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Paper: A Survey of Telematic Use by European Road Freight Operators.

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# Transport and Logistics in the Digital Era: A Survey of Telematic Use by European Road Freight Operators.

## Survey Sponsored by:



## Survey Carried out by:



# Transport and Logistics in the Digital Era

## Executive Summary

- Survey of telematics used by 122 European road freight operators.
- Survey conducted throughout July/August 2002.
- Telematics is defined in the survey as “ the convergence of wireless communications, location technologies and in-vehicle electronics, which is a fundamental way for integrating the logistics and transport company into the information age.”

## Main Survey Findings

- Survey confirms the strategic importance of telematics and mobile communications to commercial vehicle operators and confirms the trend towards real time “always on” information. - 75% of respondents felt that this was an area of high strategic importance
- Survey confirms that telematics is driving business performance:
  - 60% of respondents confirmed that telematics has reduced transportation costs
  - 84% of respondents confirmed that telematics have improved customer service levels
  - 78% of respondents confirmed that telematics has improved reliability and consistency
- Fleet operators are likely to move from pre-planned transportation operations towards more reactive/dynamic systems that can react effectively to real time events.- Raising from 8% to 35% in the next 3 years
- Track and trace shows high levels of penetration and increasing levels of sophistication – predominantly supported by web enabled interfaces – Set to grow from 24% to 68% in the next 3 years
- Electronic signatures for PODs will become the norm – 86% of fleet operators expect to be using electronic POD’s in 3 years time
- New business opportunities for digital imaging are emerging such as accident reports and claims
- Driver hours monitoring will drive growth in adoption of telematics – a reflection of increasing restrictions and responsibilities associated with the Working Hours Directive.

- Move towards customized maintenance for vehicles based on operational need rather than standardized servicing
- To date the high cost of investment and high running costs are a constraint to wider implementation – with unclear Return On Investments (ROI's). Yet few doubt the positive impact on service levels.

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## **GLOSSARY**

<b>FMCG</b>	Fast Moving Consumer Goods
<b>GIT</b>	Goods in Transit
<b>GPS</b>	Global Positioning System
<b>GPRS</b>	General Packet Radio Service – non-voice value added service that allows information to be sent and received across a mobile telephone network
<b>GSM</b>	Global System for Mobile (Communication)
<b>PDA</b>	Personal Digital Assistant
<b>POD</b>	Proof of Delivery
<b>ROI</b>	Return on Investment
<b>SKU</b>	Stock Keeping Unit
<b>SMS</b>	Short Message Service (160 characters)
<b>Tablet PC</b>	Tablet PC is a design for a fully-equipped personal computer that allows a user to take notes using natural handwriting on a stylus digital pen-sensitive touch screen instead of requiring the use of a keyboard.
<b>Telematics</b>	Wireless communication, location technologies and in-vehicle electronics

## **INTRODUCTION**

It is often stated that emerging, interactive technologies, will create entirely new types of in-vehicle services which will provide both on-going revenue generating and cost cutting opportunities for fleet operators and their customers. To date, telematic offerings have largely been focused on the private car with an emphasis on entertainment, safety and route guidance. However, this will soon be overtaken by a much broader opportunity based in the commercial sector. Advancements in telematics, remote sensing and communications technologies, and the integration of those technologies, will directly impact every player in the supply chain. The increasing need for real-time information and greater levels of driver and asset productivity and digital administration within the supply chain will drive telematic demand in the commercial sector.

Much of this debate however, is driven by the technology companies and not by the end user community. The aim of this survey therefore is to take one potential user group, European road freight operators, to try and answer three straightforward questions:

- What is the current level of telematic use by road freight operators?
- Is it worthwhile investing in telematics?
- What will drive telematics use in the next 3 years?

For purpose of the survey, telematics was defined as:

“...the convergence of wireless communications, location technologies, and in-vehicle electronics, which is a fundamental way for integrating the logistics and transport company into the information age.”

## **SURVEY METHODOLOGY**

The survey was carried out by the Centro Studi sui Sistemi di Trasporto (Italy) and the Cranfield Centre for Logistics and Transportation, Cranfield University (UK), on behalf of the survey sponsors.

Telephone interviews were conducted throughout July and August 2002, with interviewees receiving the questionnaire prior to the interview either by fax or email. The questionnaire comprised 25 closed questions covering three broad themes:

- Operational context (7 questions)
- Operational management (11 questions)
- Constraints and benefits of telematics use (7 questions)

The organisations questioned were suggested by the survey sponsors and comprised a range of European fleet operators in terms of size and operational type. As a result of the sampling technique the survey results are heavily biased to carriers, freight

forwarders and third party logistics operators. Own account (private fleet) operators are under-represented.

The results presented below are for all companies and all countries unless otherwise stated. There are some differences with respect to fleet size but only where there is a statistically significant (at the 95% confidence level) difference is any disaggregated comment or graph provided. Where percentages add up to more than one hundred percent this is due to multiple responses within a given question.

## RESPONDENT PROFILES

A total of 122 responses were received and distributed as shown below. There was an even split between small (<140 vehicles) and large (>140 vehicles), although a number of respondents did not reveal their fleet size. Aggregate data (all companies all countries) is based on 122 respondents. Disaggregated data by fleet size is based on 48 small and 49 large respondents.

Table 1: Survey Respondents by Country and Fleet Size

Country	Responses	Fleet Size	Responses	Average Fleet Size
Benelux	7	Small	48	65 vehicles
France	27	Large	49	1,400 vehicles
Germany	12	No data	25	
Italy	24			
Scandinavia	1			
Spain	25			
UK	26			
<b>Total</b>	<b>122</b>	<b>Total</b>	<b>122</b>	

The proportion of companies describing themselves as 3PLs was more pronounced within the large fleet operators (50%) compared to smaller fleet operators (29%) reflecting the wider portfolio of logistics services provided by larger fleet operators in Europe.

The operational characteristics of the respondent companies were extremely varied with no significant difference between small and larger fleet operators. Few if any of the companies surveyed operated solely in one industry sector. On average companies had operations covering 3 industries. FMCG (50%), Automotive and Industrial Engineering (38%), and Retail (35%) dominated in terms of industries served.



Figure 1: What best describes your company's activities as a transport/logistics operator?

