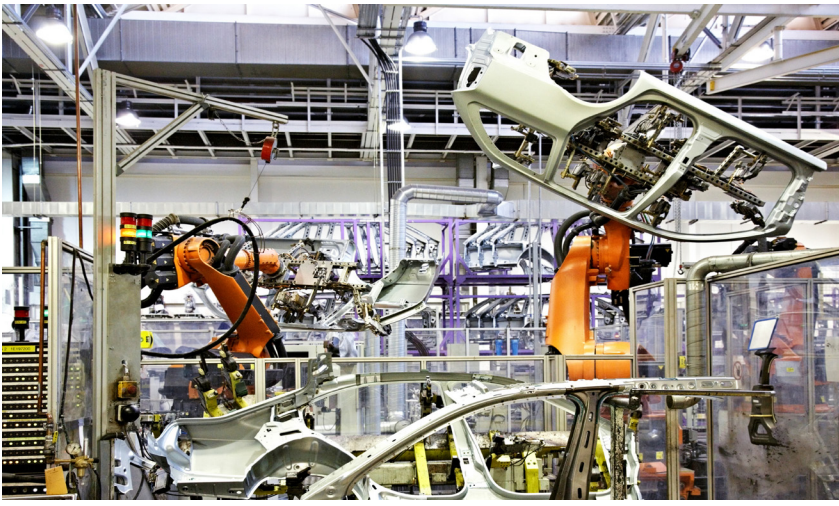


AUTOMOTIVE MANUFACTURING



Automotive Manufacturing: Preparing for Supplier Warranty Cost Sharing

Major automotive companies will start submitting chargebacks to their OEMs if quality thresholds are “breached” ... Are you ready?



Improve Insights into Warranty Claims and Part Failures

In an attempt to reduce warranty costs per vehicle, top automakers are focusing on warranty cost analysis. One result is a warranty “chargeback” system that will become more punitive in 2012. Automotive companies including General Motors, Ford, Chrysler, and others are formalizing their warranty chargeback systems to reduce their expenses by passing the costs back to their suppliers.

Automotive suppliers can be prepared by improving product quality and increasing their ability to defend claims of part failures. A major fear of suppliers is that warranty costs will be charged without proper evidence and justification. With existing manual processes, OEMs agree that it will be difficult and time consuming to differentiate between actual part defects and system-related failures.

Manufacturers and suppliers must be empowered to recognize “real” part failures from the many other possible problems. They need to be able to review part failure rate data across customers, platforms, and other factors to discover the root cause of failure, but the information relevant to warranty claims is diverse and complex. A systematic approach to aggregate and organize the relevant data is needed, but the relevant data are cryptic, with both numeric and track-and-trace data from the manufacturing process and text data from the warranty claims themselves. Warranty coding of failures by mechanics is inconsistent and unstructured, making it difficult to comprehend “the whole story.”

Using StatSoft’s multivariate solutions, patterns emerge that were not previously apparent. From these patterns, automatic alerts are generated, which indicate much earlier that a problem is developing. Once the alert is generated, the anomaly can be analyzed in real time to determine if it is the component or some other factor in the system that is causing the problem.

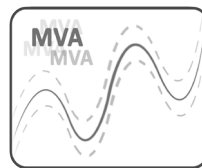
New Challenges Facing OEMs

- Auto manufacturers will begin submitting chargebacks to their original equipment manufacturers (OEMs) if quality thresholds are “breached”
- The implications for the OEMs are that (a) an early-warning detection system is needed to identify quality problems much earlier in the process so that critical factors can be corrected before the issue impacts the overall quality scorecard and (b) improved techniques to identify root causes are needed in order to positively determine whether their part is the culprit
- Many companies use Excel and other manual analysis tools in an attempt to spot emerging complications, but simplistic approaches do not provide the advance notice that a supplier needs to rapidly identify and fix problems
- The problem isn’t more data. The problem is to better leverage the data to detect patterns earlier in the process and then rapidly identify the root cause and fix the process.

Featured StatSoft Products



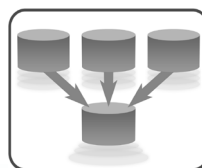
STATISTICA Enterprise – The server platform for delivering analytic and business intelligence applications to departments and divisions within the enterprise via centrally managed queries, analysis templates, report templates, and dashboards.



