

Connected insights through In-Field Quality Analytics



In-Field Quality Analytics is a collaborative solution from SAS and Capgemini that provides quality analytics for field data. It analyzes warranty claims, call center records and data gathered in real time from vehicles and components to detect and manage quality issues.

The resulting insights help engineering, operations, marketing and financial analysts identify emerging issues sooner and locate root causes faster. These insights can also be used for better forecasting and planning.

This solution has already provided substantial benefits for a number of our automotive customers:

- Improved customer experience through enhanced product quality and reliability.
- Access to real-time information about current usage rate of components for more efficient inventory planning.
- Minimized size and cost of campaigns, with identification and scheduling of potential call-backs.
- Improved prediction of quality problems and ability to put in place preventive measures.
- Faster root-cause analysis.
- Lower warranty costs.

Innovation requires insight

The global automotive industry is undergoing a fundamental change in an already challenging environment. Automotive companies that want to improve their growth, profitability and shareholder value know they need to focus on innovation in order to improve customer experience, achieve more profitable growth and gain competitive advantage. A major enabler of innovation is the advanced use of data and analytics to gain greater levels of information and generate insights at the point of action.

Despite its wealth of data, the automotive industry often struggles to identify and apply the right insights. However, new solutions are emerging.

The quality challenge

The auto industry needs more analytics solutions for a variety of uses. One pressing need is to improve vehicle quality and reliability in order to enhance the customer experience. Automotive companies know that no matter how much effort goes into quality during design, development and manufacture, issues will still arise in the field.

With the rise of social media, even small issues can create negative publicity. It is more critical than ever to identify issues and address them before they escalate and cause costly harm to the brand image.

As more and more cars and fleets are connected, and with product quality data increasingly being captured in the field, it is possible to address quality issues proactively. But first, you need quality-focused analytics for:

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Failure root cause and contribution analysis

- Historical and in-field data integration from service centers and vehicle sensors.
- Part failure root-cause identification.

Part failure prediction

- Static and dynamic data integration from service centers and car sensors.
- Developing a risk indicator value based on in-vehicle diagnostics, to identify and generate alerts for next possible failure, thus resulting in reduction of repeat repairs and prevention of potential failures.

Inventory and supply chain optimization

- Gap analysis of spare parts demand and supply.
- Dealer location and vehicle driving terrain data for better inventory management.
- Production optimization to better match the potential demand and free up cash assets.

Warranty claim prediction

- Claims patterns and seasonality identification based on historical data to enable forecasting of engine and part-level claims and demand.
- Pricing improvements for warranty extension options and warranty decisions.

Insights for research and development

- Product development efficiency is enhanced by incorporating in-field data into development of new and improved products.
- In-field data minimizes failure chain-reaction by eliminating the root source through identification of causal relationships.

Customer satisfaction and loyalty

- Customized reports on vehicle performance including vehicle status updates and customized service notifications.
- Remote on-demand diagnostic services and part failure alerts.

In-Field Quality Analytics from SAS and Capgemini

To address these challenges, we have combined our skills and expertise to develop In-Field Quality Analytics.

SAS has created a solution for quality analytics that integrates all relevant field quality data to automatically detect emerging issues before they have a significant impact on performance.

Now, SAS and Capgemini are complementing this solution with Capgemini's consulting and implementation expertise. The result is our proven ability to help automotive companies gain value from insights and data. Our approach benefits any company that wants to improve product quality, customer service and brand equity while reducing costs.

innovation

quality

value

insights

expertise

Helping you reach your potential

Capgemini and SAS work with you to focus on its specific issues regarding management, ownership, analysis and exploitation of data and insights. In particular, we help you consider how to:

- Manage the complexity of information flows.
- Validate and evaluate the quality of data.
- Select appropriate data.
- Design robust models.
- Make correct interpretations and predictions.
- Derive meaningful and comprehensive conclusions.

Lower cost of entry

We find that a “start small, scale up” approach to implementation works best. A pilot project is often the best way for an automotive OEM to assess the potential of in-field quality analytics. This pilot can focus on a specific benefit, requirement or challenge, and can just use a subset of vehicle data. The pilot can demonstrate the value of the insights gained, and show how these can be translated into tangible benefits to the company. It can also quickly mobilize the wider business by proving a concrete and measurable business value.

Once you have organizational buy-in, the pilot can be expanded enterprisewide. Three important aspects need to be considered during this phase: customer experience, operational processes and your business model. These are the critical aspects on which a data-driven business must focus.

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Becoming an insights-driven organization

Besides tackling the specific quality issues, this implementation approach accelerates your evolution into an insight-driven organization through a four-stage process:

- **Ignite:** Achieve fast impact through agile implementation of innovative pilots.
- **Envision:** Develop a big data strategy directly linked with business strategy.
- **Enable:** Establish big data and analytics capabilities.
- **Ready to use:** Establish or use analytics-as-a-service.



How SAS® Field Quality Analytics can help

While you put great effort into ensuring that the design, development and manufacture of your vehicles and components meets the highest standards, issues still arise in the field. With the impact of social media, you must identify issues and address them before they escalate.