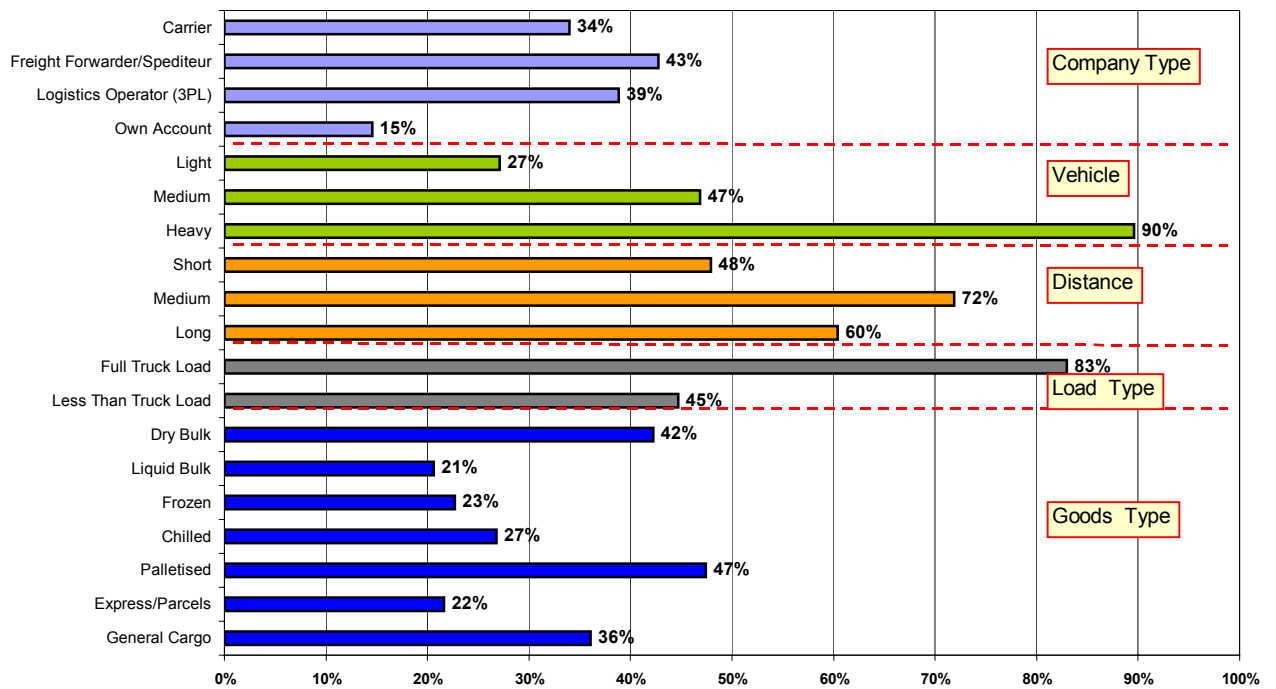
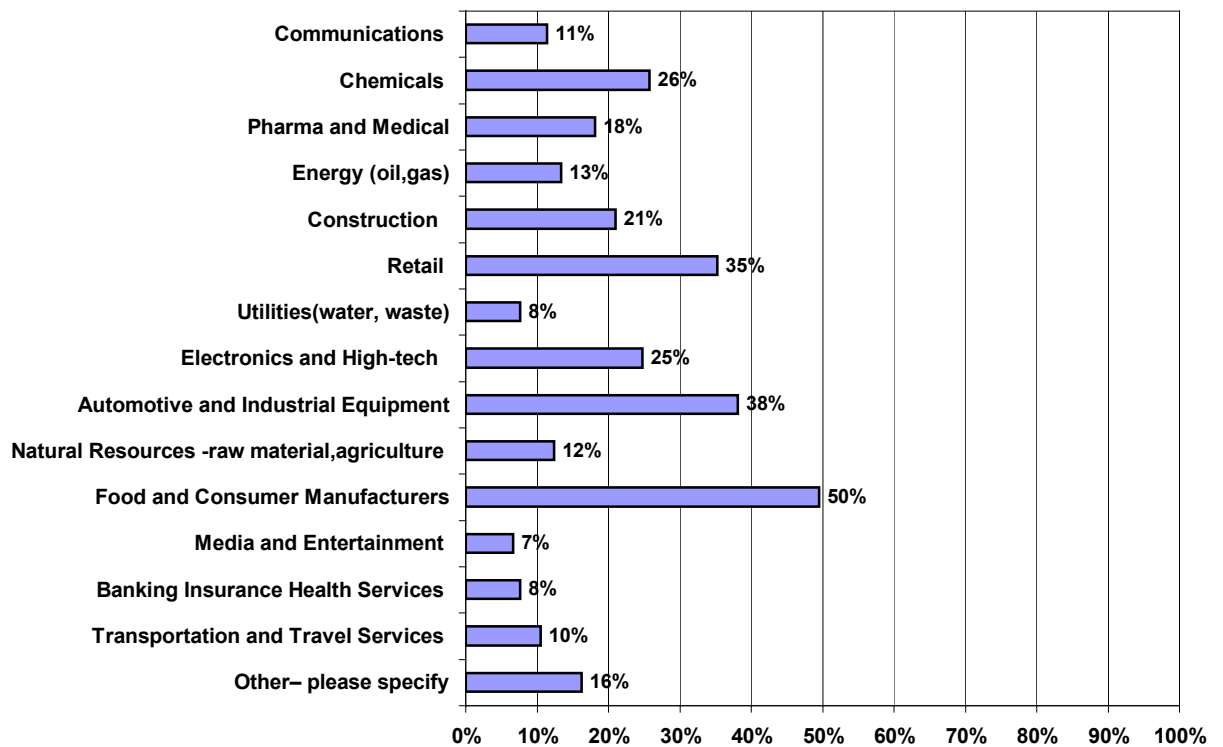


Figure 2: What industries do you predominantly work for?

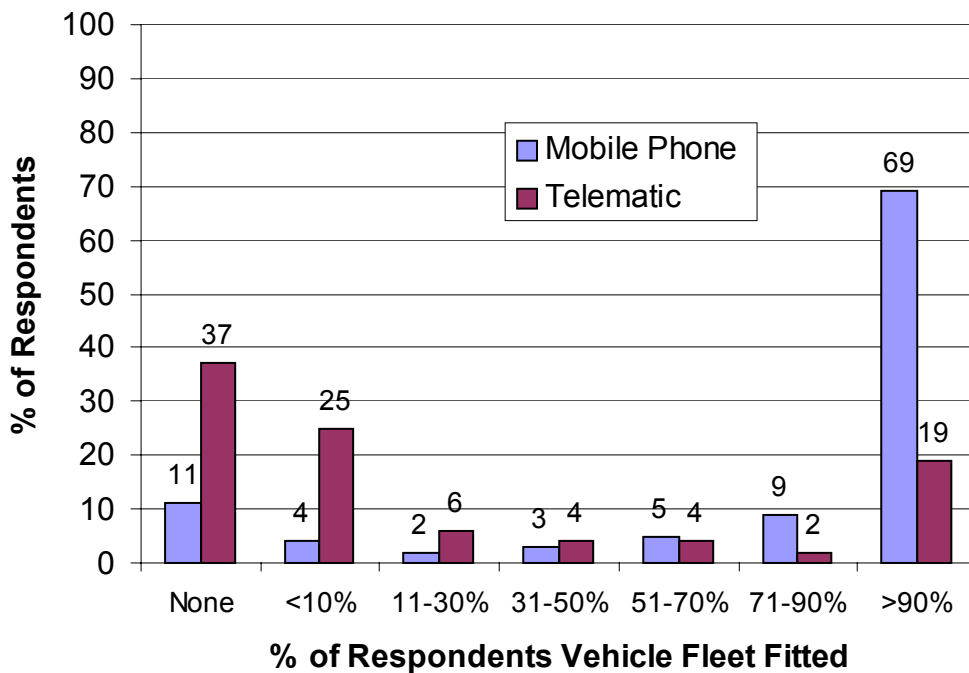


## CURRENT AND FUTURE USE OF TELAMATICS

### Current Use of Mobile Phones and Telematics

Mobile phones have achieved a high penetration as a communication mechanism to drivers. Two thirds of the respondents had fitted/issued mobile phones to virtually their entire fleet (>90% of vehicles equipped). Telematic devices (other than a mobile phone) have a much lower level of penetration with just 20% of respondents indicating that they had fitted over 90% of the vehicles. Although on average 39% of the respondents had not fitted any form of telematic system this masked a significant difference between large (26%) and small operators (51%).