STATISTICA MSPC – A complete solution for multivariate analytics, designed for applications in process monitoring and predicting quality outcomes using multivariate predictive analytics (including data mining) methods.

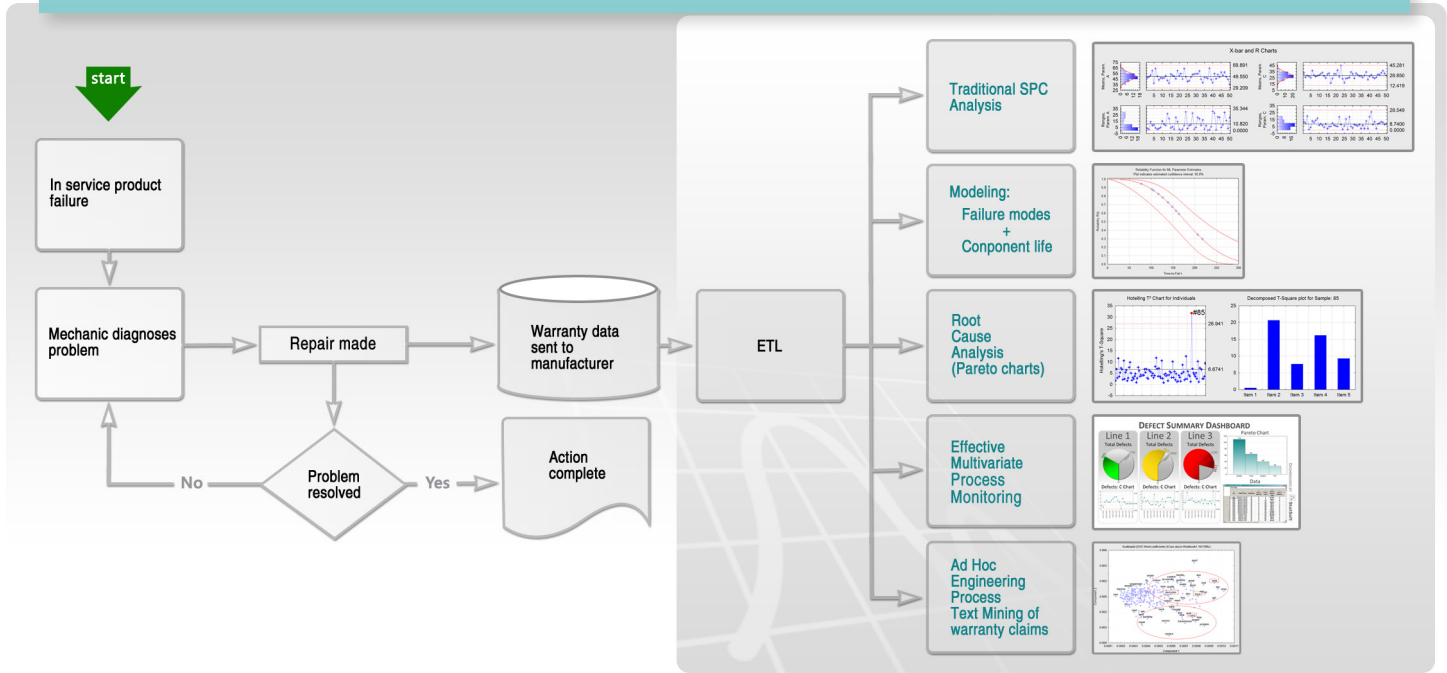


STATISTICA Text Miner – A large selection of retrieval, preprocessing, and analytic/interpretive mining procedures for unstructured text data and Web pages. Optional specific solution packages.



STATISTICA ETL – Automated data validation, pre-processing, aggregation, standardization, and merging of data from a variety of sources to support analytic applications.

Warranty Process Flow: Early Warning Detection and Root Cause Analysis System



ETL: Data Access

PROBLEM: Data resides in disparate databases requiring data connections, aggregation, and alignment across multiple databases and data historians. Getting to the data is a manual process, and engineers spend too much time producing reports.

