How to use Fleet Management Data for Business Advantages







Introduction

There is a wealth of different solutions for fleet management available in the market today. These solutions cover a range of applications from vehicle tracking and route planning to tracking driver behaviour to vehicle preventative maintenance. Using on-board hardware and some form of connection to the cloud those seeking to avail of fleet management can turn to mobile operators, IoT firms or specialised firms offering almost end to end services. Fleet management is in practice on large mine and construction sites, logistics companies, firms employing travelling sales staff and even for bicycle couriers. Quite apart from the hardware and connectivity elements in any fleet management service, the real value is in interpreting the data supplied from fleet management services. While Big Data and Artificial Intelligence are buzzwords du jour and have been for some time now, quite a lot of customers are not capturing their data correctly or indeed using that data as efficient levers and hence are leaving potential insights behind. Furthermore, many firms face challenges in incorporating data-driven insights into their day-today business processes and in attracting and retaining the right skill-sets in their staff.



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Data & Behavioural Analytics

Over the past couple of decades, data generation, analytics and consumption has proliferated. We drive cars connected to the internet, tracking cookies follow us around our internet searches and we carry phones in our pockets and handbags containing apps designed to get to know our movement, patterns and sensibilities. Whether we like it or not, we are constantly being tracked. It has now been proven and well publicised in the media that three recent elections or referenda have had their results heavily influenced by social media and ad targeting.

While there has been an exponential increase in the amount of data sources via phones, sensors, payment systems, cameras and a huge array of other devices, data gathering is not new. During the Roman Empire, Cicero and other leaders gauged public reaction by employing people to "measure" applause when they entered arenas. Seeking to understand people's behaviours is as old as civilisation itself and so behavioural analytics is nothing new; although the amount of data generated certainly is. While recent regulations and practices, such as the EU's GDPR and Apple's Privacy Policies have rightly protected customers from too much intrusion, there are enormous benefits to data capture and analysis

- Financial services institutions using pattern recognition to detect fraud and money laundering in order to combat crime
- Epidemiologists using data science to predict the spread of viruses and scientists using data to predict herd immunities and timelines of recent vaccines to the Coronavirus
- Aerospace engineers using data analysis for preventative maintenance and to predict engine failure, in doing so saving lives
- Public transportation utilities gathering data to improve efficiencies helping the world move around and in a more climate aware manner

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Route Management Example:

UPS Drivers Rarely Turn Left

In North America, and other countries where people drive on the right, UPS have evolved their route planning algorithms from searching from the shortest route to include many more data sources. They do this to avoid turning through oncoming traffic at a junction as data reported and analysed, showed it increased the likelihood of an accident, wasted more fuel and added delays.

Their new vehicle routing software based on the destinations and packages per vehicle has reduced left-hand turns to less than 10% of any driver's turns on a daily basis. UPS claim to use 10mn gallons less fuel, emit 20,000 less tonnes of C0² and deliver 350,000 more packages annually as a result.



Behavioural Analytics & Fleet Management

While automotive manufacturing follows strict protocols and this is reflected in a uniformity across brands and models, each vehicle within the same brand and model will live a unique life and this is largely influenced by the context in which it is used. Like any group of entities exposed to external environments, a fleet of vehicles is thus a perfect subject for behavioural analysis.

As outlined in the introduction, a fleet of vehicles is part of the heart and soul of a company using that fleet to serve its customers; be that a taxi firm, a haulage company or a pharmaceutical company delivering critical vaccines. The simplest approach would be to maintain each vehicle in the same way, with regular scheduled maintenance windows and to organise the fleet around these windows. This of course incurs a cost, as some vehicles are not on the road at any given time and in fact certain parts of the fleet may not require full end-toend maintenance. A large truck doing long distance with repeated light cargo loads on motorways would not require as extensive a maintenance as a smaller truck doing shorter city-based trips with a much heavier cargo load.

Imagine a situation where each vehicle in a fleet has a tailored maintenance program based on the external factors and usage patterns it is exposed to. Data gathered from on-board sensors and other trip data can pinpoint which part of the vehicle needs more careful attention and hence, this can reduce vehicle downtime via targeted and informed maintenance.

Critical Route-Centric Fleet Management Snow Removal in Canada

For anyone living in cities in Canada or the U.S. snow belt, snow removal efficiency has an enormous impact on day-to-day activities from school runs to parking to shopping to simply getting to work. A huge dump of snow can often be 20-30 inches in a single snowstorm. Winter maintenance equipment such as ploughs and trucks need to be monitored for end-to-end visibility against route progress and completion SLAs, type and amount of salt spread, current road and air temperatures, loading factors and appropriate driver behavior given the weather for monitoring by operations staff.

Throughout the winter season, data collected by the various sensors are aggregated and reported on a single-screen, so that municipalities can rapidly identify which sectors require further snow clearance, when ploughing was last performed, what type of materials spread is required, and even better forecast materials purchases for the year ahead.

For residents, real-time updates on plough progress and completion are displayed via a municipality web portal and/or mobile app showing which areas have been cleared and which areas are up next; allowing citizens to plan their trips and days accordingly.

"For such a critical public service switching to a route-centric vs. vehicle-centric approach has helped cities minimise fleet downtime, fuel costs, materials spend, and staff overtime—critical efficiencies to an expensive but necessary function." Francois Bouchard, Sales Director at Focus, part of the Telus Group.