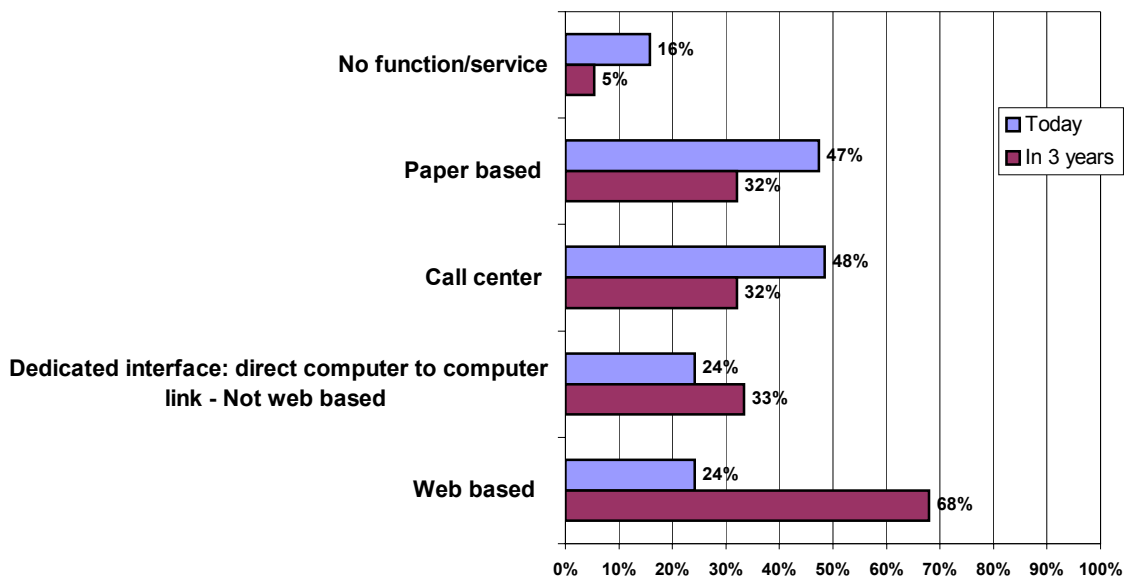
Figure 3: What % of the drivers/vehicles under your direct control are equipped with mobile phones and telematic devices.



## Track and Trace

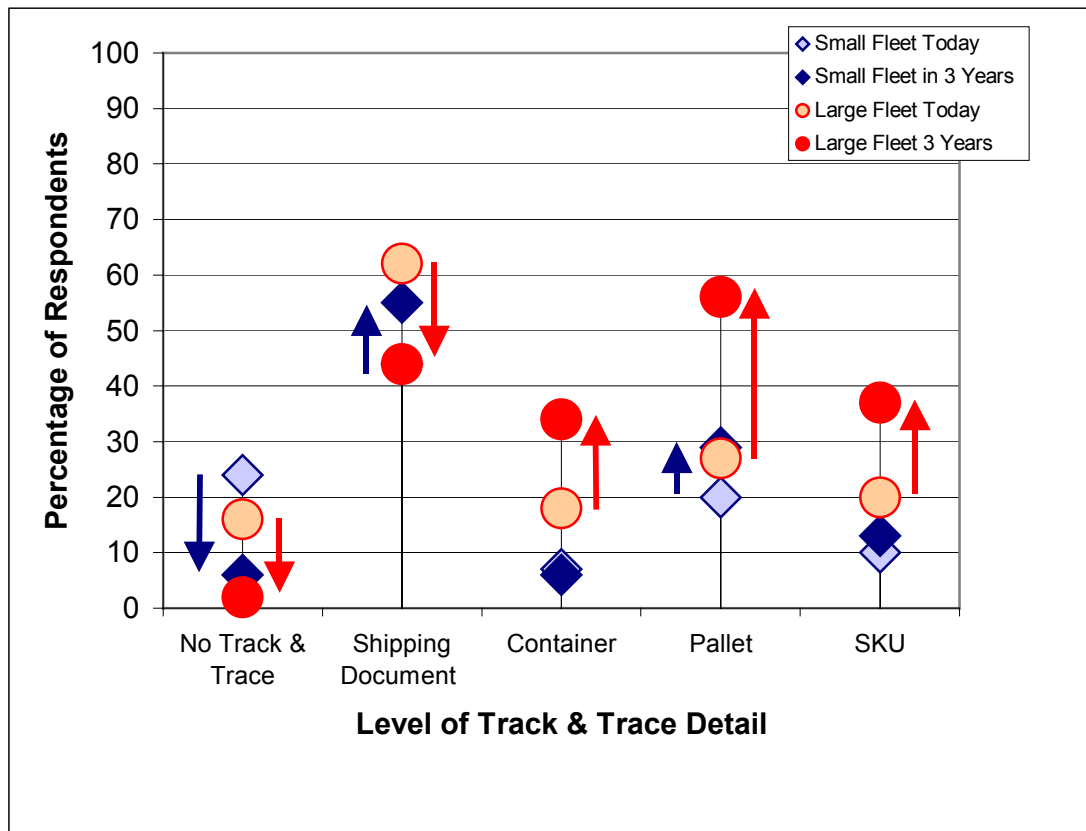
The survey reveals clear evidence for a widespread adoption of track and trace capability with 95% of all companies expecting to provide some form of track and trace in 3 years time. Web based interfaces will become the favoured method of disseminating information to customers for both small and large companies but the use of dedicated and web based interfaces is more pronounced for large fleet operators. More traditional dissemination methods, paper based and call centres will decline.

Figure 4: What track and trace service do you provide to your customers? What track and trace service will you provide in 3 years time?



There is also clear evidence for increasing sophistication in track and trace amongst larger fleet operators, where track and trace at the container, pallet and SKU (stock keeping unit) are all set to increase in the next 3 years. Smaller operators will primarily track and trace at the shipment (document) level.

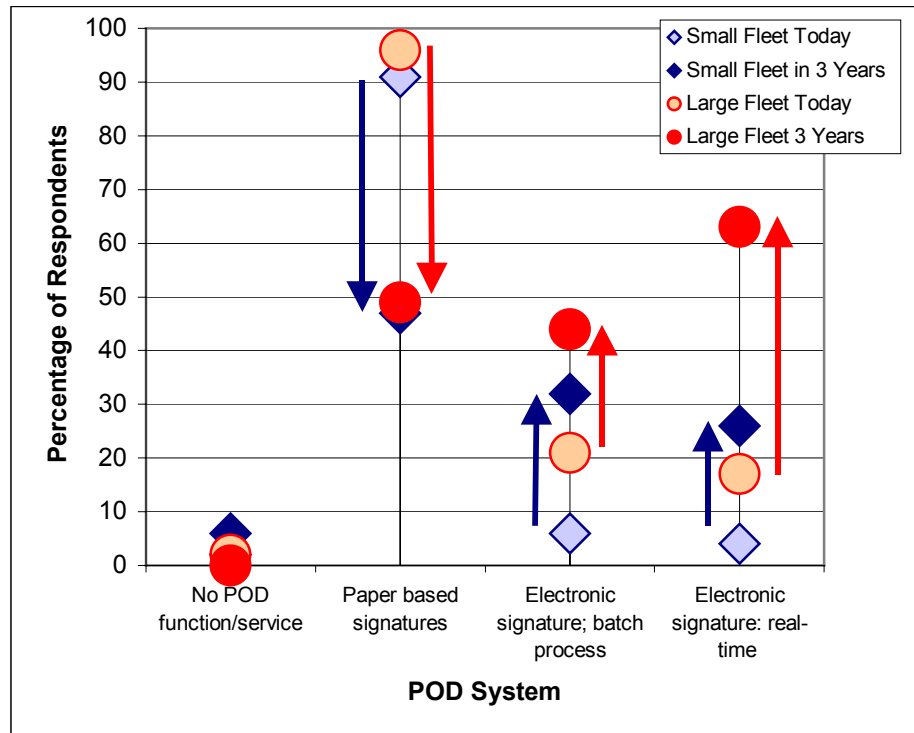
Figure 5: To what level of detail does your track and trace system operate? To what level of detail will you track and trace in 3 years time?



