



blacklinesafety

DATA-DRIVEN SAFETY

**PROTECT PEOPLE AND
IMPROVE EFFICIENCY**

MAY 2023



With the widespread adoption of smart phones and other devices over the last decade, we've become used to being connected all the time across many aspects of our lives. Yet off-line, manual systems still prevail in many industrial and manufacturing worksites. In high-risk industries such as oil and gas and petrochemicals, this means opportunities for safety and operational enhancements are being missed, and the danger to workers is higher than it needs to be.

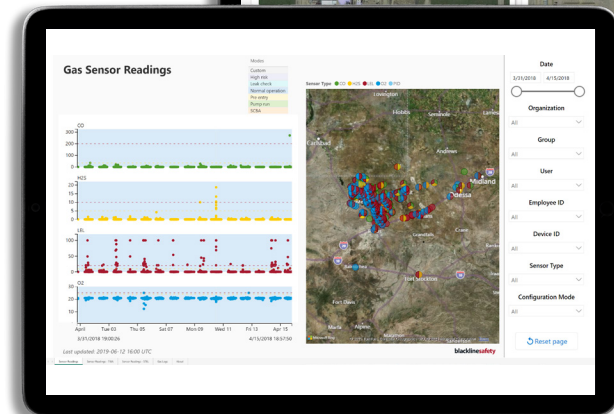
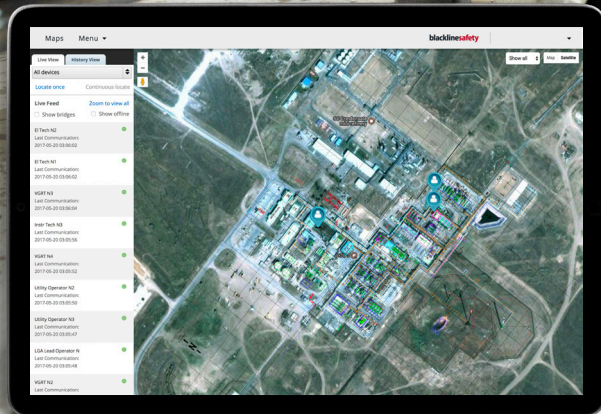
If you're a safety or operations manager looking to keep your workers safe, while also realizing operational efficiencies along the way, digitally connected devices using the Industrial Internet of Things (IIoT) can help. IIoT is more than just a buzzword, but an essential must-have in today's modern workplace.

80% OF INDUSTRIAL WORKSITES ARE IMPLEMENTING IIoT DEVICES (OH&S).



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MAKING SENSE OF IIoT AND CONNECTED SAFETY

IIoT is a network of intelligent devices connected to form systems that monitor, collect, exchange and analyze data, enabling organizations to improve operational efficiency and solve critical business problems. The IIoT includes software, hardware, data collection, predictive and prescriptive analysis, and reporting.

Connected safety combines various IIoT technologies—like sensors, wireless connectivity, location technology and cloud-computing—to deliver real-time visibility into the safety status and location of workers. And insights harnessed from analytics can be used to make performance improvements and manage compliance.

CONNECTED SAFETY BENEFITS

1 | REAL-TIME VISIBILITY INTO WORKER WELLBEING

Cloud-connected wearable devices with built-in location technology and cellular or satellite communication capability mean you can monitor the safety status of every single employee—in real-time, wherever they may be in the world—from a central online dashboard. And you can use live maps and data to view and manage single incidents or full-scale site evacuations and mustering operations as they unfold.

2 | PROACTIVE INCIDENT PREVENTION

Historical data from connected safety devices can generate predictive models to identify patterns and leading indicators to get ahead of hazards before an incident occurs. Proactive analysis can also be used to understand high alarm rates, low compliance, facility gas leaks, person down incidents, health events and more. Improved protocols, training and processes—based on aggregated trend and site comparisons can then be implemented—to reduce risk and downtime.

