WARRANTY: FROM LIABILITY TO COMPETITIVE ADVANTAGE

- Is your profit earned per vehicle rapidly diminishing while costs linked to warranty-related issues escalate?

- Is information about part failures not reaching Engineering and Quality, resulting in problems resurfacing with new launches?

- Is there a constant threat of significant recall liabilities since it takes months to detect part-failure patterns, identify the root cause and implement a timely fix?

- Is an inability to collect and decipher evidence from claims hurting your ability to attribute defects to suppliers and impeding chargebacks?

- Are good relationships with dealers jeopardized by warranty claims processing delays, while you also struggle to control warranty processing costs?

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These are just a few of the questions facing an automotive OEM – and they can be largely attributed to a lack of effective and transparent, enterprise-wide warranty management processes. And however you look at it, the costs at stake are huge and so are the impacts on your business. Since the turn of the century, total annual warranty expenditures in the U.S. Automotive industry have risen from $10 billion to $14 billion, whereas annual sales have remained stagnant. The average profit per vehicle of $200 is overshadowed by a corresponding average warranty cost per vehicle of $800. The situation is worsening as warranty periods become longer, regulations mandating disclosure of warranty data (FASB-45, TREAD act) become more stringent, and the use of electronics in vehicles increases to meet customer demands for safety, performance and economy. Research group AMR expects these pressures and industry increases in warranty coverage 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 Development, 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, while keeping the transaction costs to a minimum. IT struggles to support complex, interdependent 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 previous 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 discipline has struggled to keep pace with the changes in the automotive industry. Improvements 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. Today, some manufacturers automate the processing of up to 95% of claims they receive. However, this increased automation can hinder an effective validation of claims — according to Aberdeen research, nearly 15% of the total number of claims being accepted are sub-standard (fraudulent or inaccurate). 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 of delay in implementing an effective fix can cost up to $1 million. 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, which are severely limited in the flexibility and integration they offer, not to mention their high cost 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 of ever-changing warranty programs is nearly impossible. Thus, point applications cannot help enterprises realize sustained benefits.
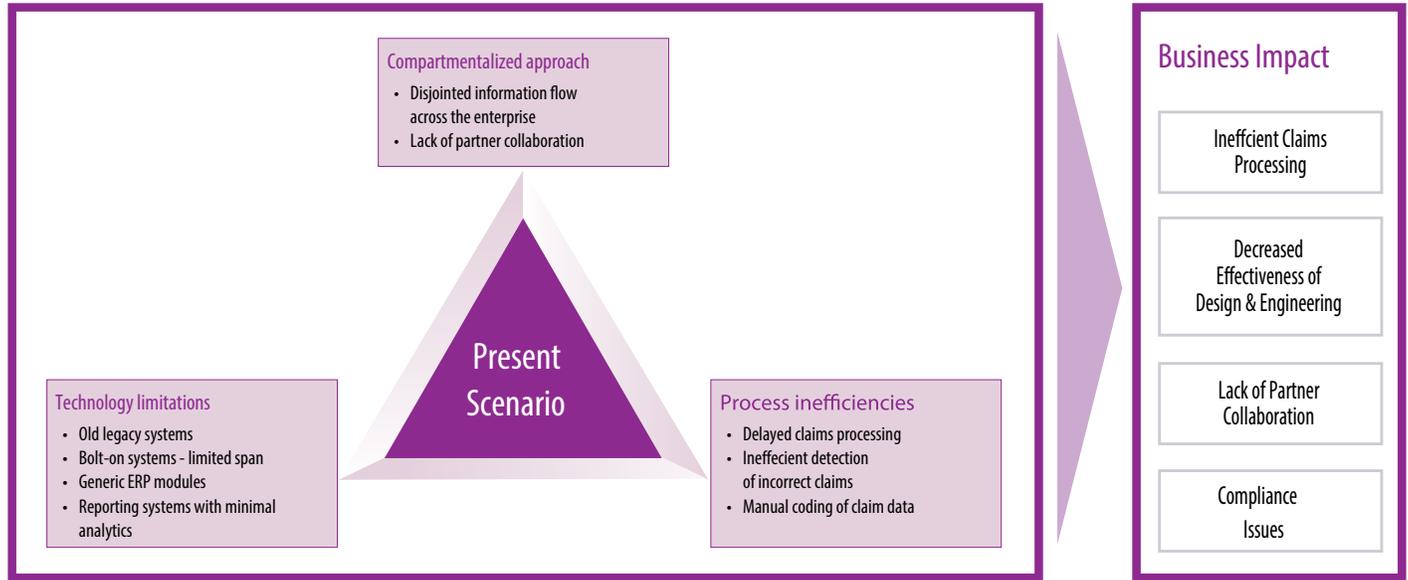
Despite the vast number of warranty systems and the volumes of data stored in them, warranty data analysis is given very little attention. Aberdeen reports that 69% of the manufacturing industry employs warranty reporting systems, that only present data, but do not analyze it. These reports are primarily on the information that enters the OEM environment as structured data, which is neatly and easily

tagged. Most commonly this includes information like part number, defect code and repair cost. 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 lack of visibility for Quality and Engineering. Feeding product failure information into the design process 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 these failures across the Engineering function cannot be overstressed.