### Proof of Delivery

Today proof of delivery (POD) is normally captured through paper based signatures. This is set to change with a high degree of interest in electronic signatures captured through some form of portable computing, e.g. PDAs, Tablets. Interest is significantly higher with respect to large fleet operators with some 63% anticipating real-time signature capture within the next three years. Large fleet operators have already been trialing such devices and full scale implementation seems imminent given their responses. Accurate PODs are of crucial importance to both consignee and transporter, as payment and effective cash flow are reliant on accurate and timely PODs.

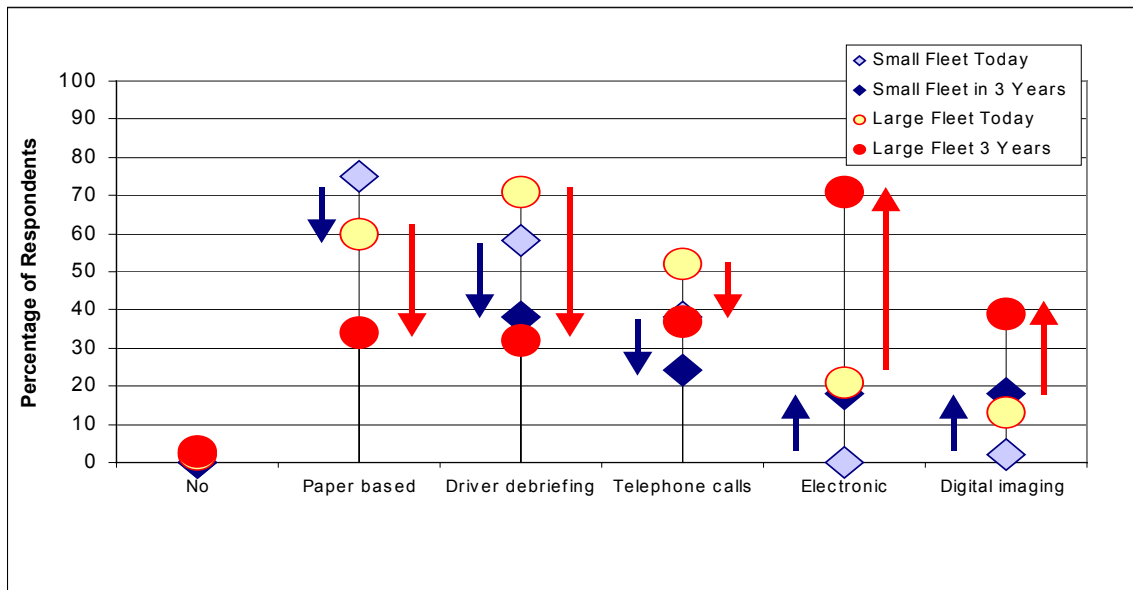
Figure 6: What proof of delivery (POD) systems do you operate? What proof of delivery (POD) system will you operate in 3 years time?



### Managing Delivery Errors

A dramatic increase in “portable” computing is foreseen by large fleet operators to record delivery errors. The increase for small operators is more modest albeit up from nothing today. The impact of this is to reduce time spent in the traffic office on driver debriefing and re-keying from paper documents. Digital imaging is set to play a major part with 39% of large fleet operators planning to use this new technology.

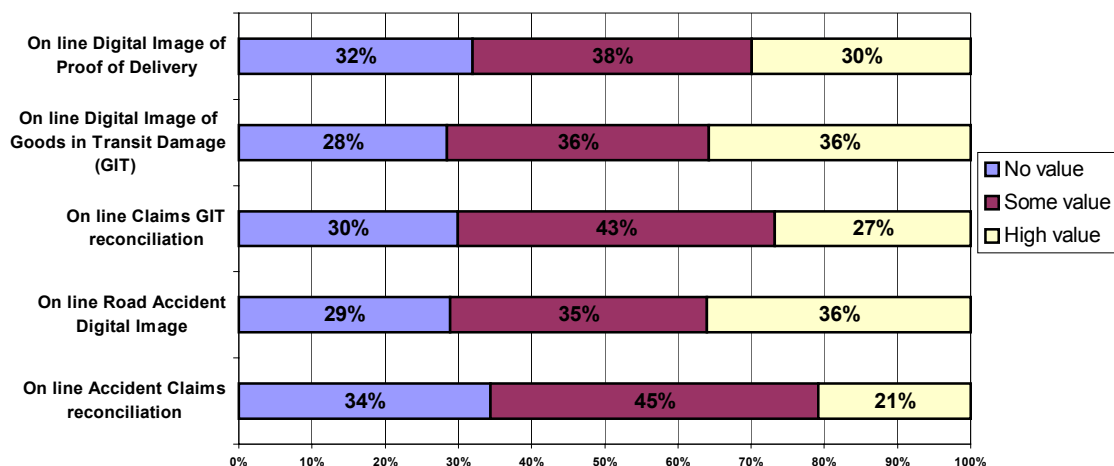
Figure 7: How do you record delivery errors (damages, wrong goods, delivery address)? How will you record delivery errors in 3 years time?



### Digital Imaging

Sixty eight percent of all companies believe there is value in applying digital solutions to POD, with 30% considering this to be of high value. A further 72% believe there is value in managing Goods in Transit (GIT) damages this way, with 36% considering the value to be high. Similar percentages were given for recording road accidents. Smaller fleet operators saw less value in digital imaging but the differences compared to large fleet operators were not significant.

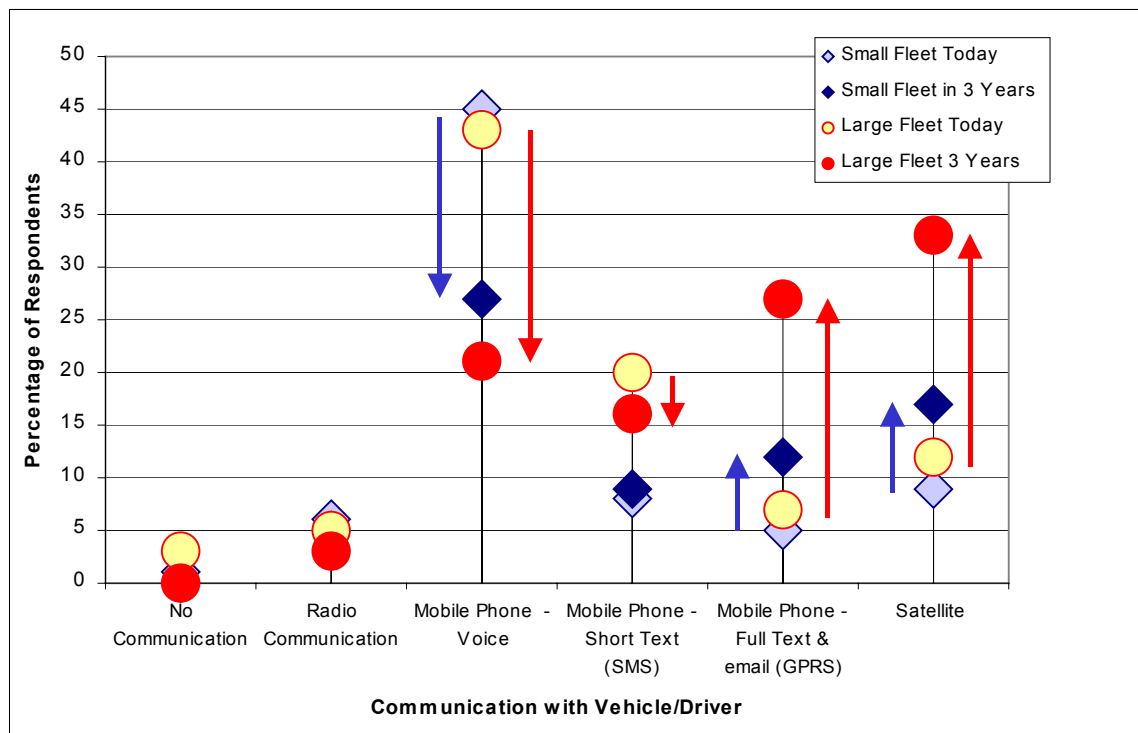
Figure 8: How would rate the value of wireless transmission of pictures from your driver/vehicle?



