

Nutrien's Digital Initiatives

In 2019, Nutrien hosted **Nutrien Innovation Days** for 30 employees across nine functions of the business to determine how the company can use digital innovations to unlock operational value and establish industry-wide leadership in the areas of safety, health and environment, process safety management and reliability. During the sessions and presentations at Innovation Days, the group explored different technologies, identified new opportunities and planned for the future.

The ideas generated at Innovation Days resulted in the following digital initiatives being implemented at some of Nutrien's Nitrogen and Phosphate sites.



Within the digital sphere, **Connected Worker** technology drives safety and productivity by visualizing the workforce with real-time headcount and mustering on-site, fatigue and overtime monitoring and integrated panic alarms for emergency response.



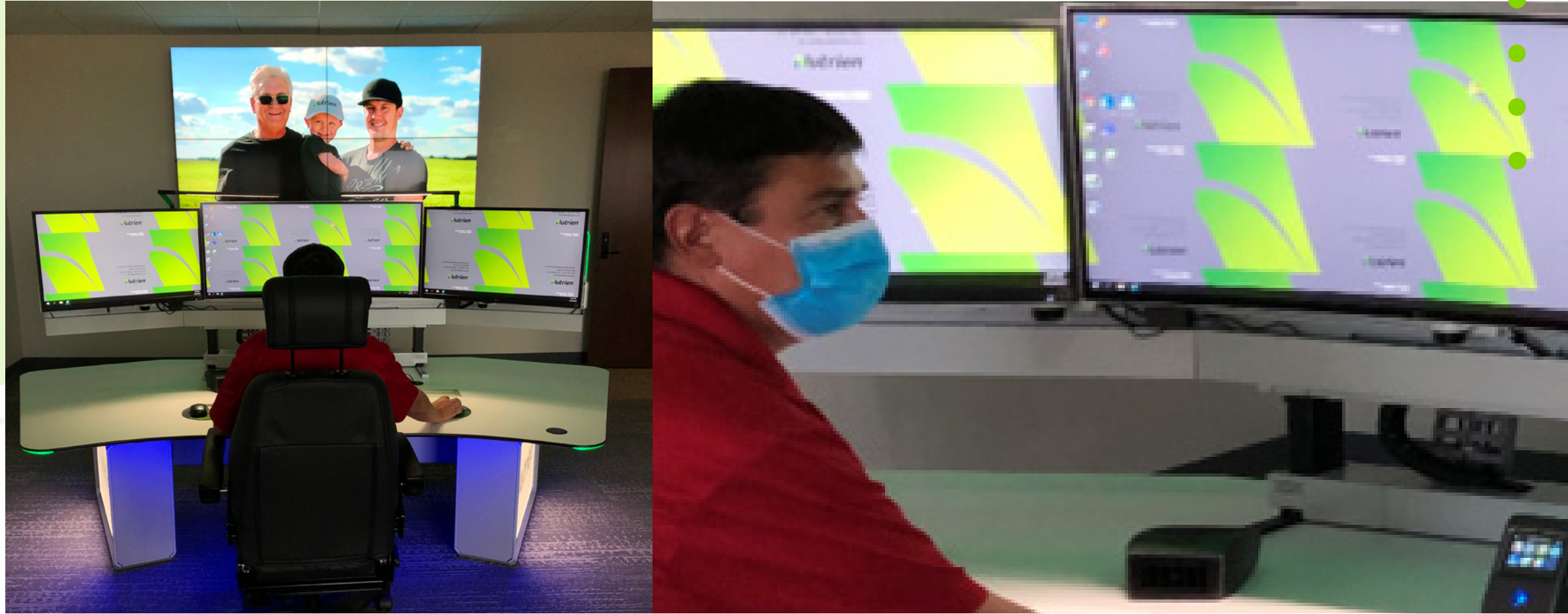
The **Manufacturing Dashboard** facilitates data-driven decision making through customized dashboards, improving operational integrity and streamlining process of events, insights and actions while decreasing production deferrals.

Mobile Enablement technology leverages a digital platform to enable more efficient workflows including augmented reality training, virtual document management and pushing information to worker's devices.



In terms of visual analytics, the **Predictive Analytics** tool manages asset health through heightened operational visibility by enabling a proactive, data-driven approach to maintenance, which reduces costs and improves reliability and safety.

The **Nitrogen Real-time Operations Center** provides real-time production surveillance and prioritization to enable a robust operating model. The center's data analytics tools increase operational visibility and efficiency, enable rapid diagnosis, prioritization and execution of field work and support end-to-end operational value chain optimization.



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Proximity Monitoring and Contact Tracing Technology at Nutrien

At the start of the COVID-19 pandemic, Nutrien was deemed an essential service in its core markets for its role supporting the agriculture industry. Nutrien has always had a safety-first culture, and technology and innovation support that core value. That’s why the company deployed **Proximity Trace™** from **Triax Technologies**, a tool to help combat the spread of the virus, to keep its essential workers safe and help ensure that a health crisis doesn’t become a food crisis.