3 | STREAMLINED SAFETY PROCESSES

Cloud-connected wearables constantly stream data direct-to-cloud. The result is instant insight into how emergency response can be dispatched most effectively with full awareness of the risks present, where equipment is being used, where and what hazards are being encountered, which devices are performing well, and which can be better leveraged.

Evacuations can also be conducted efficiently, quickly and confidently by systematically alerting individuals or entire teams across a site, monitoring their progress as they migrate to muster points and easily confirming their safe arrival with no manual record-keeping or head counts required.

4 | AUTOMATED COMPLIANCE REPORTING

Connected safety devices ensure safety audits and compliance requirements are no longer a source of stress. By replacing manual uploads with automated device log collection, there is no delay in accessing data and no human-fallible link in the measuring and reporting process. Every bump test, calibration, gas exposure and usage session is automatically recorded and compliance status is up-to-date for hassle-free reporting and faster mitigation of non-compliance issues.

5 | OPTIMIZED WORKSITE EFFICIENCY

With wearable IIoT technology, jobsite activity can now be monitored remotely, driving asset utilization up and reducing idle time. Cloud-connected devices can capture worker time and location, while also identifying areas for safety and efficiency improvements. Custom reporting from this data can unlock patterns, insights and opportunities for facility layout improvements, changes in shift management, contractor behaviors and resource scheduling.



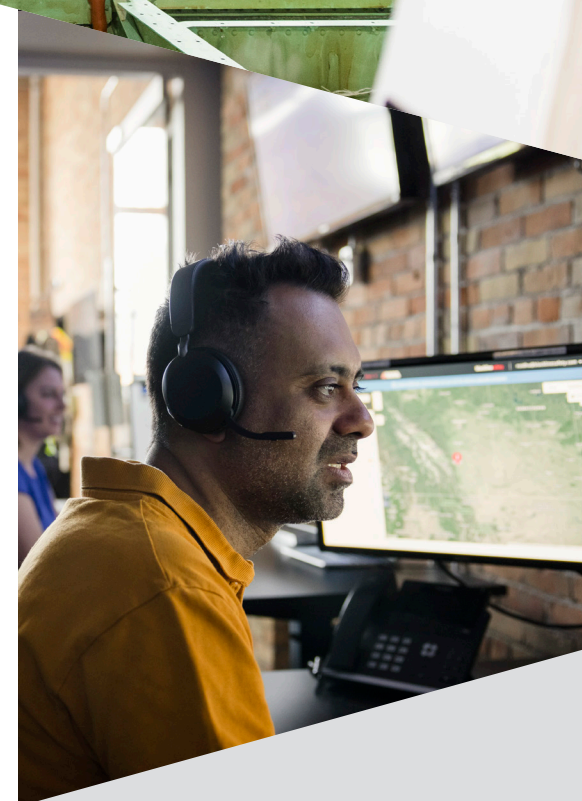
LAYERS OF COMMUNICATION

When it comes to higher-risk work environments, access to multiple layers of communication is paramount to ensure the safety of your workers, deliver real-time situational awareness and to provide incident management tools.. For example, [Blackline Safety's G7 personal safety devices](#) offer a variety of communication solutions to fit the unique needs of an industrial worksite to protect vulnerable workers. These include:

- Manual SOS latch and silent SOS so workers can send an emergency call for help
- Automated no motion and fall detection sensors let the device send an alert when your people can't
- Time-based alerts identify when a worker misses a scheduled check-in
- Two-way voice communication so first responders can connect directly with workers during an emergency to best assist
- Push-to-talk functionality (using the device like a walkie-talkie) for easy communication between teams