## Driver Communication

Today communication and control of the driver once he has left the depot is by voice through the mobile phone. This is set to change with a number of text and data based transmission systems providing additional information. Mobile full text and email (GPRS) will increase as will satellite voice, text and GPS. Again, the survey predicts that large fleet operators will adopt this technology quicker than the smaller operators. Clearly, the use of satellite based systems opens up a wide range of remote monitoring opportunities.

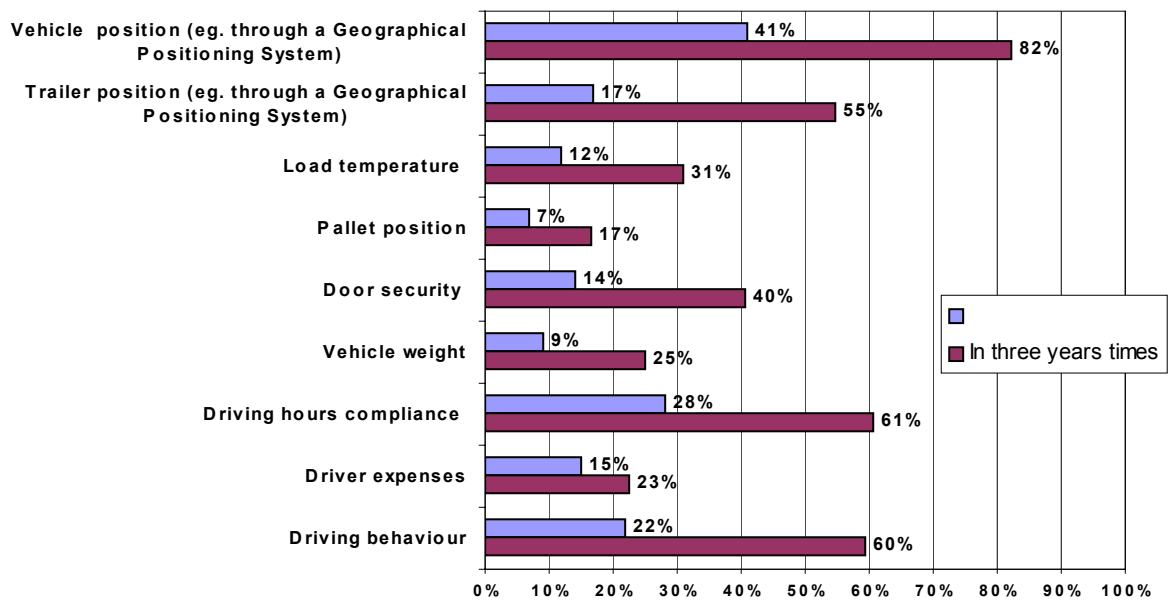
Figure 9: How do you communicate with your vehicle/driver once they have left the depot? How will you communicate with your vehicle/driver in 3 years time.



## Remote Monitoring

The survey predicts growth in a wide range of remote monitoring. The survey predicts a doubling of the use of GPS vehicle location systems to 82% across all respondents with trailer location up threefold to 55%. The increased requirement for monitoring “driver’s hours compliance” reflects concern over the Working Hours Directive, which will severely restrict driver shift times and place new responsibilities on employers to ensure compliance. Over half of all respondents will be using traffic telematics application for; route optimisation, congestion avoidance, vehicle restrictions and real-time tolls and multi-modal payments.

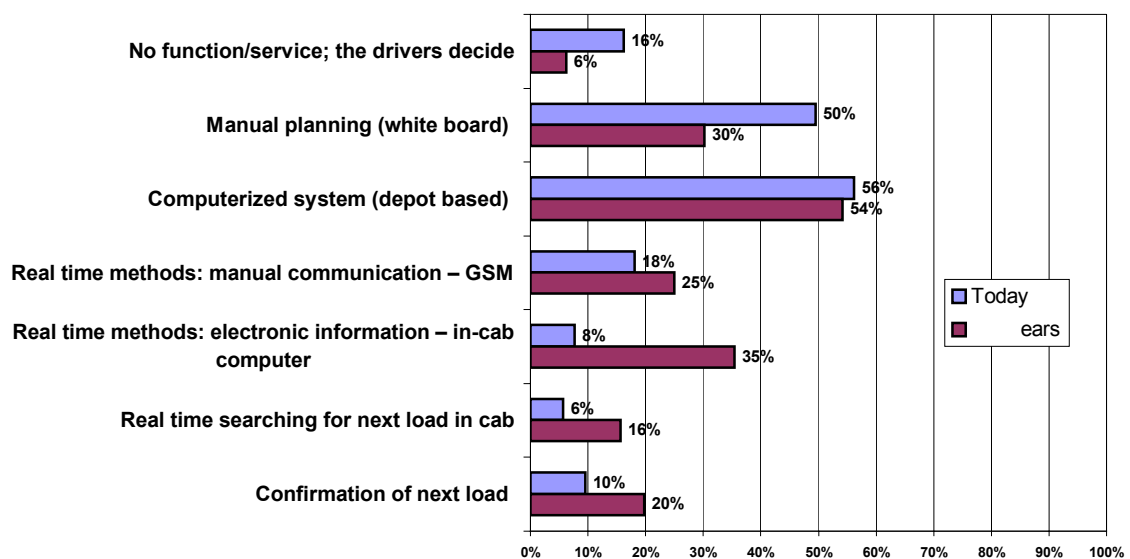
Figure 10: Can you remotely monitor any of the following through a telematic system?



## Routeing and Scheduling

There is a growing interest in real time routeing and scheduling through in-cab communication, up from 8% to 35% in 3 years, even more pronounced for large fleet operators at 48%. Dynamic routeing and scheduling, as this implies, will require sophisticated traffic and network planning tools if routes and schedules are to remain optimal rather than random reactions to transport demands. Traffic office routeing and scheduling systems will continue to replace manual (white board) planning.

Figure 11: What methods do you use for routeing and scheduling? What methods for routeing and scheduling will you use in 3 years time?

