

Win in the flat world

Warranty: From liability to competitive advantage

– Sudripto De, Robert Pritchard, Rajiv Puri

- *Is your profit earned per vehicle rapidly diminishing in the face of escalating warranty-related costs?*
- *Is information about failures not reaching engineering and quality, leading to the same problems resurfacing with every new model launch?*
- *Is there a constant threat of major recall liabilities because it takes months to detect part-failure patterns, identify the root cause and implement a fix in time?*
- *Is an inability to collect and decipher evidence from claims hurting your ability to account for supplier defects and impeding supplier charge-backs?*
- *Are good relationships with dealers jeopardized by warranty claims processing delays, whilst you also struggle to control warranty processing costs?*



These are just a few of the questions facing any automotive OEM – and they can all be largely attributed to a lack of an effective and transparent enterprise-wide warranty management. And whichever way you look at it, the figures at stake – and the effects on your business – are not small.

Since the turn of the century, total annual warranty expenditures of the U.S. Automotive industry have risen from \$10 billion to \$14 billion, whereas the annual sales have remained stagnant. The average profit per vehicle of \$200 is overshadowed by a corresponding average warranty cost of \$800 per vehicle. The situation is escalating further as warranty periods become longer, regulations mandating disclosure of warranty data (FASB-45, TREAD act) become more stringent, and electronics in vehicles increase to meet customer demands for safety, performance and economy. Research group AMR expects these pressures and the increases in warranty coverages to lead to a 16% rise in warranty costs.

The Present Warranty Scenario: A Grim Picture

Managing warranty is an enterprise-wide challenge, impacting multiple departments including Quality, Customer Service, Product Engineering, Finance, and Procurement. Quality is under pressure to analyze and pinpoint the root cause of failures. The warranty department must provide quick and accurate processing of claims, whilst keeping the transaction cost to a minimum. IT struggles to support complex, inter-dependent warranty-related systems and the large volumes of complex data residing in them. Engineering strives to improve future models and achieve quality launches, but a lack of timely and accurate product related information means old failures continue to show up in new models. Finance must juggle the reserves and accruals required to reflect escalating claims and recalls. Moreover, all of these departments often operate in silos with few processes, if

any, in common. This state of affairs renders core warranty processes ineffective and inflexible.

However, in spite of the growing challenge, warranty management has struggled to keep pace with the changes in the automotive industry environment. Improvements in warranty management are rarely approached as a comprehensive transformation – and there are several shortcomings in the areas of **process, technology and the approach** to warranty management:

Process Inefficiencies:

OEMs aim to automate claims processing in order to reduce processing time and headcount. Some manufacturers today, automate the processing of up to 95% of claims they receive. However, increased automation can hinder an effective validation of claims — nearly 15% of the total number of claims being accepted are sub-standard in one way or another. Also, the opportunity to pinpoint major safety issues or critical part failures is lost during claims-processing.

Coding of claims remains a largely manual activity, a time consuming and error-prone process. Dealers often end up entering generic codes, thus diluting the accuracy of these critical data sources.

Root cause identification remains the biggest challenge for the industry. It has resulted in detection-to-correction (DTC) cycles of up to 220 days – astonishing, when each day's delay in implementing an effective fix can cost \$1 million per day. Generally speaking, 75% of the annual warranty expenses are consumed by repetitive and chronic problems. They command most of the warranty analysts' attention, and there is little focus on detecting causes of newly emerging defects.

Technology Limitations:

Most of the warranty systems today are based on

legacy mainframes, severely limited in the flexibility and integration they offer, and very expensive to maintain and enhance.

In order to overcome short-term challenges, bolt-on applications, targeting specific functions and pain-points, are usually deployed; these however have limited features and cover limited processes. They are highly customized and therefore suffer from a lack of scalability and extensibility. A multitude of applications leads to situations where data in various formats and versions is scattered throughout the organization. In fact, more than 70% of the respondents to an AMR survey said they could not share data across applications. Configuring such systems to meet the needs for ever-changing warranty programs is nearly impossible. Thus, point-applications cannot help enterprises realize sustained benefits.