For firms who resell their fleet once it has reached a specific point in its life, the reselling value can be correctly predicted as well as the point in time when to release the vehicle, using historical data and pattern recognition, keeping losses at a minimum and revenues and fleet movement stable. For car rental firms, collating data from

across a range of sources including the external environment such as weather, traffic maps, flight information and prior customer cancellation levels or other customer information can maximise fleet usage, reduce downtime as well as streamlining staff efforts all leading to reduced operational costs.

Data in Fleet Management

In order to correctly use data generated by fleets and to step up the level of data generated insights, as portrayed in the image on page 3, organisations should look at three main areas: Data Collection, Data Analysis and Data Leverage and Value Creation.

Data Collection

As previously outlined, vehicles generate a tremendous amount of data, from various sensors. This can be position and speed to technical information such as tyre pressures, oil level to driver actions such as engine start or door locking and many many more. To capture and store these data points is a technical challenge in itself but it's only the first step in the process. A fleet is usually composed of a variety of makes and models which have their specific and distinct proprietary ways of collecting and transferring these data points. The next step of the process is the normalisation of the different data points to allow comparison and analysis across the entire fleet. Thanks to their knowledge of the myriad different vehicle manufacturers, brands and models, Fleet Management Solutions offer great value here and are an essential part of the value chain.

Data Analysis

The next step of the journey is data analysis. Turning raw data into valuable metrics which can then be compared to base lines and goals to create KPIs. The addition of timelines, then allows a deeper analysis and surfaces trends and patterns providing insights to the business to make informed decisions. By mainly focusing on the operational side of data analysis, dedicated solutions are helping organisations optimise their activities. However analysing only the data related to the fleet itself only provides one point of view of the fleet's reality.

Data Leverage and Value Creation

The last but not least step in the process of harvesting data-driven insights from Fleet Management Solutions is integration to external systems, the use of external data-sets and context to the analysis. This creates another point of view and these integrations with external systems further removes the risk of error and frees-up the workforce to drive growth in the business. In addition, it can foster the use of data across the organisation, from finance and HR to sales and customer service.

Creating contextualized and behavioural based decision levers, allows businesses to be proactive rather than reactive and respond quickly to an always changing landscape.



Data Collection (Technical Challenges)

- Collect the information from the vehicles
- Record & store the information
- Make the information usable

Data Analysis (Operational Management)

- Operational Dashboard
- Tactical information
- What happened in the fleet
- Reactive alerting

Data Leverage & Value Creation (Business Impact)

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- Global understanding
- Proactive decision levers
- Busimess impact
- Strategic alignment

Besides the core common benefits of telematic solutions, data harvested from these solutions can be further leveraged through correct integrations with the client's IT systems; in doing so feeding the right information at the right place and time. Our most successful business cases occurred when our clients run the appropriate analysis on the vehicles, using contextual and behavioural data. This resulted in a strong adoption throughout their organisation as simply put, it was making their employees jobs easier, faster and more reliable

Jad Tabet - Head of International Sales at Targa Telematics, a leading European telematic solution provider

Data – Readiness for the Future

We should note that four technologydriven trends have already started to radically change fleet management and will continue to do so over the coming decades: electrification, shared vehicle usage, connectivity and autonomous driving. Hence, getting business processes, organisational structures and value chains set-up to accommodate, utilise and bring revenue from this proliferation of data now, is critical in order to succeed in the future.

Analysts predict that by 2030, 20% of all new car sales will have some form of electrification be that plug-in hybrid, hybrid or fully electric. Indeed, in Norway the sales figures for new cars in 2020 show 54% were electric and including hybrid types this figure rises to 83%, putting Norway far ahead of the curve.

Shared car services have grown immensely in the last 15 years with services such as Zipcar in the US, Communauto in Canada and more recently, GoCar in Ireland. Multiple users of the same car on a daily basis, while clearly reducing the number of cars on the road and people's spending on automotive, paves the way for radical personalisation of the car experience, much as other industries such as banking and shopping have been forced to transform digitally.

Data Categorisation and Privacy

Data Category	Examples	Data Sensitivity
External conditions	Weather, traffic conditions, upcoming hazards	Low – Public info
Vehicle Status	Oil temperature, engine conditions, unit malfunction	Low – Could be shared as part of a fleet
Vehicle Usage	Driver behaviour, speed, load parameters, location	High/Very High – personal data
Vehicle Personalisation	Preferred settings, driver identity, radio/entertainment settings	High – Personal data
In-car Communications	Phone calls, SMS, twitter, email, entertainment	Very high – personal data and communications

•				More than 500 million cars will be	such as Advanced Driver Assistance
			•	connected to the internet by 2025 (Ericsson	Systems (ASDS) will proliferate. All of these
			•	2019) and connected vehicle services will	will use data analysis to deliver value.
			•	be worth US\$ 81 billion by 2030 according	
				to PWC. In this way the car will become an	Autonomous cars are ASDA taken to its
		•		internet browser for the actual real world	logical next step, where the assistance
				Competing technologies such as C-V2X	becomes fully automated. This transforms
				WIEL and 5C indicate the claim for best	the ear into an internet platform and free
				will faile 36 indicate the claim for best	the car into an internet platform and nees
				solution in this area is an ongoing battle.	up the once-upon-a-time driver to do
				More Importantly, Internet connectivity	personal activities such as work, snopping
				means data collection growth and services	and entertainment consumption.
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Conclusion

		As this first white paper in a series of three has shown, quite apart from hardware and connectivity, for organisation with fleets or those operating in the vertical of fleet
		management the real value and business insights can be gained from correctly analysing
•		the data gathered
• •		
•		In the next white paper, we will detail real life problems and the data-driven solutions
• •		employed to solve these problems.
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