Compartmentalized approach
- Disjointed information flow across the enterprise
- Lack of partner collaboration

Present Scenario

Technology limitations
- Old legacy systems
- Bolt-on systems - limited span
- Generic ERP modules
- Reporting systems with minimal analytics

Process inefficiencies
- Delayed claims processing
- Ineffecient detection of incorrect claims
- Manual coding of claim data

Business Impact

Ineffcient Claims Processing

Decreased Effectiveness of Design & Engineering

Lack of Partner Collaboration

Compliance Issues

Warranty issues directly affect not only the OEM organization, but also the entire value chain. The importance of suppliers in product design, development and manufacturing is well-recognized. Yet, access to warranty information systems for suppliers remains very low. Only 19% of suppliers learn of field w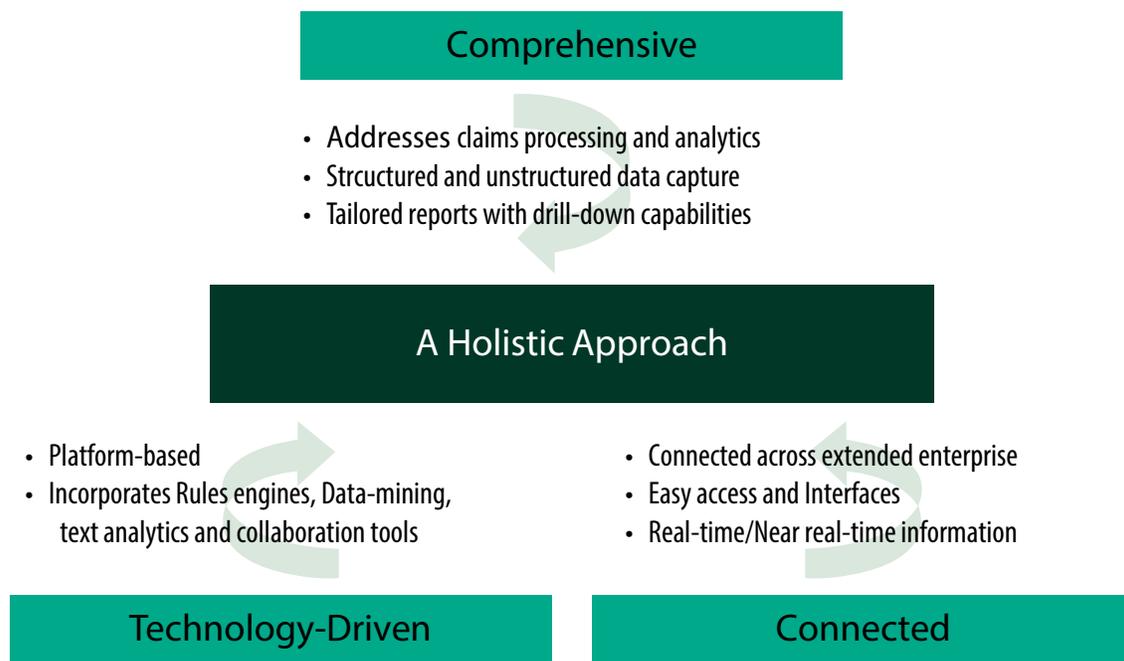arranty problems via an OEM's quality systems. This lack of sharing of information between an OEM and its suppliers prevents a collaborative approach to solving problems. Accountability for the field failures is likewise compromised; 41% of companies polled by Aberdeen said that recovering warranty costs from liable suppliers was a significant challenge.

Simply stated, the current warranty systems are difficult to use, costly to maintain and sub-optimal in supporting a critical business process. A new approach is needed to effectively meet the current business needs and support the requirements for future growth.

A Holistic Approach to Warranty Management

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 OEM collaboration with upstream and downstream partners to enable the value chain to contribute to problem resolution and quality improvement initiatives.

- Leveraging technology to effectively utilize warranty and field data in securing deeper insights about quality, engineering and manufacturing processes.

Comprehensive

- Addresses claims processing and analytics
- Strcuctured and unstructured data capture
- Tailored reports with drill-down capabilities

A Holistic Approach

- Platform-based
- Incorporates Rules engines, Data-mining, text analytics and collaboration tools

- Connected across extended enterprise
- Easy access and Interfaces
- Real-time/Near real-time information

Technology-Driven

Connected

- Identifying non-core activities and implementing a framework to manage their outsourcing; thus enhancing focus on core activities like quality control, root-cause analysis, design and engineering.

- Complementing technical capabilities with a knowledge base to enable 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 freeform 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.