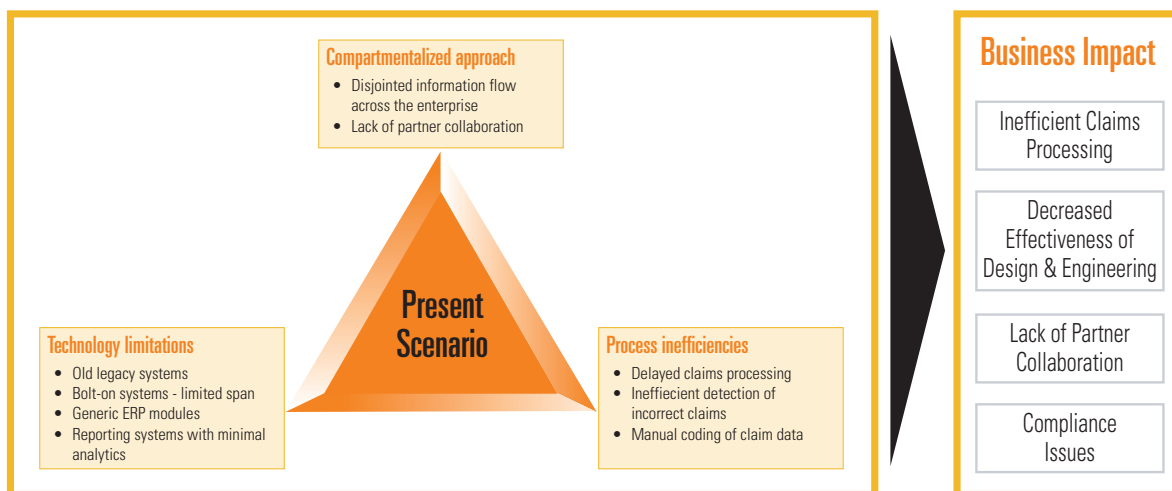
Despite the vast systems and volumes of data stored on them, analysis of warranty data is given a very narrow remit. Aberdeen reports that 69% of the manufacturing industry employs only warranty reporting systems. These applications mostly provide reports on the information that enters the OEM

environment as structured data – most commonly part number, defect code and repair cost information – information which is neatly and easily tagged. The additional information embedded in the free-form text fields and other unstructured data remains largely unanalyzed. Thus, while the breadth of analysis is vast, the ability to drill down to the root cause is virtually absent.

Compartmentalized Approach:

A compartmentalized approach and a disjointed information flow leads to a lack of visibility in Quality and Engineering. Feeding product failure information to design remains a key challenge. This prevents early diagnosis and creates an environment for **repeated failures**. Many chronic problems which could otherwise be resolved much earlier with the right information are not effectively dealt with. With product development cycles being compressed, the importance of information flow about failures across the Product Development and Engineering function cannot be overstressed.

Warranty issues directly affect not only the OEM



organization, but also the entire value chain. The importance of suppliers in the product design, development and manufacturing process is well-recognized. Yet, access to warranty information systems for suppliers remains very low. Only 19% of suppliers learn of field warranty problems via OEM's quality systems. This ineffective sharing of information between an OEM and its suppliers prevents a collaborative approach to solving problems. Accountability for the field failures is likewise compromised; recovery of warranty costs from suppliers is as low as 5%.

On the dealer front, there is no repository of repair history and other knowledge that can be shared with the dealers, so that they *"fix the vehicle first-time right"*. Such a repository can not only improve the detection-to-correction cycle, but also directly impacts the customer satisfaction as knowledge about fixes travels faster across service locations.