SAS Field Quality Analytics was designed to detect early warnings of quality problems to reduce the cost of poor quality and help minimize campaigns and recalls. It integrates all the relevant field quality data to automatically detect emerging issues before they have a significant impact on performance.

At a glance: SAS® Field Quality Analytics features

Data integration

- Standard, extensible data model.
- Multiple databases supported, including SAP HANA.

Early-warning analytics

- Automatically determines analytically driven critical values.
- Enables entry of manual thresholds for safety and regulatory issues.
- Simultaneously monitors changes across production period, usage and claim period.
- Generates automated alerts and notifies relevant issue owners.
- Attach comments so current status is easily ascertained.
- Drill into alerts to conduct further analysis.

Issue analysis and prioritization

- Ad hoc warranty analysis, including Pareto charts, control charts, exposure charts, reliability analysis, decision trees and association analysis.
 - Drill into results to conduct further analysis.
 - Review raw claim data.
- Advanced warranty analysis with hundreds of analyses and charting options, including descriptive analysis, table analysis, ANOVA, regression, multivariate, survival analysis, capability analysis, control charts and graphs.

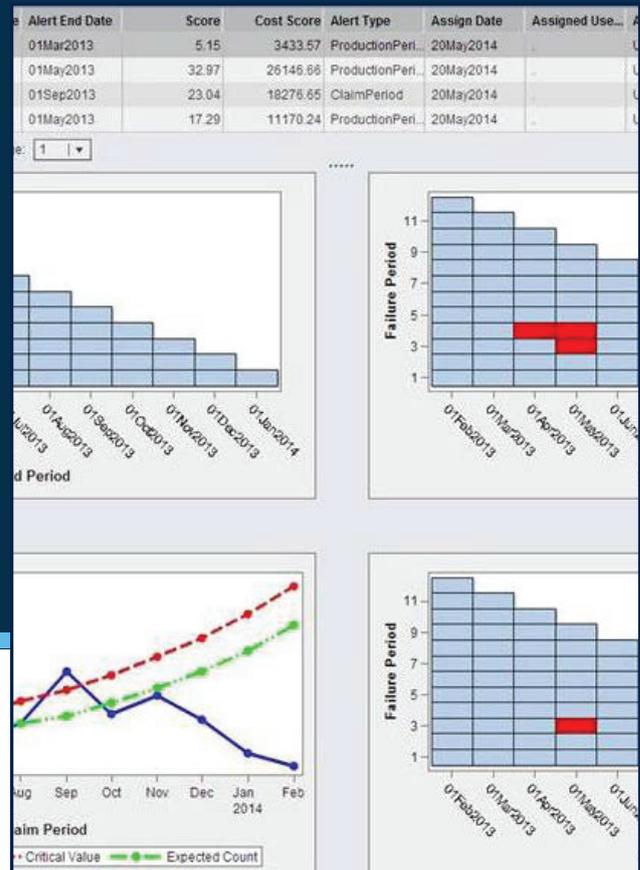


Figure 1. The Emerging Issues Workspace provides interactive alerts on new field issues. Reports can be drilled into for further analysis.

Integrated text analysis

- Analytic models to recognize patterns in text.
- Ability to identify similar comments.
- Word search that includes synonyms, misspellings and other related words.

Easy reporting capabilities

- Project-oriented interface for creating both simple and complex reports:
 - Workflow mirrors the warranty analysis processes.
 - Group analyses by project.
- Warranty report library:
 - Searchable repository of information.
 - Content can include special studies, documents posted by users and automatically generated standard reports.

Putting it all together

SAS analytics leadership

IDC research shows that SAS has a commanding 33 percent market share in advanced analytics - more than twice that of the nearest competitor. This market domination reflects SAS' appreciation that it's not enough to have advanced technology - what counts is how far that technology can advance a client's organization.

SAS advanced analytics software is infused with innovative algorithms that can help you solve even your most intractable problems. With it, you can make the best possible decisions, and discover opportunities you would otherwise miss.

Capgemini automotive capabilities

Capgemini works with the leading automotive companies of the world, serving the entire automotive value chain. Our leading-edge solutions include AutomotiveConnect for OEM, AutomotiveConnect for Suppliers, and Cars Online.

All of them focus on helping to resolve the key issues across the automotive value chain, from consumers to suppliers. Over many years, we have built up deep automotive industry knowledge. Applying our collaborative approach and proven global delivery capabilities, we can help you achieve results quickly.

About SAS

SAS is the leader in analytics. Through innovative analytics, business intelligence and data management software and services, SAS helps customers at more than 80,000 sites make better decisions faster. Since 1976, SAS has been giving customers around the world THE POWER TO KNOW®.

Learn more about [SAS Field Quality Analytics](#) and other SAS solutions for [automotive](#).

About Capgemini

With more than 180,000 people in over 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2015 global revenues of EUR 11.9 billion.

Together with its clients, Capgemini creates and delivers business, technology and digital solutions that fit their needs, enabling them to achieve innovation and competitiveness. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its world-wide delivery model.

For further information visit www.capgemini.com.



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