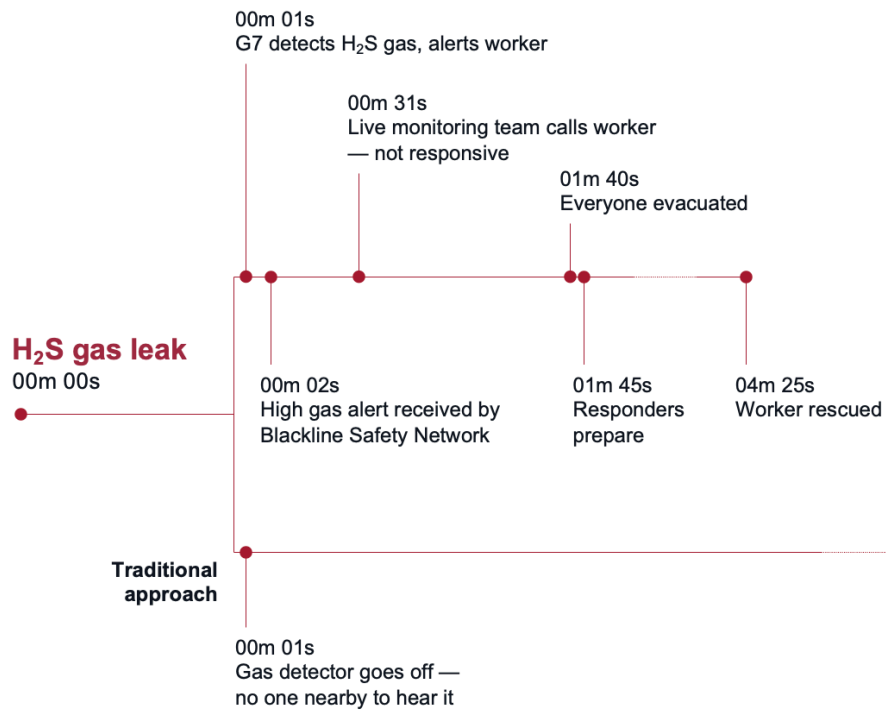
When paired with professional 24/7 live monitoring, like [Blackline's Safety Operations Center](#), wearable devices can provide a critical lifeline between employees and the help they need during an emergency, health event, dangerous situation, poor weather conditions and more.

This combination of capabilities allows workers to stay connected, remain protected from hazards, and communicate effectively—all while carrying less equipment throughout their working day.



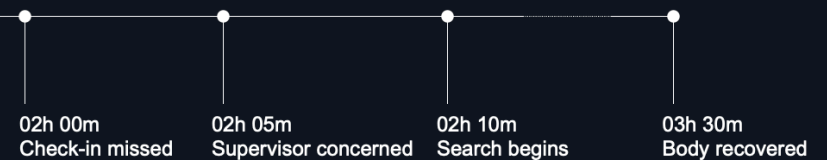
CONNECTED VS. UNCONNECTED RESPONSE

When it comes to a toxic gas exposure situation, there is no doubt that connected safety saves lives.



WHEN AN INCIDENT OCCURS, EVERY SECOND COUNTS

Connected technology can shave the response time dramatically, leading to a response being initiated within seconds and a worker being rescued within minutes. Conversely, it could take up to three and half hours to reach an unconnected worker, and by then it can be too late.