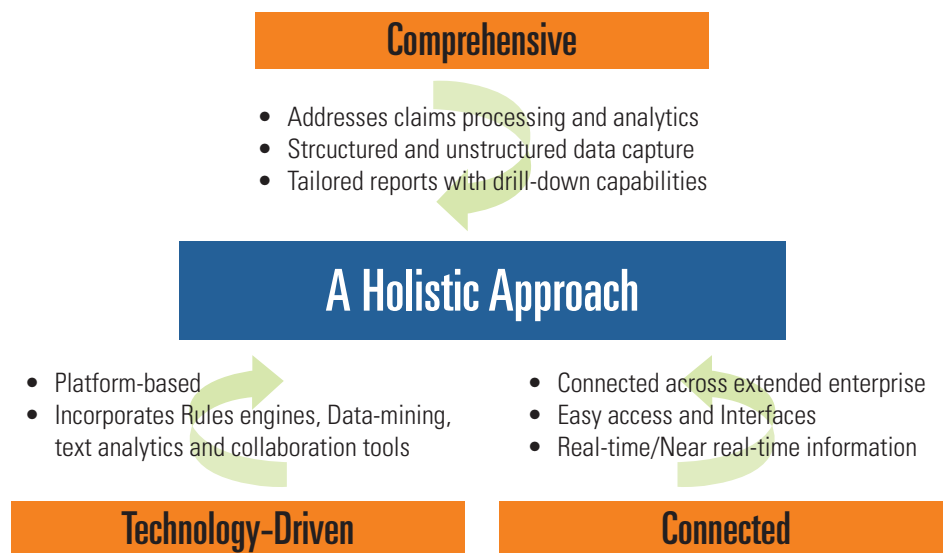
Simply stated, the current warranty systems are difficult to use, costly to maintain and the approach too is not ideal. A new approach is needed to effectively meet the

current business needs and support the requirements for future growth.

Holistic Warranty Management: A Different Approach

Clearly, the current warranty management approach – automation driven with outdated technology and tools – lacks collaboration across the value chain. It fails to leverage the power of the rich information contained in claims and field-data, and needs to be revamped. This new holistic approach, encompassing strategy, warranty operations and processes, should focus on:

- Bridging the critical gaps between Customer Service, Quality and Engineering departments in order to align the actions of those diagnosing the problem with those solving it.
- Ensuring collaboration of the OEM with upstream and downstream partners to actively contribute to problem resolution and quality improvement initiatives.



- Leveraging technology optimally, to effectively utilize warranty and field data to provide deeper insights about quality, engineering and manufacturing processes.
- Identifying non-core activities and implementing a framework to manage outsourcing of the same, with clear service levels and metrics, thus enhancing focus on core activities like quality control, root cause analysis, design and engineering.
- Complementing the technical capabilities with a knowledge-base for faster diagnostics by technicians, and more effective root-cause identification by the Quality department.

A solution arising out of such an approach would utilize technology to be comprehensive, connected, scientific and accurate enough to add real value to OEM operations:

Comprehensive

The new approach to warranty management must be comprehensive in more ways than one. It must tap into the rich information contained on the warranty claim, as well as in field-data. Thus, it must utilize the vast unstructured data – such as information embedded in free-form text fields provided by customers about the symptom and by technicians about the diagnosis and repair. Similarly, information held by suppliers should be incorporated into the knowledge base: how, where and when a part was made, handled, shipped and fitted, and not only in that brand of vehicle, but elsewhere too.

All the information must be made available in reports – tailored to the needs of different stakeholders in the warranty process, and with the capacity to drill-down. The solution should also provide decision support for the users through intelligent forecasting.

Connected

At an organizational level, the approach should span

various departments to provide a single view of the data. The solution should integrate not only different departments, but also upstream and downstream partners. Such a connected approach would aim to eliminate the situation where vital data is scattered across the organization. A single consolidated picture of the truth would be available to different user groups and changes would immediately reflect throughout the system, adding to the agility of the enterprise.

Such a seamless warranty process can be achieved by a balance between automation, manual claims processing and analytics. Such a blended approach can harness the rich information contained in warranty claims to provide not only increased control of warranty-related costs, but also an improvement in the engineering and manufacturing process, all at a considerably lower cost.

Technology Driven

The approach to warranty management should harness the power of technology to ensure effectiveness. The components of a solution derived from the above approach, should be based on an enterprise-wide platform, which could be easily extended to build specific components. Technologies like text-analytics, ontology based probabilistic analysis, business warehousing and data mining should be used to directly mine unstructured information, and extract actionable data. Collaborative tools directly utilizing base-data would make it easier to achieve a single, connected value chain.

