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USING DIGITAL TECHNOLOGY

to Revolutionize Turnarounds

This type of approach lets managers keep their finger on the pulse of the turnaround and make objective, data-driven decisions.

by Peter Lempriere

When industrial companies have to take facilities off-line for essential maintenance or upgrades, careful management of the process is key. These turnarounds, or TARs, can be complex and require meticulous planning and solid execution because delays only mean more lost production and higher costs.

That's no small challenge. TARs typically involve a large influx of contractors that can double or even triple the number of people on a site. They can also involve working with sophisticated heavy machinery, managing complicated materials logistics and operating in difficult environments. Companies have found that the ability to draw on the experience of previous TARs to guide a current effort is vital. But too often, that information is not captured effectively or is simply too vague and the people who worked on the last project have moved on to other roles.

All of this means that during the execution of a TAR, managers find it difficult to keep track of the effort and cannot respond quickly to unexpected problems, potentially affecting productivity and the overall duration and cost of the TAR.

But now, digital technology is supporting dramatic improvements to TAR management. By drawing on this technology, managers can have a near real-time view of their TAR, and use it to keep workers and the project on track.

How It Works

With a digitally enabled TAR solution, radio-frequency identification (RFID) tags are worn by workers and attached to mobile equipment. These tags are linked via Hazardous Area compliant Wi-Fi connectivity to create a pervasive network, with receivers set up to enable triangulated location accuracy to within 10 to 15 meters. This data is integrated into a TAR analytics platform, combined with current site-related data, and integrated into the analytics platform.

The resulting information is then displayed on a set of interactive dashboards that provide a concise view of key factors, such as mass or individual movement, time spent in different geofenced zones, potential worker fatigue and project progress, among others. Delivered as a service, this platform is set up on-site in or near the TAR command center.

This type of approach lets managers keep their finger on the pulse of the turnaround and make objective, data-driven decisions and take quick action during the TAR event. They can see factors, such as the time workers spend on the site, where workers spend that time, trends in the movement of people and potential fatigue risk factors. They can also identify inefficiencies in near real time and then drill down into the data to discuss root causes of problems and ensure accountability of relevant stakeholders. In addition,

