With accessibility to high-speed Internet access and smartphone adoption on the rise, there is a growing impact of next generation mobile devices on global enterprises today, rapidly transforming how they access critical business information and reports. Defiance Technologies Limited’s mobility solutions aim to help global enterprises adapt to this change. Incorporated in 2009 and headquartered at Chennai, India, Defiance provides engineering, manufacturing and enterprise (EME) services and solutions for automotive, aerospace, defense, industrial and general manufacturing industries. It has over 50 active global clients including 18 of the Fortune Global 500 companies.

**CHALLENGES**

- **Follow stringent quality standards in pre-delivery inspection.** Deliver defect-free vehicles by following quality assurance tools across the manufacturing process, such as performing exhaustive vehicle inspection at the end of assembly, at dealership, and so on.
- **Improve vehicle inspection process.** Eliminate error in writing description of vehicle defects while reducing time and cost spent in inspecting vehicles.
- **Replace conventional data capture process of reporting vehicle defects.** Do away with the paper-based system which does not allow for an easy way to analyze defects and retrieval of such data.

**SOLUTIONS**

- **Develop iREVUE mobile app.** Create iREVUE, a pre-delivery vehicle inspection mobile application running on Intel Atom processor Z2420 and SAP Mobile Platform running on Intel Xeon processor E7, which ensures a more efficient process of capturing and analyzing pre-delivery vehicle inspection data.
- **Make inspection process paper-free.** As iREVUE has been developed on SAP Mobile Platform, paper was no longer needed for the inspection process, documentation and data retrieval.
- **Efficiently capture vehicle defects.** Automate process of capturing defects through iREVUE, which verifies various visual and physical attributes, records the defects and updates in real-time to enterprise resource planning (ERP) back-end for further processing and reporting.
iREVUE, developed by Defiance with Intel and SAP, provides an automated way to conduct pre-delivery vehicle inspections

“Enterprises have to grapple with the challenge of not only identifying the right use case studies for mobilizing; they also need to ensure the chosen mobile application solutions run in a reliable fashion in delivering the desired productivity enhancement goals. Chief information officers (CIOs) also have to take into consideration several other factors such as device cost, legacy application compatibility, and device administration and management, apart from security of data on these devices. Our iREVUE vehicle inspection solution, developed on Android, a leading platform for enterprise applications, harnesses the power and robustness of the SAP Mobile Platform to deliver these benefits. Defiance has successfully tested our iREVUE mobile application on Asus Fonepad* that is powered by Intel processors. The Asus Fonepad is an excellent example of a device that combines the flexibility of an enterprise app-running tablet with a 3G phone.”

Umasankar Subramanian
Vice President, SAP Practice – Enterprise Mobility
Defiance Technologies Limited

TECHNOLOGY RESULTS

- **Harnessed automation technology.** As a mobile application, iREVUE enables automation of the pre-delivery vehicle inspection process.
- **Utilized real-time data process.** iREVUE provides real-time visibility on defects, enabling monitoring and corrective actions and allowing users to generate up-to-date information whenever, wherever.
- **Leveraged SAP Mobile Platform.** With iREVUE running on SAP Mobile Platform, inspection data is easily accessible in real time at the back end, and to other applications.
- **Utilized Intel Atom processor.** With iREVUE successfully tested on an Intel Atom processor-powered device, the device perfectly combines the flexibility of an enterprise app-running tablet with a 3G phone.

BUSINESS VALUE

- **Helped innovate pre-delivery vehicle inspection process.** iREVUE promotes automation of the pre-delivery vehicle inspection process, creating an innovative way to simplify the process.
- **Improved productivity.** Automating the process improves productivity among OEMs and dealers.
- **Promoted best business practices.** Real-time alerts to Lines of Business (LoB) enable OEMs to quickly address any on-going production issues and reduce in rectification timelines. At the dealers’ end, a PDI process creates a direct positive impact in providing superior customer service.

In pursuit of a better pre-delivery vehicle inspection process

For a customer to walk out of a dealership with the satisfaction of having received a vehicle in mint condition, it is important for auto original equipment manufacturers (OEMs) and dealers to deliver a defect-free vehicle.

“The automotive industry follows quite stringent quality standards in terms of the end product delivered. They use several quality assurance (QA) tools across the manufacturing process and perform an exhaustive vehicle inspection at the end of assembly, at dealership and so on. Most OEMs and dealers conduct a detailed paper checklist-based inspection before delivering a vehicle to a customer. A defect identified and rectified before a vehicle reaches the customer has a direct bearing on warranty costs, besides having a positive effect on the brand itself,” said Umasankar Subramanian, vice president, SAP Practice – Enterprise Mobility at Defiance.