A Holistic Warranty Management Solution

A holistic approach detailed above, can be achieved by a balance between automation, manual claims processing and analytics. We believe that the best way of achieving this balance is through the blended use of Enterprise Resource Planning (ERP), Business Process Outsourcing



(BPO) and an Early Warning System (EWS) based on advanced analytics:

Enterprise Resource Planning – A customized claims processing module to streamline processes and increase agility

Enterprises seeking greater connectivity have increasingly looked for modern ERP systems to provide the necessary technological platform that has the intrinsic benefits of collaboration and integration and scalability.

A warranty module *pre-configured* to the requirements of the modern global automotive industry, built on top of the existing ERP system, addresses the shortcomings of point-solutions in terms of flexibility and maintainability. At the same time, the module is connected, facilitating seamless data flow across the various enterprise functions.

The claims-processing module, with a core consisting of a rules-based engine can make it much easier to configure new rules and roll out new warranty programs. Advanced reporting facilities can be used to obtain insightful

information through analytics, which can be fed back to the Engineering and Production functions, as well as be utilized for quality improvements. Other features built in by the ERP platform (like Business Warehousing, Portals, etc.) can be leveraged to share data with partners and mine useful information.

Thus, the ERP component leverages the current ERP investment to streamline warranty processes by implementing best practices, and it provides a ready infrastructure to build partner-interfacing systems to improve collaborative innovation, based on shared warranty data.

Business Process Outsourcing (BPO) – Value-added outsourcing through manual claims processing

While claims processing automation significantly reduces costs, too much of it hampers flexibility, and increases risk. Certain classes of claims are better processed

manually; for example, claims involving high-risk dealers, safety-related claims, and claims during the initial launch of a new model. This helps to flag fraudulent or inaccurate claims, improve data quality for effective analytics, and identify critical exceptions for early diagnosis.

Certain other repetitive processes directly related to claims processing – like supplier chargeback, part-return follow-ups, recall management – can be safely outsourced to get direct and immediate cost savings, leaving the manufacturer more time to tend to value-adding activities like fault analysis and root-cause analysis.

Early Warning Systems (EWS) – Analytics and intelligent forecasting

An Early Warning System is the intelligence vital to achieve the maximum out of warranty management systems. It is based on statistical analysis of claims data to provide initial pointers to the failure patterns. Structured data analytics can be supported by a sound text analytics engine – customized to automotive industry – which extracts information embedded in free-form text.

A critical dimension of EWS is an inference engine. This engine draws pattern-based inferences from a knowledge repository of vehicle systems, manufacturing processes and past failure trends, to highlight probable causes of failure and make intelligent, scientific forecasts of possible failures in the field. Such a Decision Support System can significantly enhance the efficacy and productivity of the quality analysts and other automotive experts by allowing them to focus on more value-added activities.

The synergies provided by the three components – BPO, ERP and EWS – in action can be easily understood through a few examples:

Claims Management:

The combination of the above components add value even

in this most transactional of activities:

- Consistency and completeness of claims data through data cleansing techniques employed in BPO.
- Standardization and best practices across brands and geographies.
- Wider process and workflow coverage for all types of warranty claims.

Quality and Product Development

The highest value proposition to any automotive enterprise.

- Monitoring the effectiveness of corrective action in the field ensured in EWS through text-analytics and structured-text mapping techniques.
- Assistance in Root-cause analysis through the use of text analytics. Mathematical, model-based root cause determination through EWS. ERP aids in reporting DTC cycle trends.
- EWS helps identify valuable feedback on product failure trends and probable reasons, and ERP acts as the medium for providing the information to product development and design teams.
- Using data from the ERP platform, tools like Data-warehouse and Business Intelligence aid knowledge-based engineering.

Supplier Interface:

- Parts return efficiency through ERP via detailed track and trace techniques
- Supplier chargeback effectiveness improved through data analytics and statistical techniques in the EWS; Chargeback

management and information dissemination through ERP and portal based on ERP data.

- BPO operations to follow-up and monitor chargeback process and activities.

Recall Management:

- Recall forecasting in EWS based on high-end analytics and statistical hypothesis testing.
- Campaign management rollout through ERP, in compliance with all regulations.
- Controlled recall notification through BPO ensure traceability of recall operations.