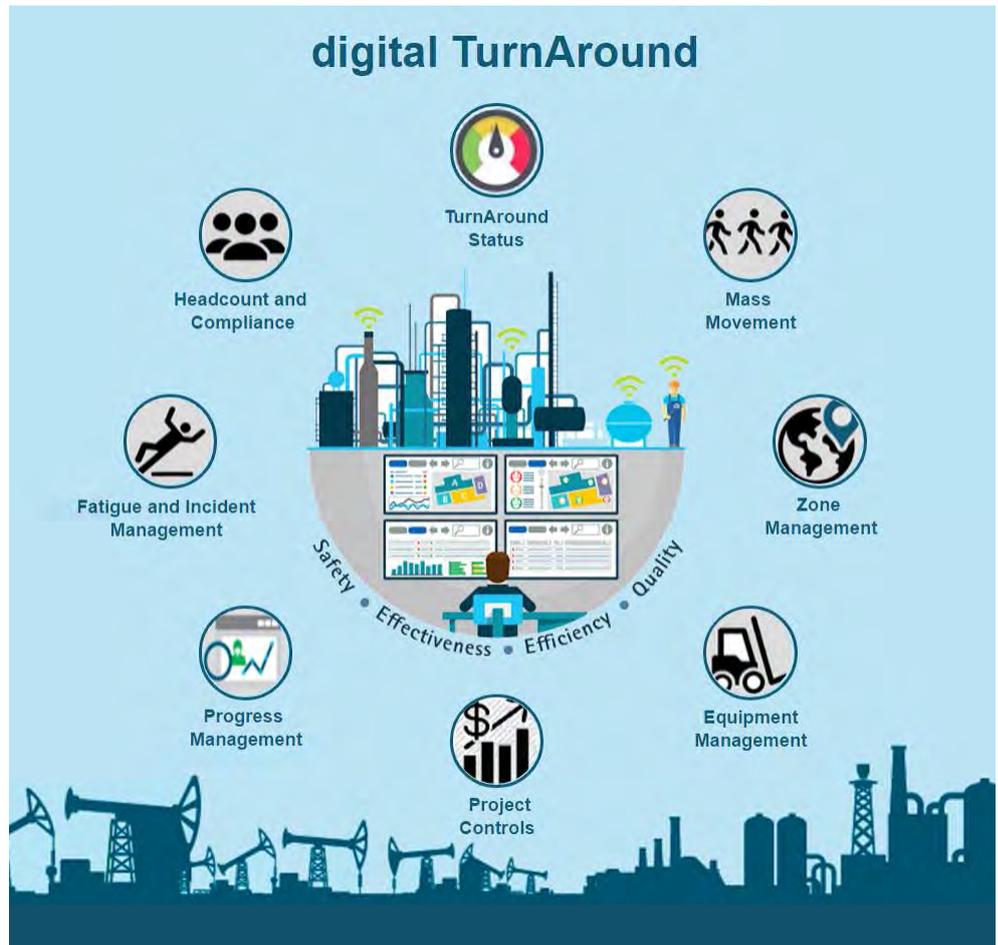


Figure 1: Combining industrial pervasive wireless, location tracking applications and event analytics, companies can track movement trends, progress, worker fatigue and more on the digital turnaround platform

tion, the system can capture all this information and store it to provide lessons learned to support future TARs.

The technology enables TAR managers to be much more responsive. They can work with factual data, such as the amount of time that working teams spend waiting at permit facilities, or going to and from workplace zones at shift changes and rest periods. They can quickly identify pinch points associated with the time required to retrieve materials and tools from logistics areas. When excessive delays are seen, managers can identify interventions that proactively remove the barriers affecting productivity by, for example, securing extra permit authorizers; staggering start, finish and break times to reduce congestion; or even moving storage and tooling facilities closer to the work area.

In addition, managers can gain important insight, with the ability to filter data by vendor, role, or discipline to understand, for example, the amount of time that frontline managers are physically within the work area zones. That's important because experience has shown that having leaders spend more time in the field rather than in the office is vital to supporting safety, quality and productivity.

A Record of Results

Although a relatively new innovation, this type of service has been applied successfully to five major TAR events that involved event budgets as much as \$150 million, tracking of up to 5,000 personnel and nearly two million hours to date. Results have been impressive: Each of these events was completed 15 to 25 percent below the labor execution budget.

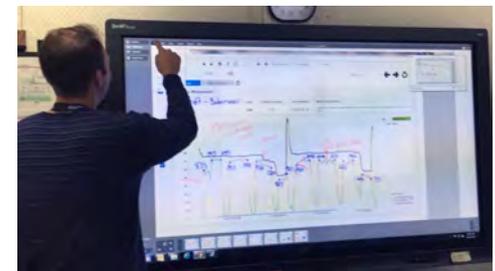


Figure 2: Interactive dashboards allow TAR managers to perform root cause analysis in near real time by drilling down into key data to identify underlying issues responsible for inefficiencies or project delays