The information must be made available in reports tailored to the needs of different stakeholders in the warranty process with the provision to drill-down to granular details. 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 version of the truth would be available to different user groups and changes would be immediately reflected 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 overall 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 this base data would make it easier to achieve a single, connected value chain.

A Holistic Warranty Management Solution

A holistic approach, as detailed above, can be achieved by striking a balance between automation, manual claims processing and analytics. We believe that the best way to achieve this balance is through the blended utilization 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, 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 pointsolutions 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 like business warehousing, portals, etc. can be built on top of the ERP platform and 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) – Valueadded 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 repetitive processes – for example supplier chargeback, part-return follow-ups, recall management – that are directly related to claims processing can be safely outsourced to get direct and immediate cost savings, leaving the manufacturer more time for valueadding activities like fault analysis and root-cause analysis.

	ERP	BPO	EWS	
Imperatives				**Benefits**
Integration	Claims Management			Reduced TCO
Automation	Quality & Product Development			Reduced DTC
Process Optimization	Dealer Assistance			Recover Costs
	Supplier Interface			Accurate Forecasts
Analytics	Recall Management			Improve Partnership

Early Warning Systems (EWS) – Analytics and intelligent forecasting

An Early Warning System provides the intelligence vital for achieving the maximum value out of warranty management systems. It is based on statistical analysis of claims data to provide initial pointers to failure patterns. Structured data analytics can be complemented by a sound text analytics engine – customized to the automotive industry – which extracts information embedded in freeform 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 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 more easily understood through a few examples:

Claims Management:

The combination of the above components adds value even in this transaction intensive activity:

- 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, modelbased root-cause determination through EWS. ERP aids in reporting DTC cycle trends.

- Identification of valuable feedback on product failure trends and probable reasons through the EWS. 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 through data analytics and statistical techniques in the EWS; Chargeback management and information dissemination through ERP and portals using 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 to ensure traceability of recall operations.

Benefits of a Holistic Approach to Warranty Management

A system like the one described above can provide 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
  - Substantial cost savings due to quality insights from the EWS

- Streamlined warranty and claims management processes leading to better visibility of warranty information.

- Reduced Detection-to-Correction cycles 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 by adopting this approach lowers costs while improving product quality, 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. This understanding is being leveraged to develop a solution based on the approach described here 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 a 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 the automotive industry that leverages the SAP Warranty module. The EWS solution utilizes SAP Business Warehouse as well as other SAP tools and software. Thus, the solution builds upon the inherent strengths of SAP. Moreover; most OEMs already use SAP systems as their IT backbone, which enables easier integration of the Warranty module into their landscape and leverages their existing ERP investment.

Since the maturity and effectiveness of warranty processes and systems varies significantly across organizations, Infosys has designed a modular solution. A joint assessment of an OEM's present warranty management 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 experience, Infosys can partner with you on your transformational journey to reduce costs and enhance quality in the domain of warranty management.

Infosys Warranty Management Solution
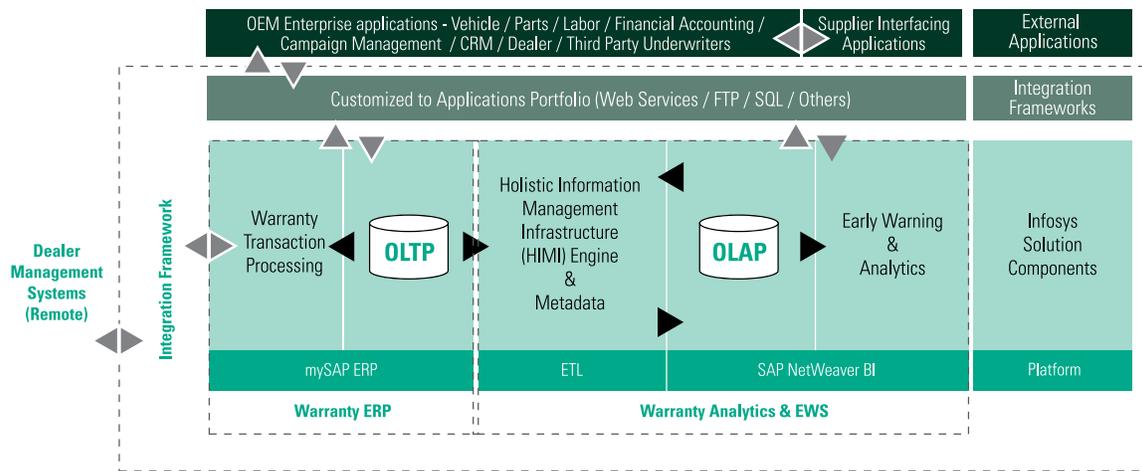
The use of this integrated approach for mitigating warranty challenges can help build the inter-disciplinary synergies and transform warranty function from a liability to an asset of competitive advantage. The benefits of such an approach — improved Design and Engineering processes, lower warranty-related costs, improved supplier collaboration, and reduced operating costs for ERP and IT systems — are well worth a second look in today's challenging environment.

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