



Unlocking the Information within Raw Data

An Automotive Warranty Case Study

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Prepared by

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Case Study – Global Automotive Supplier

Ubiquiti technologies have been applied for a number of different solutions, and as one instance of use, Ubiquiti has developed (in conjunction with Autoliv N.A., Dura Automotive, Lear Corp., and Siemens-Yazaki SysTech) software to analyze the numeric, categorical and narrative text comments in automotive warranty claims. The software automatically extracts key information (e.g., system, repairs, parts etc.) from each claim, thereby allowing for the rapid detection of critical problems and/or inconsistencies present in the claims.

The Ubiquiti customer for this case study is a major global supplier (i.e., a Tier 1 Supplier) to all major automotive OEMs. Together with its joint ventures, it has about 80 facilities with almost 30,000 employees in more than 30 vehicle-producing countries. In addition, the company has several technical centers, including test tracks, around the world.

Our customer started using the Ubiquiti **Automotive Warranty Analysis Solution** in April 2003. Within seven months of use, the direct, verifiable savings **had already paid for the technology**. Also, there were **pending savings of at least twelve times the purchase price** just in the first year of use. Additional benefits have been recognized in the speed of problem resolution, improved root cause analysis, and thereby, improved relationships with the OEMs. The supplier recently identified an issue (using the same Ubiquiti solution) that anticipated cost savings of **several million dollars over the subsequent three year period**.

The savings mentioned have accrued in two major categories:

- The Ubiquiti Automotive Warranty Analysis Solution has enabled our customer to (a) identify rapidly existing warranty issues, and b) drill down to the root cause(s). These activities are now being accomplished in hours or minutes – rather than the weeks or months it was taking without the solution. Even for just the two cases where Ubiquiti technology was used initially, the speed with which issues were identified and addressed saved our customer significant and verifiable amounts.
- The Ubiquiti Automotive Warranty Analysis Solution allows our customer to perform a thorough and accurate analysis of the data attributed to warranty issues. Increasingly, warranty costs are being passed from the OEMs to the suppliers, and the decisions on responsibility are often made by the OEMs using inaccurately or incompletely examined data. In several cases, our customer has been able to show, through the use of Ubiquiti technologies, that the OEM decisions on the warranty sharing needed to be altered in favor of our customer. This has resulted in significant direct cash savings.

Before Ubiquiti tools were available, it would take months to analyze warranty claims manually; it takes only a few hours now. Our customer is able to track continually the top warranty issues as the data arrives. This has allowed warranty analysts to spend significantly more time working on the resolution of the different problems – rather than having to spend time identifying them by manual data analysis. Our customer is also able to share the warranty data, their analyses, and the resulting reports etc. widely – among field engineers, quality control specialists, manufacturing engineers, and the senior management – all very rapidly.



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This supplier uses the Ubiquiti Automotive Warranty Analysis Solution in several different ways:

- Analysis of incoming warranty data examines **trends**. As new claims arrive each week (and are downloaded, coded, and charted automatically), a combination of features such as the clustering, the charts, simple searches etc., the data gets analyzed quickly. Some common categories are used to organize the data: by component, by vehicle, by system by failure type. The new data may be examined alone, or combined with other datasets, in order that either emerging trends in the new data, or longer-term patterns in cumulative data, are recognized.
- Analysis of incoming warranty data indicates **inconsistencies**. A common issue is that the problems reflected in some warranty claims may not be the responsibility of our customer. Often the information needed to find the component responsible for a failure is contained, and effectively “buried”, within the narrative text comments in the warranty claims. Since Ubiquiti software extracts the information from the text, such hard-to-obtain information gets included in the analysis, and therefore, finding the real problem components is more accurate. In addition, Ubiquiti technologies can often infer the appropriate component or part numbers automatically from the claims.
- Analysis of data pertaining to a particular problem to **determine or verify the root cause(s)**. Once an issue has been identified, either by the supplier, the OEM, or by the use of Ubiquiti software, the root cause(s) of the issue can be identified quickly using Ubiquiti technologies. Any correlations of the issues to categories such as geographic regions, dealerships, assembly plants, and related systems, can all be investigated. The results help indicate the appropriate corrective actions, or help show that the problems are due to factors other than component quality (or similar supplier responsibilities).
- Ubiquiti **flags re-occurrences of previously addressed warranty issues automatically** once they have been examined and identified by the supplier. This allows for immediate follow-up on any re-emerging known issues, which previously would not have been detected until a new trend had been established.
- Ubiquiti software can be easily updated with **new coding or analysis parameters**, and thereafter, existing and new warranty data may be analyzed with the new settings. If needed, Ubiquiti support works with the supplier in an on-going basis to augment and fine-tune the software based on the feedback received. New codes and categories may be added, and the analyses re-run, within a few hours – a task that would have taken many months before. Our customer has used this feature to respond to OEM requests in significantly less time than was possible before.
- Available Ubiquiti **data mining technologies identify correlations not known currently**. Our software mines datasets to report interesting, statistically significant correlations that should be investigated further. This is an effective way of discovering potential issues that simple trend detection may miss. Automatically determining such information easily saves many man-years of work. For example, through experience it may be learned that blowing of fuses in the instrument panel may co-occur with leakage through a faulty windshield, and that the latter is the root cause of the issue. Such co-occurrences may be automatically detected with data mining technologies.



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- Ubiquiti technologies are often **applied to several different datasets at the same time**. Using the technologies on several datasets can improve the results as compared to simply using it in a single context (e.g., just for warranty claims). As an example, consider using our technologies to near real-time identification of issues arising in warranty claims as well as accessing records within a “Lessons Learned” dataset. While the former helps to identify and pinpoint the root causes arising in currently deployed components, the latter helps to organize and retrieve corrective actions from the experience of many individuals over multiple years. Note that both types of datasets are commonly available at suppliers, although often, they are referred to by different names (e.g., Lessons Learned may be called the 8D's).

Our customer’s **effectiveness in addressing warranty issues has dramatically increased** since the adoption of Ubiquiti technologies. The solution **paid for itself in less than a year** and was expected **to return many more times the investment** within the first few years.

Ubiquiti References

Ubiquiti is confident that our solutions deliver valuable results. Ubiquiti customers remain our best references.

Former Approach

Before using Ubiquiti technologies, our customer had a technical team which would read through samples of claims, and associate with each claim standard "codes" (for the problems, the parts and the repairs in the claim) developed internally by the supplier. Thereafter, the coded claims would be collated and analyzed to assess the major issues and trends etc. But, the human effort, time expended, and inconsistencies in reading the narrative text, were a significant overhead.

Ubiquiti Background

Ubiquiti Inc., in business since year 2000, provides high-value solutions for information analysis, with special emphasis on text data and large datasets. Our technology solutions cover the entire lifecycle of information analysis including requirements gathering, design, implementation, and on-going support. Our solutions are highly regarded, our customers are our strongest references. Our partial client list includes Autoliv NA, Dura Automotive, Freudenberg-NOK, General Motors, Lear Corp, Siemens-Yazaki SysTech etc. (and see more at our website).



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