

Leveraging Analytics in Driver Risk Management

Considerations for Selecting a DRM Partner to Best Suit Your Business

by Bryon Cook, Vice President, Data Analytics, DriveCam Inc.

When making the decision to partner with another company to help your business, there are several factors you must consider besides service, selection and price. In addition, you need to keep in mind:

- Which company is in the forefront of technology?
- Which company will be the best long-range partner?
- Which company is looking out for your best interests and is willing to invest in you?
- Which company is looking beyond its hardware and software to find the data, trends and analysis that will help you move forward in this fast-paced world?

This paper focuses on these key factors to help you make the right decision.

Data, trends and analytics. More and more, organizations profess to be applying analytics to improve their business performance. But, what does the term really mean? What role does analytics play in the world of business? And why should you care about it?

Merriam-Webster defines analytics as the method of logical analysis. Distilled further, analytics is the method of “logically separating the whole into its component parts” (Merriam-Webster) and examining them individually and in relation to one another. Organizations practice analytics when they analyze business data and information – monthly sales, inventory levels, turnover rates, earnings – over a period of time in an effort to identify trends that might predict future business performance. Utilizing analytics, however, enables businesses to make educated, objective decisions based on historical information and statistics as opposed to gut feelings or “hoped for” conclusions.

How DriveCam Leverages Driver Behavior Data

With analytics, DriveCam is leading the Driver Risk Management revolution by leveraging driving behavior data to help fleets mitigate risk and directly impact their bottom lines while improving the overall safety of their mobile workforces. To do this, DriveCam has compiled the world’s largest repository of events reflecting actual risky driving behaviors across driver and vehicle types in commercial, consumer and government industry sectors.

Less is More

The great German architect, Ludwig Mies van der Rohe put it best when he said, "Less is More." The same theory can be applied to Driver Risk Management (DRM) Programs – the more precise view on risky driving behavior, the more efficient and effective program you will have. In fact, thorough testing has shown that in DRM, less is definitely more.

That's why DriveCam developed RiskPredict™. RiskPredict is an evolutionary result of DriveCam's business growth and maturity. It is an intelligent algorithm that eliminates irrelevant data and focuses on the events that contain the riskiest driving behaviors. Additionally, it optimizes the duration/length of captured events so that only the critical moments before and after the trigger are captured for accurate review.

How is this done?

RiskPredict focuses on the captured events that are the highest predictors of risky driving behavior optimized to highlight root cause and help forecast future events. It was developed by top data analysts using world-class processes in conjunction with Fair Isaac, the world leader in commercial applications of predictive analytics, and leading research institutions such as University of Iowa and University of Michigan. The result is fewer events to sift through and shorter events to review.

Leveraging data based upon a large, continually growing repository of risky driving events is a key consideration when deciding who will be your Driver Risk Management partner. Having compiled a repository with over a million actual instances of drivers exhibiting risky behavior behind the wheel – across various industries and nearly every type of vehicle – over a ten-year period (and continuing to grow it every day with tens of thousands more events), DriveCam has proven its commitment and longevity.

But DriveCam doesn't stop there. Initially, DriveCam began producing ad hoc reports and performing one-off queries based on the data it collected in an effort to identify trends in risky driving behavior, or antecedents, and related consequences. Today, most DRM vendors are still using this approach. However, DriveCam has continued to expand its customer base to include thousands of commercial and government organizations and implemented its behavior-based risk mitigation solution based upon nearly 100,000 vehicles. As a result, the number of risky driving events its video event recorders captures grows exponentially to hundreds of thousands per month. In partnership with Fair Isaac Corporation, the world leader in commercial applications of predictive analytics and leading research institutions such as University of Iowa and University of Michigan, DriveCam invested in its analytics – and its customers -- by developing a process and an advanced mathematical algorithm to help filter events and successfully manage the data it was gathering.

Where is DriveCam Today?

What does all of these analytics mean to you? Ask yourself ... Can I identify the driver in my fleet who is more likely to get into an accident and cost me millions of dollars? Even if I know the "what", do I really know the "why"?

DriveCam is developing the analytic capability to do just that. Recognizing that risky driving behaviors are the antecedents to accidents, DriveCam began gathering evidence of risky driving events captured on its exception-based video event recorders for detailed analysis by a handful of certified driving behavior analysts and safety experts. Using spreadsheets and other standard reporting vehicles, the analysts were initially able to identify the root cause of events and provide fleets guidance on how to coach their drivers for better performance and reductions in risky driving behavior.

Today, through a combination of automated filtering of events through advanced technology plus expert human review of each event, DriveCam identifies the riskiest behaviors (e.g. falling asleep at the wheel, running a stop sign) and weeds out events not attributable to driving risk (e.g. rough terrain that triggers the event recorder). DriveCam experts trained in identification of risky driving behaviors perform the final review and scoring of filtered events and provide objective analysis to fleets. This information, in turn, enables fleets to coach their drivers and prevent "accidents waiting to happen" by improving driving behavior.