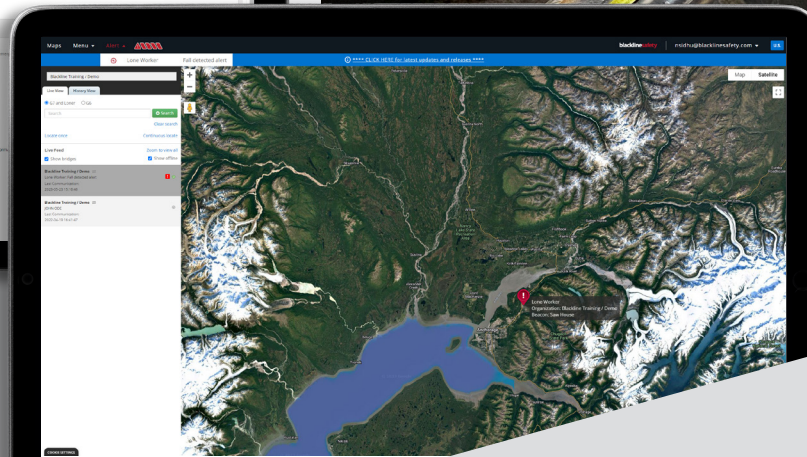
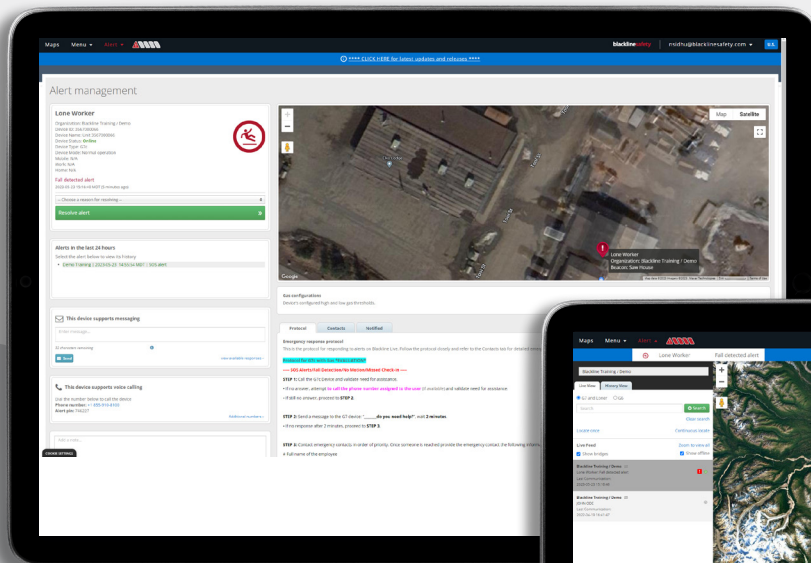
CONNECTED SAFETY IN ACTION

Connected safety can help avoid serious workplace incidents. With around 340 million occupational accidents and 160 million victims of work-related illnesses annually, according to the International Labour Organisation, we can do better.

The case studies on the following pages detail some of the ways safety-focused companies are using Blackline Safety's cloud-connected devices and data analytics to deliver safer and smarter operations.

LONE WORKER: AUTOMATED FALL ALERT AND QUICK RESPONSE SAVES WAREHOUSE EMPLOYEE

- [Blackline Safety G7c cloud-connected wearable safety monitors](#) are used to ensure the safety and security of a company's warehouse workers. These workers are often alone for extended periods and could be exposed to potential hazards.
- A worker suffered a cardiac arrest while working alone in a warehouse. The incident caused him to fall, strike his head and get knocked unconscious.
- The fall triggered an automated fall alert from his G7c wearable device, immediately notifying his Operations Manager and Blackline's Safety Operations Center (SOC).
- Quick response from the Operations Manager (who moved to the scene and fetched the external defibrillator) and Blackline Safety's SOC monitoring personnel (who dispatched 911), enabled critical medical attention to be delivered in minutes, saving the employee's life.