SOLUTION: Build data access, automated process monitoring, and root cause analysis templates only once and do away with manual data retrieval. Free up engineers' time for higher value task resulting in process improvement and reduced warranty claims.

Traditional SPC Analysis

PROBLEM: How to implement effective SPC monitoring that is responsive to small changes in (warranty) trends?

SOLUTION: Use cumulative sum charts, exponentially weighted moving average charts, and runs tests to simultaneously monitor hundreds or thousands of components and subcomponents

Modeling: Failure Modes + Component Life

PROBLEM: How to link warranty issues to manufacturing parameters and product testing? How to implement successful strategies for driving down warranty repair costs?

SOLUTION: Predictive modeling techniques can identify the key patterns relating manufacturing and product testing data to warranty claims; those predictive models can then be used in "what-if" (scenario) analyses to identify cost-effective solutions to drive down warranty costs.

Root Cause Analysis

PROBLEM: What are the most important variables that impact product quality and reliability in the field, and drive warranty cost? How to quickly diagnose root causes when new failure modes are reported in the field?

SOLUTION: Diagnose complex issues quickly by applying automated root cause analyses. Quickly identify the critical manufacturing parameters and inputs where additional resources are needed to drive warranty cost down.

Effective Multivariate Process Monitoring

PROBLEM: Exceptional component/product reliability is the result of a complete understanding of the interactions among numerous manufacturing parameters, supplier inputs, etc. When reviewing a process sequentially, one parameter at a time, important interactions will be overlooked.

SOLUTION: Find anomalies and patterns in high-dimensional data through the implementation of multivariate and model-based process monitoring. Find manufacturing quality problems early and before they show up in standard control charts.

Ad Hoc Engineering Analytics; Text Mining of Warranty Claims

PROBLEM: How to find emerging problems and new patterns in warranty data? How to avoid the expense of trained engineers reading large numbers of warranty reports in order to classify them, and to detect new problems?

SOLUTION: Apply advanced automatic text mining methods to classify and cluster warranty claim reports; then use ad-hoc drill-down methods to detect emerging trends.

The Goal

The goal is to eliminate the manual data analysis and preparation work through automated analysis. By freeing up your engineers' time, they are able to focus on (a) root cause analysis and remedy and (b) process improvement to reduce warranty claims.

ROI

- Meet and exceed the goals established for number of repairs per 1000 vehicles.
- Dramatically reduce supplier chargeback expenses.
- Secure more business with automotive manufacturers.
- Link product performance and warranty outcomes directly to the controlled manufacturing process.
- Transform valuable engineers' time from data preparation to root cause analysis and process optimization.

Key Benefits Summary

Automotive suppliers need improved techniques to identify root cause in order to (a) monitor and predict part failures and (b) to achieve an Early Warning Detection System (EWDS). The EWDS identifies quality problems earlier and helps identify opportunities for process improvements before issues impact their overall quality scorecard and increase costs.

Typical Problems with current approaches resolved by StatSoft's Solution for Warranty Analysis:

- Over 50% of an engineer's time is spent on data retrieval, alignment, and preparation.
- Reports and reviews are backlogged and out of date.
- Trends in the data are not made clear and emerging problems are not spotted in a timely fashion.
- Data is everywhere, not organized and consolidated. Text or unstructured information is captured on each warranty claim and data are available from production and testing of the parts but are not analyzed together to spot emerging problems or trends.

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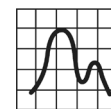
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StatSoft Inc. is one of the largest global providers of analytic software. **STATISTICA** is an enterprise-wide, scalable Web-enabled system that is used by a variety of industries in mission-critical applications where predictive modeling helps increase productivity and bottom-line profitability, while also helping protect life, increase safety, and save the environment.

While easier to use and more cost-effective than its competitors, **STATISTICA** is one of the most technologically advanced tools in the industry, with uncompromising attention to detail and overall quality, which ensures success for its users.

For two consecutive years, **STATISTICA** has been recognized as the primary data mining tool of choice in an annual survey conducted by Rexer Analytics of corporate and consultant data miners. **STATISTICA** was also recognized for receiving the highest satisfaction ratings among those surveyed.



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