecting the system	Have you carried out an initial evaluation?	
	Have you short-listed companies that you wish to contact and get more details from?	
	Have you asked short-listed suppliers to demonstrate their product to you?	
	Do you have a full understanding of the benefits of the product?	
	Has one of your employees who will be using the new system tried it out?	
Implementing the system	Have you defined your objectives, and made sure they are measurable?	
	Have you developed a plan and broken large jobs down into smaller tasks?	
	Have you set a clear timeframe to help the project stay under control?	
	Have you selected a project champion?	
	Have you set up a project team if it is a large project?	
	Is sufficient training included in your implementation plan?	
	Have you run a pilot test to estimate benefits and obtain feedback from staff?	
	Have you asked for staff feedback?	
Monitoring and improving the system	Have you put a monitoring process in place for after the system has been rolled out?	
	Will you track performance by monitoring what is happening versus what was predicted?	
	Have you identified a specific set of key performance indicators that relate to your business objectives?	
	Do you monitor the performance of the new system and its on-going positive impacts?	

Appendix 1 - Contact Points

- ➔ **Freight Best Practice**
Tel: 0845 877 0 877
Web: www.freightbestpractice.org.uk
Email: info@freightbestpractice.org.uk
- ➔ **Department for Transport**
Great Minster House
76 Marsham Street
London
SW1P 4DR
Tel: 020 7944 8300
Web: www.dft.gov.uk
- ➔ **Road Haulage Association**
Roadway House
35 Monument Hill
Weybridge
Surrey
KT13 8RN
Tel: 01932 841515
Web: www.rha.net
- ➔ **Freight Transport Association**
Hermes House
St John's Road
Tunbridge Wells
Kent
TN4 9UZ
Tel: 01892 526171
Web: www.fta.co.uk
- ➔ **Chartered Institute of Logistics and Transport (UK)**
Logistics and Transport Centre
Earlstrees Court
Earlstrees Road
Corby
Northants
NN17 4AX
Tel: 01536 740100
Web: www.ciltuk.org.uk
- ➔ **British International Freight Association (BIFA)**
Redfern House
Browells Lane
Feltham
Middlesex
TW13 7EP
Tel: 020 8844 2266
Web: www.bifa.org
- ➔ **Intelligent Transport Systems United Kingdom**
Suite 312
Tower Bridge Business Centre
46-48 East Smithfield
London
E1W 1AW
Tel: 020 7709 3003
Web: www.its-uk.org.uk
- ➔ **AIM UK (represents the automatic identification, data capture and mobility industries)**
The Old Vicarage
Haley Hill
Halifax
HX3 6DR
Tel: 01422 368368
Web: www.aimuk.org
- ➔ **GS1 UK (business association specialising in cross-sector supply chain standards, from bar coding to electronic communications)**
10 Maltravers Street
London
WC2R 3BX
Tel: 020 7655 9000
Web: www.gs1uk.org

Appendix 2 - Useful Trade/Industry Publications

- ➡ **Logistics and Transport Focus** - the journal of The Chartered Institute of Logistics and Transport
Web: www.ciltuk.org.uk
- ➡ **RFID Journal** - independent media company devoted solely to radio frequency identification and its many business applications.
Web: www.rfidjournal.com
- ➡ **Modern Materials Handling** - a publication for supply chain professionals in most major industries responsible for purchasing and implementing materials handling solutions.
Web: www.mmh.com
- ➡ **Material Handling Product News** - a journal reporting on the entire range of material handling products, from those used at the loading dock, to those required in the manufacturing process and for storage and distribution.
Web: www.mhpn.com
- ➡ **Supply Chain Management Review** - a senior level publication dedicated to the art and science of moving goods to market.
Web: www.manufacturing.net/scm
- ➡ **Telematics Update** - a valuable update to the telematics industry.
Web: www.telematicsupdate.com
- ➡ **Commercial Motor and Motor Transport**
Web: www.reedbusiness.co.uk
- ➡ **International Freightling Weekly**
Web: www.ifw-net.com

Freight Best Practice publications, including those listed below, can be obtained FREE of charge by calling the **Hotline** on **0845 877 0 877**. Alternatively, they can be downloaded from the website www.freightbestpractice.org.uk

Saving Fuel



Fuel Management Guide

This is the definitive guide to improving the fuel performance of your fleet. It gives step-by-step explanations of the key elements of fuel management, how to measure performance and how to implement an effective improvement programme.

Developing Skills



Safe Driving Tips

Written especially for commercial vehicle drivers, this pocket-sized guide provides essential safety hints and tips on all aspects of driving safely.

Equipment and Systems



Truck Aerodynamic Styling

This guide offers practical information on aerodynamically effective styling for trucks including appropriate add-on features.

Operational Efficiency



Make Back-loading Work for You

This guide shows you how to find and choose backloads in order to improve your fleet efficiency.

Performance Management



In-fleet Trials of Fuel Saving Interventions for Trucks

This guide shows how to establish the potential performance of fuel saving devices in your fleet.

Public Sector



Efficient Public Sector Fleet Operations

This guide is aimed at fleet managers in the public sector to help them improve operational fleet efficiency.