Automated fall
alert received in
Blackline Live in
<2 seconds

Fall alert
responded to
by SOC in
<60 seconds

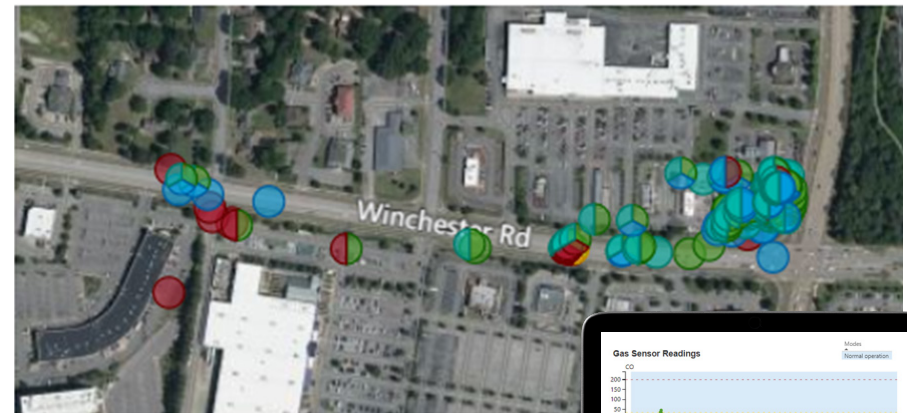
Emergency
response
initiated – **EMS
dispatched**



SPILL: REAL-TIME DATA PROTECTS EMERGENCY RESPONDERS AND COMMUNITY

- While making a routine fuel delivery to a local gas station, the driver of a tanker truck went inside to buy a coffee. When he returned to the truck, 32 gallons (120 liters) of gasoline had spilled out, and more was flowing rapidly onto the ground.
- Within minutes of firefighters arrival on scene, the [Blackline Safety G7c connected gas detectors](#) they were wearing sent high gas PID and LEL alerts to the fire department lieutenant, who was over five miles away at the firehouse.
- Via the Blackline Live portal, the lieutenant could see the location of personnel, plus gas type and exposure levels on a real-time map view. He perceived the spill site was on a downward slope with the potential to flow into a busy roadway and down into the sewers.
- The lieutenant assessed the situation, directed his people and leveraged the instant data and gas readings from his peoples' G7c monitors to validate and adjust his strategy and keep firefighters safe on the scene.
- In total, the devices detected 38 instances of high gas and 98 instances of low gas exposures, which quantified the amount of exposure each person had had during the entire incident. The information was used to assess health risks and ensure responders got proper medical attention if needed.

Sensor Type ● CO ● H2S ● LEL ● O2 ● PID



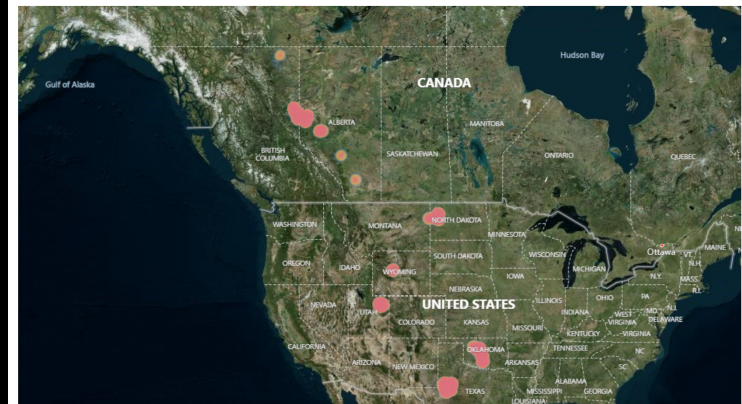
Being able to hear the radio transmissions and see the location of the responders on the map we were able to quickly direct and adjust the response remotely. And with the real-time data – we could follow how the incident was progressing. The safety devices proved their worth to us right then and there.

Fire Department Lieutenant

RISK PRIORITIZATION: IDENTIFYING HIGH-RISK SITES TO PUT PROACTIVE SAFETY MEASURES IN PLACE

- An E&P company, operating in both the U.S. and Canada and employing thousands of people, oversaw several worksites and offices across both countries.
- Due to its cross-border, multi-site and multi-application operations, tracking lone workers and gas detection was a considerable challenge. The company's HSE team solely relied on workers reporting every safety incident, which in many cases failed to happen due to the fear of retribution or disinterest in filling out paperwork.
- The company deployed Blackline Safety's connected safety wearables, which provided them with significant data on worker movements, gas exposure and more, across every site and office.
- As a small HSE team with limited time and resources, the company sought out Blackline Safety's data services experts to analyze the device data and prioritize the biggest threats to its worksites and the riskiest behavior.
- The real time nature of data coming from the [G7 wearables](#) ensured they had constant visibility into risk trends across all their sites. Long term analysis of risk patterns allowed them to proactively measure and mitigate risky behaviour with improved training, signage and information.