Benefits of a Holistic Approach to Warranty Management

A system like the one described above provides tangible benefits to the enterprise:

- Potential to avoid up to 10% of the total warranty costs
 - Up to 30% reduction in the total manual claim processing cost
 - Up to 35% reduction in the total cost of ownership of warranty IT systems
 - Up to 10% cost savings due to quality insights from the EWS
- Streamlined warranty and claims management processes leading to better visibility of warranty information.
- Reduced fault Detection-to-Correction cycle and improved product quality.
- Increased efficiency of supplier chargeback and reduced warranty reserves
- Efficient data exchange between dealers, OEMs and suppliers leading to collaborative resolution

of warranty and quality problems and improved partner relationships

Thus, tackling warranty management via this approach lowers costs, improves product quality and consequently customer satisfaction and brand perception in the marketplace.

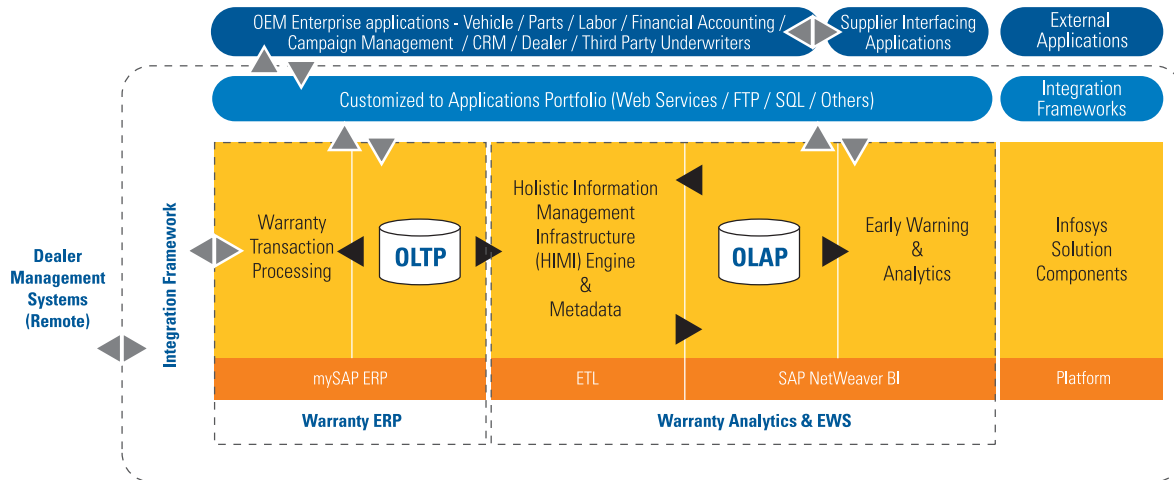
The Infosys Solution and Approach

Infosys understands the warranty management space both in its breadth and depth and is developing a solution based on the above approach with a view to optimize warranty management processes, integrating them with the rest of the organization, to address the spectrum of challenges and operations in the warranty landscape. It is an integrated solution based on the philosophy of collaboration among the various stakeholders and the warranty improvement enablers: ERP, BPO and EWS.

The Infosys warranty management solution leverages several components of the SAP stack. The warranty ERP is a pre-configured rules-based claims processing system for automotive industry that leverages the SAP warranty module. The EWS solution utilizes SAP business warehouse & other SAP tools & software. Thus, the solution imbibes the inherent strengths of SAP. Moreover, most of the OEM's have SAP systems as the IT backbone, which enables easy integration of the warranty module in their landscape, and leverages their already considerable ERP investment.

Since the extent of maturity and effectiveness of warranty processes and systems varies significantly across organizations, Infosys has designed the solution in a modular fashion. A joint assessment of the OEM's present warranty scenario would determine the phased implementation roadmap so that ROI is maximized, while the impact resulting from change is minimized. With its strong IT and warranty process management credentials and automotive domain understanding, Infosys can partner

Infosys Warranty Management Solution



with you on your transformational journey.

The use of this integrated approach to mitigation of warranty challenges can help build the inter-disciplinary synergies and transform warranty from a liability to an asset of competitive advantage. The benefits of such an

approach — an improved Design and Engineering process, lower warranty-related costs, improved supplier collaboration, and reduced Total Cost of Operations of your ERP and IT systems — are well worth a second look in today's challenging environment.



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