DriveCam is the only Driver Risk Management company that is able to provide fleets and insurers true insight about driving root causes based on actual risky driving behaviors (both observed and real world) that calculates the likelihood of collisions and enables them to improve risky driving behaviors that lead to collisions. This is a tremendous benefit not

The Science Behind the Solution

Working with data experts and a team from Fair Isaac, the global leader in predictive analytics, and leading research institutions such as University of Iowa and University of Michigan, DriveCam conducted a rigorous analysis across more than one million events – paying close attention to industry and vehicle type.

The objective was to identify risky event “triggers” using G-Force and other data, so that DriveCam could optimize resources and focus on the riskier events – those that are likely to be the driver’s fault and need the deepest review. Using a representative sample of event clips from each trigger type, DriveCam extracted G-Force data from each clip into a usable format, developed custom characteristics and decision keys, and used Decision Trees to develop a segmentation strategy to identify higher risk events.

Further analysis led to the conclusion with the optimum amount of event duration that was required to best highlight the risky behavior root cause. Thus eliminating the non-risky events that are a large percentage of overall events and get in the way of analyzing and coaching on the risky events.

only to fleets in terms of corporate reputation management and bottom line savings – due to personal injury, vehicle damages, workers’ compensation and claims costs reductions – but also to the motoring public as countless incidents are prevented and lives are saved. DriveCam is able to identify trends in behavior not only among individuals, but across locations, fleets, industries and vehicle type.

Where Is DriveCam Going?

In their book, *Competing on Analytics: The New Science of Winning*, authors Thomas Davenport and Jeanne Harris highlight organizations as varied as Amazon, Marriott International, Netflix, the Boston Red Sox and UPS and the commonality among them – each has leveraged the power of analytics to differentiate itself and become an industry leader. By analyzing data ranging from customer spending habits and the success of loyalty programs to player statistics and delivery times, these organizations have been able to develop innovative products and services, improve processes, increase efficiencies, boost sales and even win more ballgames. More importantly, these organizations use analytics not only to measure their own businesses, but to help their customers and vendors do the same.¹

The authors contend that analytics competitors such as those named above have “elevated data management, statistical and quantitative analysis, and fact-based decision making to a high art,”² regardless of their industry or core competencies. Like all analytics competitors, they possess four key attributes³:

- **Distinctive capability.** Use of analytics supports their unique capability. Netflix’s primary use of analytics, for instance, is to predict customer movie preferences.⁴
- **Enterprise-wide analytics.** Analytics permeates the organization and a uniform approach to gathering, aggregating, sharing and analyzing data is applied organization-wide.
- **Senior management commitment.** Senior executives at the organization embrace an analytic approach and ensure an analysis-driven mentality is applied across all business processes, departments, hiring methods, etc.⁵
- **Large-scale ambition.** The analytics competitors Davenport and Harris studied “had bet their future success on analytics-based strategies.”⁶ They set ambitious goals, took risks and expected the scope of their success to match their efforts.

¹ Davenport, Thomas H., “Competing on Analytics,” Harvard Business Review. Decision Making. January 2006.

² Davenport, Thomas H. and Jeanne G. Harris. “Competing on Analytics: The New Science of Winning.” Harvard Business School Press, 2007.

³ Ibid.

⁴ Ibid.

⁵ Davenport, Thomas H., “Competing on Analytics,” Harvard Business Review. Decision Making. January 2006.

⁶ Davenport, Thomas H., “Competing on Analytics,” Harvard Business Review. Decision Making. January 2006.

Evolving Analytics

In the third stage of analytical competition, companies are focused on advanced reporting and filtering based on a growing data repository. Maintaining this focus is key to working through Stage 3 to Stage 4 – Statistical Analysis Forecasting.

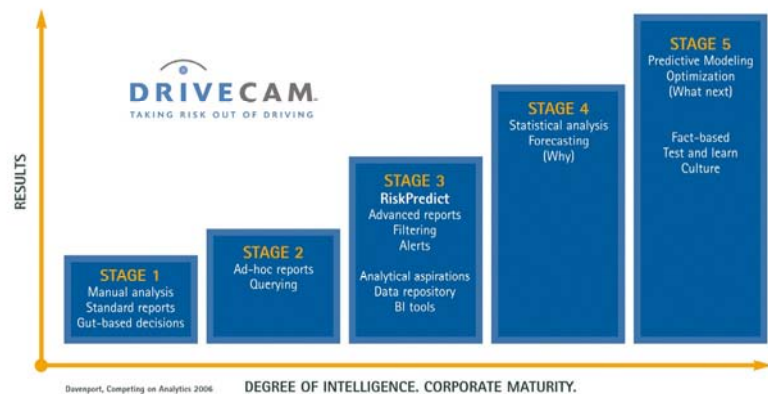
As DriveCam optimizes and enhances Stage 3 – predicting and preventing risky behavior – it continues to maximize performance for identification of risky driving, the precursor to Stage 4. By delivering more precision and consistency for its clients, and filtering through irrelevant data, DriveCam allows fleet managers the ability to utilize their time more efficiently through quicker coaching sessions.