Since its pilot testing and implementation in July 2020, Nutrien has completed three large turnarounds and five outages (scheduled maintenance periods), supporting more than 3,000 employees and contractors at one time at its Nitrogen and Phosphate sites without a COVID outbreak.

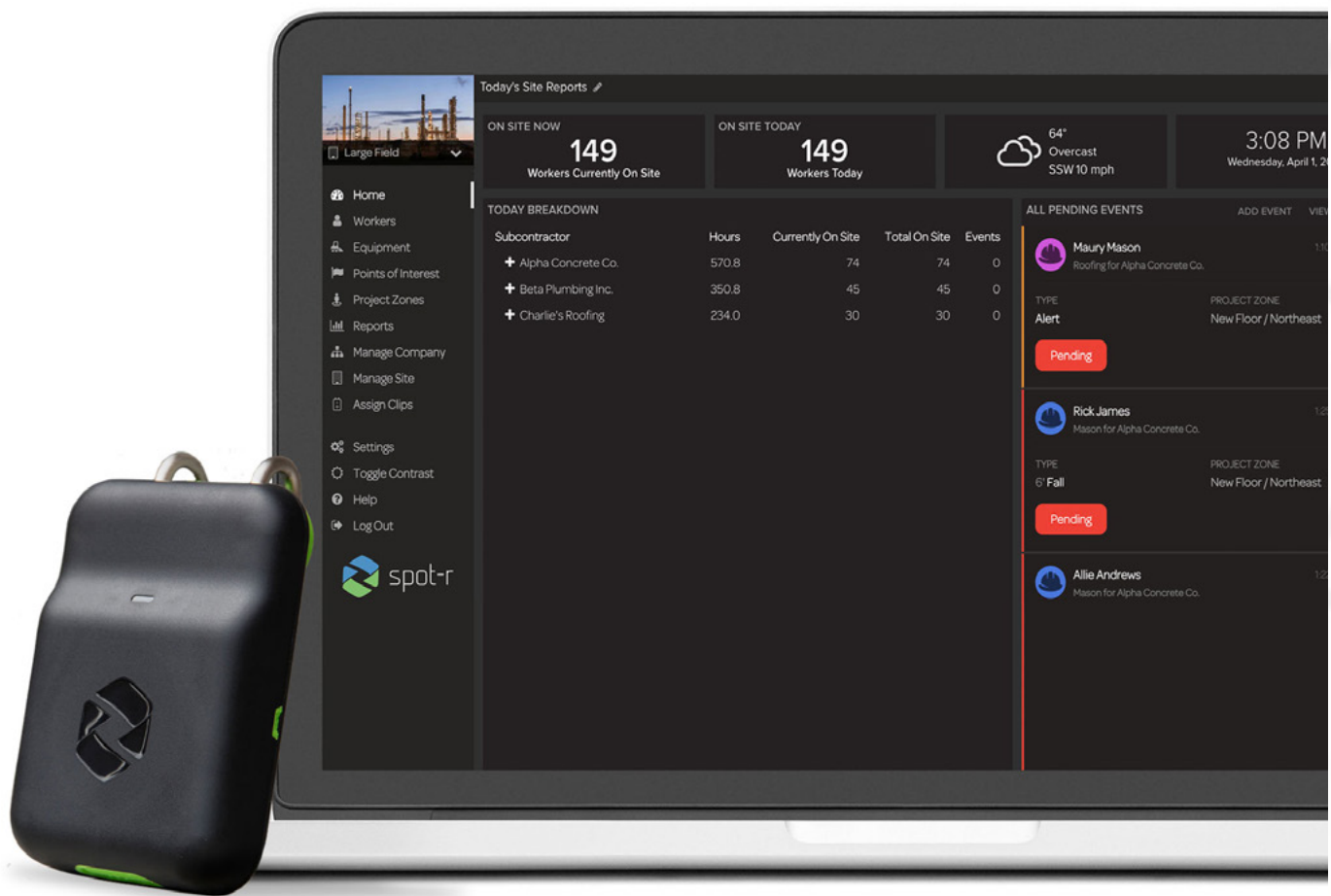
Since it pinpoints the individuals who may have been exposed to COVID-19, the solution also helps Nutrien minimize operational shutdowns and reduces the risk of associated costs and product delivery delays.



This proximity monitoring and contact tracing technology is currently being used by more than 10,000 employees at 23 Nutrien locations including operational sites and corporate offices.



The Proximity Trace tags, wearable sensors attached to workers’ clothing, provide physical distancing alerts that have reduced the number of positive cases at the sites. The technology also automatically logs data using a cloud-based software, improving the efficiency and accuracy of contact tracing.



With the success of the Proximity Trace tags, we are now piloting Spot-R technology from Triax for additional safety of employees and contractors, including during turnarounds, and improvements in operational efficiencies.