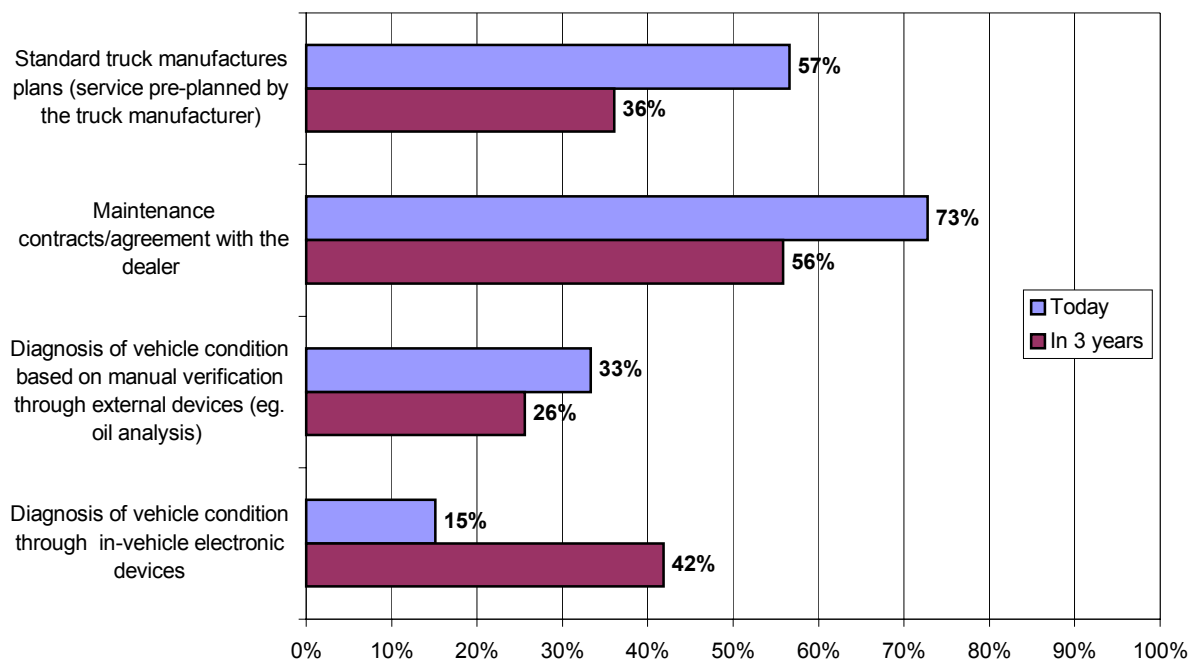




## Vehicle Diagnostics

The use of in-cab diagnosis is predicted to rise from 15% to 42% for all companies. This however, hides a significant difference between large and small operators where the figures are 54% and 29% respectively. The reduction in planned and fixed contract maintenance schedules implies a move towards more operationally determined service programmes, tailored to the individual vehicle.

Figure 12: What methods do you use for maintenance and repair? What methods for maintenance and repair will you use in 3 years time?



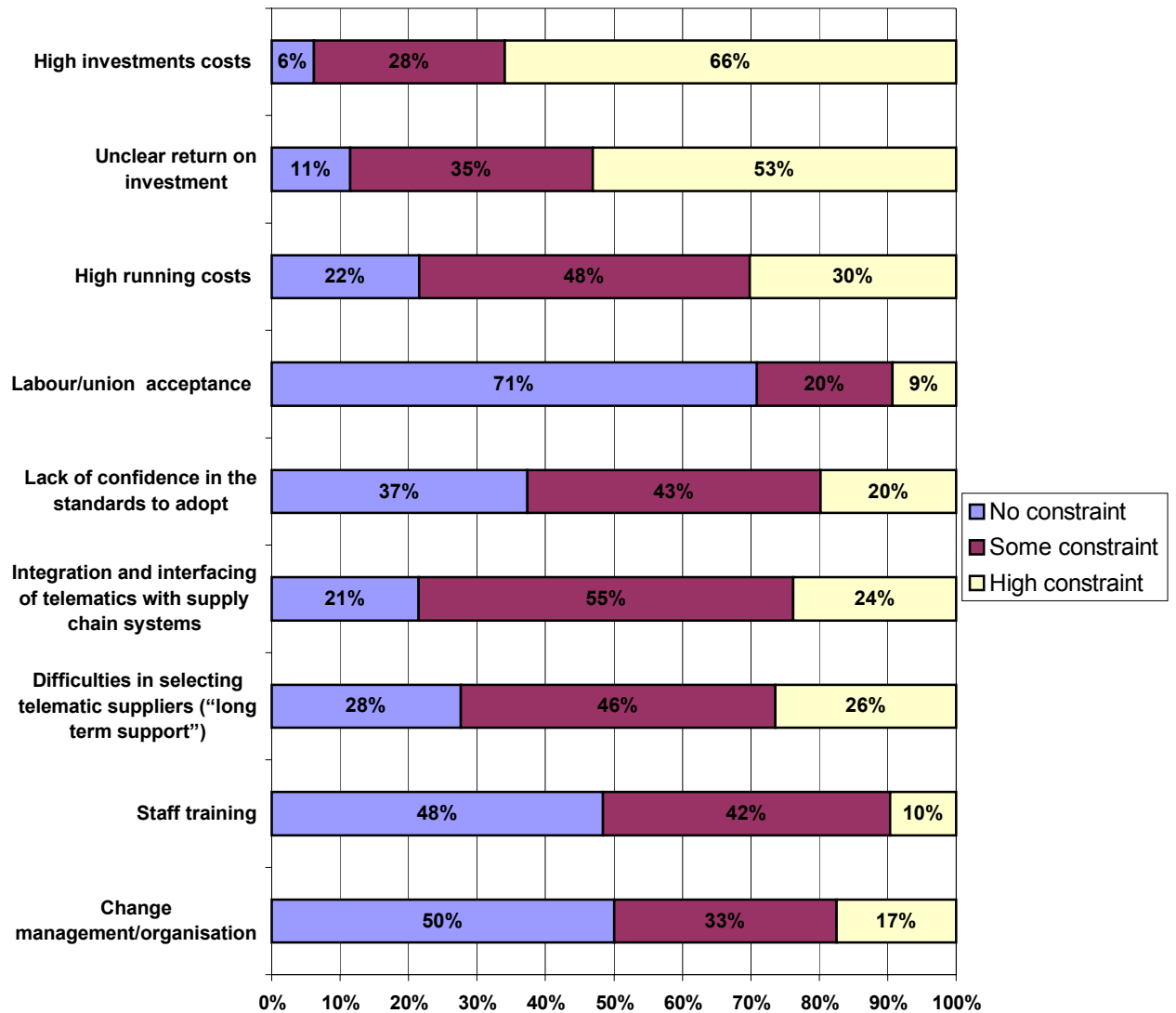
## Telematic Constraints

The survey reveals a general concern, across all companies, about the business and value proposition to support telematics and mobile communications investment. Some 94% felt that initial high investment costs are a constraint, with 66% stating this to be a high constraint. High running costs and unclear return on investment were also constraints to wider telematic usage.

Initial analysis has not shown any significant differences between large and small fleet operators with respect to telematic constraints. However, the payback period achieved by larger fleet operators (47% within 18 months) is significantly better than the smaller operators (26% with 18 months).

Issues concerning systems integration, standards and after market support represented some constraint for over 60% of the companies but the severity of that constraint was lower than cost related constraints.