Accurately checking for defects and taking remedial action takes time and the team faces the challenge of productivity targets for the line. That would mean the inspectors should complete their job efficiently and completely on one vehicle before moving on to the next without causing a bottleneck. High level of human integration makes the data capture process prone to errors. Also, paper-based system does not allow for an easy way to analyze defects. Moreover, archiving paper-based checklists over a long-term period is not just a humongous task by itself, but quick retrieval of data is also quite a taxing activity.

Defiance believes automating the pre-delivery process, and making it paper-free and hassle-free will not only make the process more effective and quicker, but also convenient for customers.
Creating a new process of inspection
Defiance innovated a user-friendly pre-delivery vehicle inspection mobile application solution that can be leveraged by automotive OEMs, dealers, vehicle rental agencies as well as vehicle import and export agencies. Called iREVUE, this pre-delivery inspection solution offers data and process integrity, eliminates manual errors, and provides real-time data update to the SAP back-end for any secondary action. Moreover, digitally archived data is easy to retrieve for any future analysis requirements. iREVUE also makes the pre-delivery vehicle inspection process completely paper-free and more efficient in capturing and analyzing inspection data.

This mobile application was developed on SAP Mobile Platform as a full-fledged mobile enterprise application platform (MEAP). Defiance has leveraged its rich experience of automotive domain and strong technology bandwidth in enterprise and new technology applications while developing this product in association with Intel and SAP’s Co-Innovation Lab (COIL).

“SAP Mobile Platform, much at the core of this solution, is a robust platform to develop and manage this application. Gartner has rated SAP Mobile Platform in the leaders’ quadrant. An advantage of using this architecture is that it can integrate with a non-SAP back-end as well, apart from out-of-the-box connectivity to SAP applications,” said Subramanian.

Since the vehicle inspection is carried out in the yard and the inspectors move around the vehicle quite a bit, it is more apt to make the solution a mobile application as opposed to making conventional desktop applications. Hence, iREVUE was conceived as a tablet-based application connected to an ERP back-end.

Automating the vehicle inspection process
iREVUE enables an inspector to conduct a visual inspection of a vehicle in an effective and efficient way. The inspector can capture pictures and attach it with the defect report and also retrieve previous inspection history for a particular vehicle identification number (VIN). Moreover, the solution can trigger email and SMS-based alerts to pre-identified stakeholders in case some thresholds are exceeded. It can easily integrate with any existing system and can be customized for any unique requirements.

iREVUE has been developed for tablet devices such as the Asus Fonepad* running on Android 3.1 and above, ideally 7-inch and above in size with a minimum camera resolution of 5 megapixels. It is architected on the SAP mobile platform and connects with SAP QM Module. Inspection data is available real time at the SAP back-end, available to other applications.

Lessons learned
• The vehicle inspection yard is hardly suited for any desktop or laptop-based solutions. Using mobile tablets is more practical as they are lightweight, connected devices that allow inspectors to move around with in the workshop.
• SAP Mobile Platform is a robust platform to develop and manage mobile applications.
• SAP Mobile Platform can integrate with SAP or non-SAP back-end as well, apart from out-of-the-box connectivity to SAP applications.
With iREVUE, OEMs and dealers instantly automate the vehicle inspection process and data capture at point of action, resulting in improved productivity. As the barcode reader automates VIN data capture, data integrity is ensured to avoid errors due to manual entry. Real-time visibility on defects and continuous feed enables monitoring and corrective actions, while inspection history is also consolidated since data is captured against VIN. Using iREVUE provides direct positive impact on delivery commitments, customer relationship management and revenues as alerts to lines of business (LoB) enables significant reduction in rectification timelines.

More innovative solutions in the works

The current version of the application is iREVUE-PDI 1.0. Defiance is currently working on the next release of the application, which will have some new capabilities. Set to be released soon is iREVUE-PDI 2.0, which will be expanded to other vehicle types, and allows inspectors to choose the model currently under inspection. The new version will also have image capture capability, where inspectors can add a picture of defect and VIN validation. It will also come with a defect density feature, where inspectors can slice and dice the defect details, as well as provide identification details of the coordinates of the defect so the repair shop can locate the flaws easily.

"We would like to extend PDI and PSI solutions under the iREVUE brand that will focus on creating an Integrated Mobile App Suite for the auto industry where SAP’s mobile platform would be the key enabler," shared Subramanian.

Find a solution that’s right for your organization. Contact your Intel representative, visit Intel’s Business Success Stories for IT Managers (www.intel.com/itcasestudies) or explore the Intel.com IT Center (www.intel.com/itcenter).

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