

# How Rolloos Used OSIsoft's Edge Data Store to Improve Safety on Offshore Rigs



## INDUSTRY OIL & GAS

### CHALLENGE

Operators needed real-time visibility into asset and personnel location while operating heavy equipment on the drill floor of an offshore rig.

### SOLUTION

A red zone detection solution that leverages OSIsoft's Edge Data Store, enabling on-rig data collection, real-time analysis, and visualization.

### BENEFIT

A safer drill floor that mitigates costly accidents, optimizes procedures, and enhances performance.

Offshore drilling is a complex and dangerous process, and ensuring employee safety in the middle of the sea on a drill rig is a top priority. Operators driving the driller rely solely on visual confirmation from ground crews while moving drill pipes. Between numerous personnel, heavy equipment, and 30-foot drill pipes, the drill rig is a dynamic environment that's ripe for accidents. After a safety incident involving a drill pipe striking a crew member, a client reached out to Rolloos, an OSIsoft partner, for help.

To enable its client to mitigate accidents and know where team members are at all times, Rolloos turned its CCTV technology into a comprehensive red zone detection system. By piloting OSIsoft's Edge Data Store (EDS) technology, Rolloos ensured that all data was accessible by offshore operators for immediate decision support and could be streamed onshore for further retrospective analysis. Not only did this enable real-time monitoring of both people and heavy machinery, data is now used to optimize processes and improve overall performance.

## People and Process Data Unite

Originally started as a CCTV company, Rolloos has turned its camera systems into smart sensors for the oil and gas industry. As part of its end-to-end solution, Rolloos creates custom analytics for the PI System™ based on deep learning algorithms and integrates time-series data with documents and manuals to optimize maintenance management. This powerful combination of camera technology and data science proved to be exactly what the client needed to mitigate safety risks on an offshore rig.

"We got people data and location data, and that gave us the capabilities to actually start analyzing the way we work," said Martijn Handels, director at Rolloos. "If you don't measure something, you don't really think about how your operation goes."

## Livin' on the Edge

Creating a safe drill floor meant giving rig drivers real-time visibility into crew member location. However, a huge technological hurdle for offshore drilling is connectivity. Given the large amounts of steel and distance from land, connectivity is slow or nonexistent, causing severe data latency

issues when sending information back to shore. To avoid any data lag, Rolloos piloted EDS to collect, store, and stream data right on the rig. EDS combined with a full private LTE network enabled them to paint a complete picture of people's movements and assets on the drill floor. "In the red zone system, everything stays on the rig – it's full edge," Handels said.

EDS is industrial IoT (IIoT) software that allows operators to collect, store, and access data from assets and sensors in remote environments. With EDS, customers can remotely monitor critical assets to improve uptime while minimizing the costs and safety risks associated with manual, in-person inspections.

For Rolloos, the choice to pilot EDS was clear. "We focus on the core development process and EDS came alongside because we needed a historian on board," Handels noted. "The product manager sent us the installers, we went through the API management, and an hour later I had it spun up on a docker container and it was talking to a mobile simulator. For me that's been really the reason why we jumped onto it. This EDS was really easy to do."

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We can actually track people from video and can combine that with the output from the equipment data and improve the efficiency even more. And then we can stream it back to shore using the Edge Data Store.”

— Martijn Handels  
Data enthusiast and  
Director at Rolloos



Cameras located above the drilling floor send real-time location information, enabling drivers to see when crew members have breached the red zone.

### Smile for the Camera

As a first step, 16 cameras were installed on the drill floor. Existing algorithms were able to detect human faces but lacked the right triangulation capabilities to determine precise personnel location. In response, Rolloos adjusted the cameras to 10 meters above the drill floor. After retraining the algorithms to help the cameras capture crew member movements from that new height, the system was able to expose that information to the rig drivers.

With 10-20 screens operating at one time, drivers needed a simple user interface to see what the cameras were capturing. With one touch, drivers can now see a simplified image where human movement is represented by red dots. Cameras automatically detect when someone has breached the red zone, triggering audio and light alerts so drivers can make life-saving decisions.

### A Comprehensive Red Zone System

The red zone system is open and scalable, enabling data to be shared with other systems. When a new application is added, the team trains the algorithms onshore and pushes the configurations offshore so it can run on the edge. Offshore visualizations are run on EDS and are fed out to the PI Server, where it can connect to third-party apps or the client's PI Server via PI Cloud Connect. “We've opened up the data that's coming from our systems to everybody – it's not a closed system, so we're sharing ins and outs,” Handels noted. Thanks to EDS, Rolloos has created a central dashboard management for all the rigs, ensuring the safety of its critical, remote personnel and improving overall process performance.

**For more information about Rolloos and the PI System, watch the full presentation [here](#).**