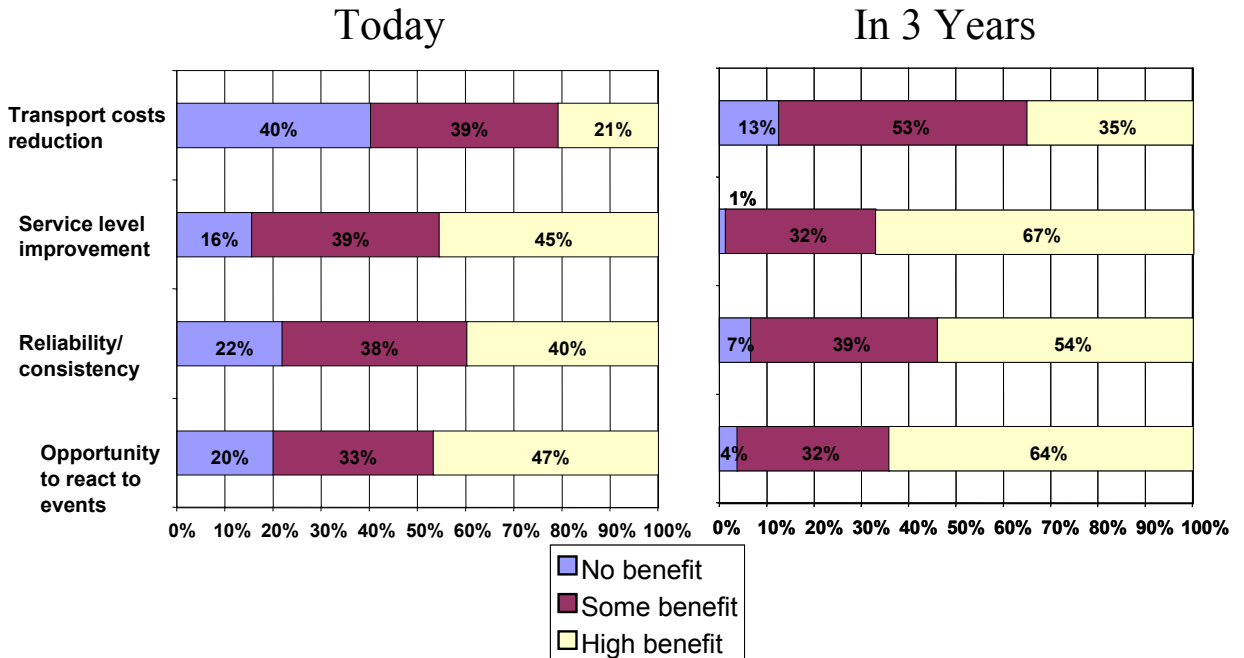
Figure 13: What as far as your company is concerned have been the main constraints to wider telematics use?



## Telematic Benefits

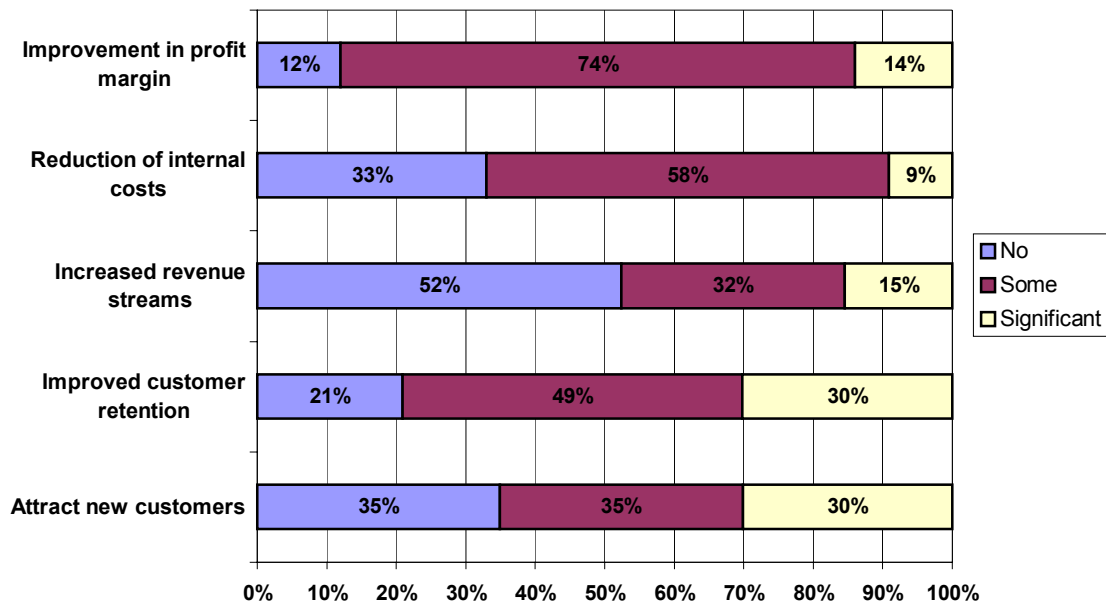
No reduction in transport costs from current telematic investments was reported by 40% of the respondents. But in the future some 87% expect to extract some value with 35% expecting transport cost reductions to be high. Much more evidence exists to support customer service improvements, with 45% claiming high values from existing investments, and 67% expecting high returns in this area from future investments. This in part reflects the value delivered and expected from the ability to react to events with 64% expecting this to provide high value.

Figure 14: What benefits have telematics delivered to your company and what benefits do expect in the future (3 years time)?



Investments in telematics to date have delivered some margin improvement to 74% of the respondents, but only 14% have seen high improvement. Over 30% have achieved no internal cost reduction. More encouragingly, 50% of respondents felt that they had achieved some increased revenue stream. Significant value has come from retention of existing customers and the attraction of new customers. This is a somewhat mixed picture but cost and margin improvements appear elusive. It is clearly difficult to establish cost and margin improvement from limited trial projects where the true economies of scale and network opportunity cannot be realised.

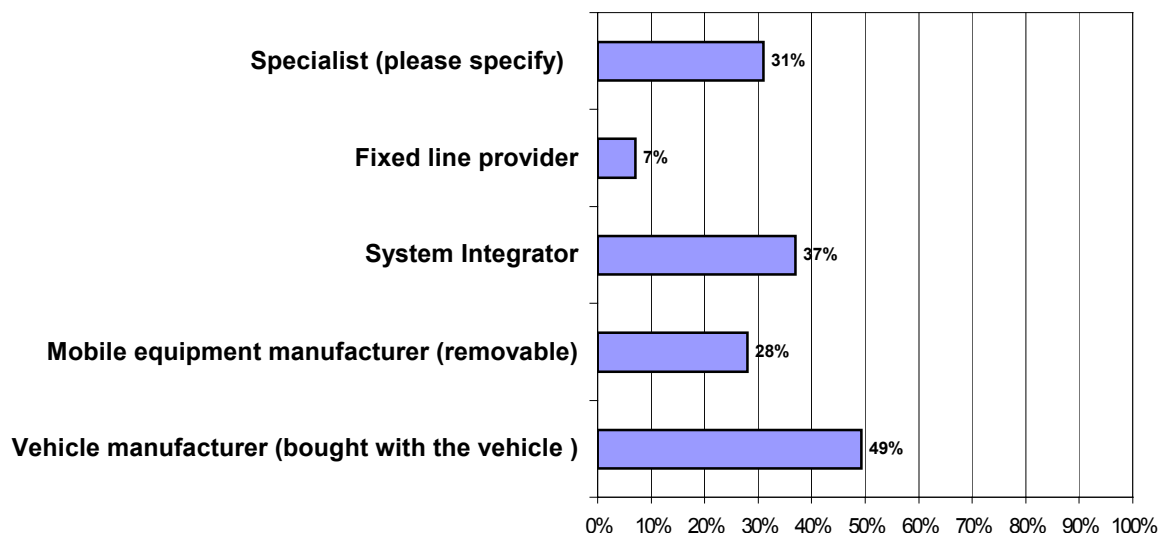
Figure 15: Has telematics enabled you to achieve any of the following?



