Harnessing the Power of predictive maintenance

by Nadine Shenker*, Director of Business Intelligence and Advanced Analytics at BITanium

As industries and governments turn toward greater mechanisation and become increasingly reliant on technology, the need to keep systems running smoothly has never been as critical as it is today. A simple software flaw can bring a multibillion rand manufacturer to a standstill within minutes. One crack in a cog can destroy an oil rig in seconds. Never before has technology been so central to both safety and success, and the stakes so high.

Both governments and business executives have recognised this, and are looking for ways to reduce risk and standardise their approach to maintaining and improving critical technology and infrastructure. One of the traditional bugbears has been figuring out how and when to schedule maintenance – start work too early and you waste precious time and resources; start too late and you can put entire systems at risk. While scheduled maintenance has been the only real "solution" to the problem, it has proven to be an imperfect one.

Now, with the rapid advances in business intelligence and analytics, a new solution has emerged, termed "predictive maintenance". As the name suggests, this approach is based on the ability to anticipate problems. And the beauty of predictive maintenance models is that not only can they anticipate when a problem will occur, but where and how. For instance, by making use of highly intelligent sensors and advanced analytics tools that trawl for problems thousands of times a second, a predictive maintenance solution can pick up a damaged pipeline in a refinery located thousands of miles away from technicians.

Indeed, the potential applications for predictive maintenance solutions are almost limitless – simply because of the massive amount of data these models can process per second. Just as the potential applications are limitless, so too are the potential cost savings. By avoiding unnecessary downtime (and potential disasters), business leaders can save scarce human resources and breathe more easily when it comes to the budget – all without reducing the quality of products and services.

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As with many new technologies and solutions, however, the majority of South African organisations are resistant to change, and often wait until new trends have become more established before taking the leap. For the early adopters, though, predictive maintenance is likely to be a critical differentiator at a time when technical skills are scarce and budgets are being slashed.

Internationally, the early adopters are already reaping the rewards of predictive maintenance. An example being a leading automotive manufacturer who uses sophisticated on-board diagnostics and software programs to detect potential problems. In one instance, this led to the detection of an error on the side mirrors of a particular model car.

By running a root cause analysis, they were able to isolate the problem to a mirror assembly component that was poorly manufactured because of improperly maintained machinery. The automotive manufacturer was able to identify and fix the equipment, thus reducing warranty claims and eliminating the need for customers to bring their vehicle in for replacement parts. By incorporating analytical insights into their operations, the company reduced its warranty claims by 5%, which led to an annual saving of a whopping 30 million euros. Not bad going.

The story is just one of a growing number of case studies that are consistently revealing the multiple benefits of predictive maintenance solutions. One study found that using predictive maintenance models triggered an impressive tenfold increase on the return of investment for large-scale manufacturers.

With the increasing complexity of infrastructure, systems and processes, combined with a growing dependence on machines to run major operations, the need for advanced tools such as predictive maintenance will undoubtedly spur business leaders and key decision-makers to rethink their strategies. Those who do not will surely be left behind.

* Nadine Shenker has worked in the Predictive Analytics space for the last eight years. Together with other passionate individuals she formed BITanium Analytics as a natural extension of BITanium Consulting, an existing company focusing on Business Intelligence, Big data and Data management. Their mission is for BITanium Analytics to become the leading "predictive analytics hub" in South Africa, by partnering with clients to assist them along the predictive journey. ◆