The evolution of Driver Risk Management has led to RiskPredict™. By focusing on the captured events that are the highest predictors of risky driving behavior, RiskPredict turns today's data into forecasts of future events. Simply put, RiskPredict helps you know your drivers better than they know themselves.

The Stages of Analytics

Undoubtedly, every organization, at some level, applies some type of data analysis to its business. Perhaps it is a simple spreadsheet that helps a manager determine average revenue per employee or the quantity of product sold per month. The difference between these organizations and the true analytics competitors – those organizations using analytics to lead their industries and delight customers – Davenport and Harris would argue is the degree to which they leverage analytics for competitive advantage.

The authors illustrate the five distinct stages of analytical competition from “analytically impaired” (stage one) to “analytical competitor” (stage five).



Most companies perform analysis consistent with the first, and possibly second, stages – analyzing data manually with standard spreadsheet reports, making gut-based decisions, particularly with regard to HR issues, and occasionally compiling more sophisticated ad hoc reports and performing advanced queries. A few, including the industry leaders Davenport and Harris highlight, recognize the competitive advantage analytics affords and operate in the fifth stage. These organizations have adopted a “test and learn” culture and routinely apply predictive modeling techniques across their businesses that enable fact-based decision-making.

Following along these lines, DriveCam is a high-growth company moving through the various stages of analytics toward predictive modeling. As the company progresses through each stage, it delivers better, more sophisticated data and business intelligence to its customers.

Consistent with the authors' third stage of analytics, DriveCam is able to provide its customers comprehensive monthly reports detailing their fleet's driving improvement and advice on where to focus coaching. Industry-focused general managers at DriveCam benchmark results and provide insight into overall program effectiveness.

Increasingly, DriveCam is moving toward the authors' fourth stage of analytics, using statistical analysis to forecast and answer the question "Why is this happening?", and ultimately toward predictive modeling optimization in which they are able to answer the questions "What will happen next? What is possible? And, how do we stay ahead?" (the fifth stage). Answers to these questions benefit not just DriveCam, but their customers as well.

This is particularly evident in vertical markets that operate expensive, high-risk vehicles such as concrete mixers, waste haulers, buses and heavy trucks. Imagine the significance to a waste management company of knowing that 35 percent of all risky driving behaviors captured on video event recorders inside its trucks occur on a specific route at a particularly challenging intersection.

Now imagine that DriveCam could tell the company definitively the reason for such a high number of events – specifically, that drivers are required to make a sharp left turn across traffic and visibility frequently is hampered by parked cars and overgrown trees. This information empowers the waste management company to respond proactively and make adjustments that will directly impact the safety of its fleet and boost the bottom line. For instance, the company might propose that drivers take an alternate route to avoid the intersection.

By predicting and preventing accidents, the company not only is helping itself, but is delivering better customer service, as well, since vehicles and drivers not involved in accidents are able to work (less down time), fewer accidents mean lower claims costs that could in turn result in lower costs (or ideally, at least not increased costs) for customers.

Analytics are the key to business success and, when applied to driving behavior, crucial to fleet safety. Analytics enable businesses to make better decisions while also making it possible for them to predict and prepare for future events – whether that be providing a risky driver the right coaching to prevent an accident or anticipating a customer need based on historical data and trends and responding accordingly with service and solutions customers cannot get elsewhere. Analytics, in conjunction with forward-thinking technology, is an organization's competitive advantage. And the one that will help prove that it is a long-range partner.

About the Author

Bryon Cook is vice president, data analytics at DriveCam Inc. In this role, Mr. Cook is responsible for strategically leveraging the company's data warehouse and analytical tools to improve the user experience and reduce both time and cost for managing a Driver Risk Management program.

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About DriveCam

DriveCam is a global Driver Risk Management company that reduces claims costs and saves lives by improving the way people drive. By combining sight and sound, expert analysis and driver coaching, DriveCam has reduced vehicle damages, workers' compensation and personal injury costs by more than 50 percent in over 80,000 commercial and government vehicles. DriveCam has the world's largest repository of events reflecting actual risky driving behaviors. In 2007, Inc. Magazine included DriveCam on its list of the 500 fastest-growing, privately held companies in the U.S. for the third consecutive year. For more information, visit www.drivecam.com