### Telematic Source

There is no clear telematics solutions leader. Respondents will buy from a range of suppliers, including, vehicle manufacturers. Mobile equipment manufacturers (38%) and systems integrators (49%) were more favoured by the large fleet operators. Smaller operators on the other hand significantly favoured buying from the vehicle manufacturer (bought with the vehicle 61%). Fixed line providers were not seen to be a main source of solutions.

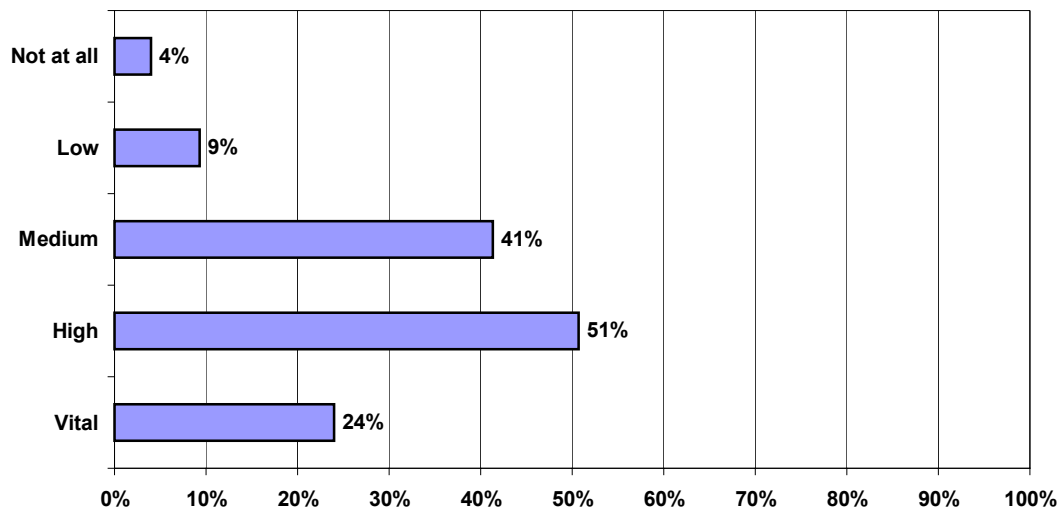
Figure 16: From whom would you expect to buy telematics capability?



## Strategic Importance

Without doubt the most important result is the importance that these new telematic and mobile communications solutions will play in the future for all commercial vehicle operators. Three quarters (75%) of the respondents felt this area was of high strategic importance, with 24% stating it was of vital importance.

Figure 17 How strategically important do you think telematics will be in the future for your company?

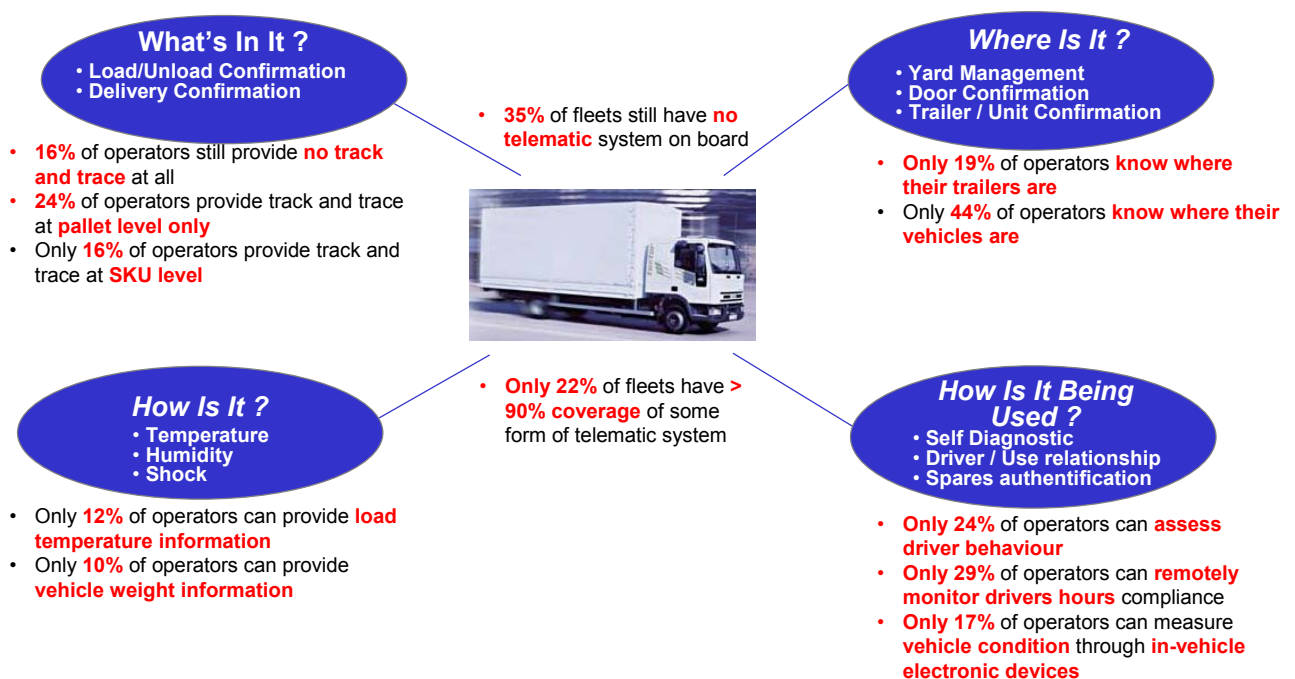


## CONCLUSIONS

### What is the current level of telematic use by road freight operators?

The survey has clearly established the current use of telematics by European fleet operators as summarised below. It reveals a low level of telematic adoption with clear opportunities for improvements in asset productivity and control.

Figure 18: Summary of current telematics use by survey respondents.



### Is it worthwhile investing in telematics?

The evidence from the survey is mixed. It must be recognised that telematics technology is still seen as expensive and it remains unclear to many how telematics information will be integrated into existing supply chain systems. Cost savings seem elusive although the impact on customer service is more positive. Pilot projects have proved the technology but it has been difficult to judge the impact of full implementation on costs/productivity. As a result the business case for wider telematics use is difficult to construct and current payback periods are too long. Yet, few doubt the positive impact on service levels and the opportunities to grow revenue streams through customer retention and the attraction of new customers. Finally, with the introduction of Digital Tachographs there may at last be a universal telematics application that will provide the critical mass to drive down hardware,

software and implementation costs down making the ROI for telematics even more attractive.

### **What will drive telematics use in the next 3 years?**

It is clear from the Survey that European companies will increasingly benefit from telematics. The survey respondents recognise that real-time, “always on” telematic information is going to play a highly strategic (75% of respondents) role in their future success.

Specific factors driving the adoption of new technologies include:

- Need for fleet operators to continuously drive operational efficiency and effectiveness
- The major customers of fleet operators driving the need for more value added services and information
- A greater emphasis on load monitoring and security post 9/11.
- The introduction of new legislation, e.g. telematics can help ensure driver compliance with the Working Hours Directive.
- The advance of new pay per use road infrastructure, e.g. road tolls