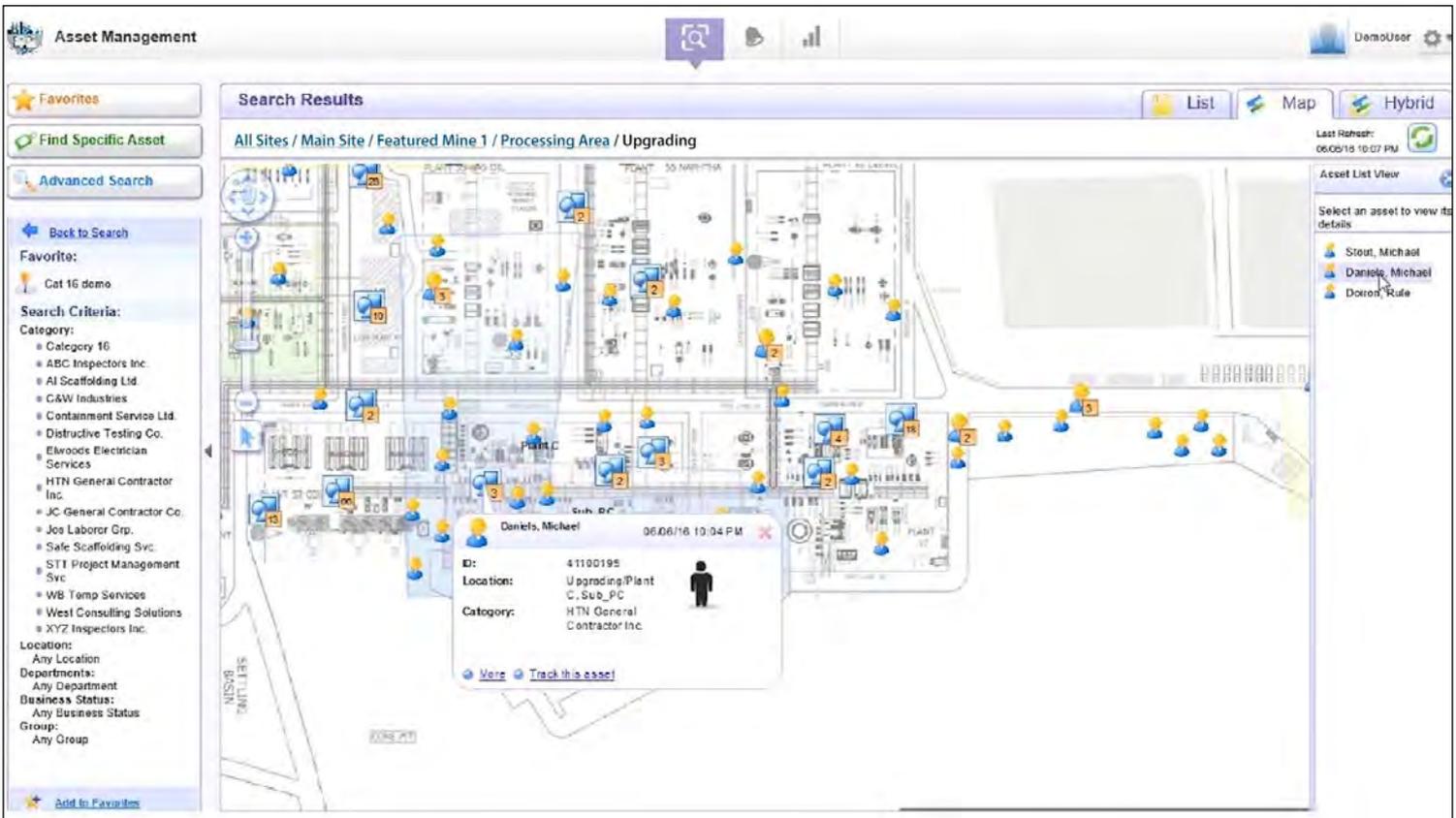


Figure 3: Interactive screens display geo-location data from RFID tags, allowing managers to track workers' locations on-site in real time

This approach can also bring significant benefits in terms of safety. It provides a comprehensive view of who is on-site and where they are, regardless of what their duties are or which vendor employs them. And in the event of an emergency, workers can be accounted for and missing individuals located within minutes, versus traditional muster methods that can take more than an hour.

Having this pervasive network in place opens the door to other safety measures, as well. For example, RFID-enabled badges can be equipped with worker-down alarm buttons and motion detection capabilities. These can alert the control center when there is a problem, then managers can identify the individual by name, company and discipline and see where the worker is on the site, allowing emergency teams to respond with speed. The RFID technology also can be incorporated into continuous gas monitors, allowing real-time work environment exposure alarms to be sent to the control center and automatically logged into the company's incident system. The company can then easily analyze that data in later investigations.

Across industries, digital technology is being used to continuously improve asset and process management, enabling predictive analysis and the ability to move beyond reactive responses. Now, that kind of innovation is being applied to TARs. Indeed, it is easy to imagine how this type of TAR solution could be applied even more broadly to support day-to-day maintenance operations and capital projects.

Within industrial plants, an accurate view of what is happening on-site is critical. Today's digital technologies can enable real-time decision-making, capture operational data for continual improvement and improve accountability in operations. It's clear that digital solutions open up tremendous opportunities in the pursuit of safety, productivity, cost management and high performance.

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Peter Lempriere is a Senior Manager within Accenture's Asset and Operations practice based in the London office. Peter is a chartered Manager and Engineer, having 29 years of oil & gas experience with major upstream and downstream assets. He consistently pursues continuous improvements securing positive results within engineering, maintenance and operations functions to increase reliability and operations efficiencies. www.accenture.com



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