Exposure Risk Heat Map ?



1.38

Average Threat

2152

Total Events

357

High Gas Events

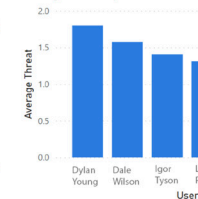
259

Time Clusters

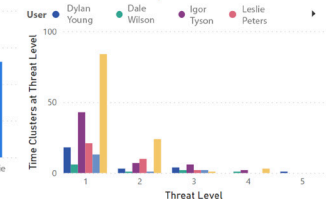
80

Location Clusters

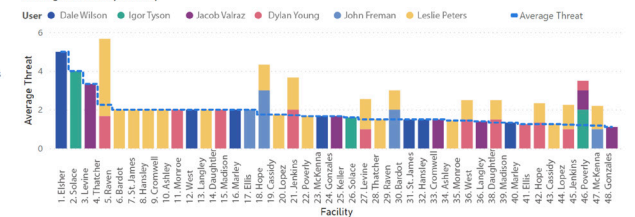
Average Threat by User



Count of Time Clusters by Threat Level



Average Threat by Facility



SAFETY PROCESSES: DATA ANALYSIS REVEALS OPTIMAL SUPERVISION FOR SAFER, MORE EFFICIENT WORKSITE

- To determine the optimal supervision for maintaining a safe and efficient worksite, a contractor analyzed data from 500 Blackline Safety G7 connected wearable devices used on site.
- [Blackline Safety's data services](#) experts created a custom report with geofenced zones to measure the number of supervisors-to-workers ratio in an area and the number of incidents occurring.
- They found that incidents increased when an area had not been supervised for a certain length of time or if a supervisor did not perform a physical walkthrough in an area.
- To improve safety, Blackline Safety G7 devices were customized to send time-based alerts to supervisors to perform a walk-by if no one had walked by in the last 15 minutes, which was determined to be the inflection point for incidents.



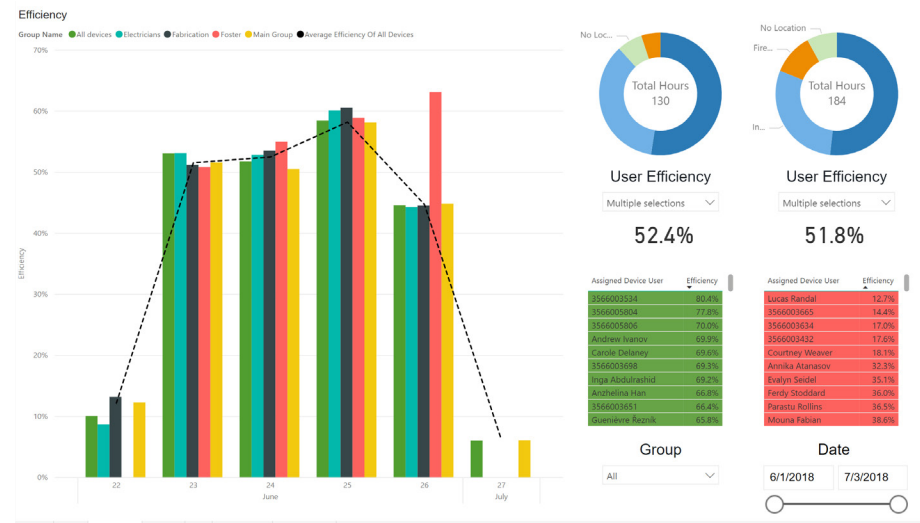
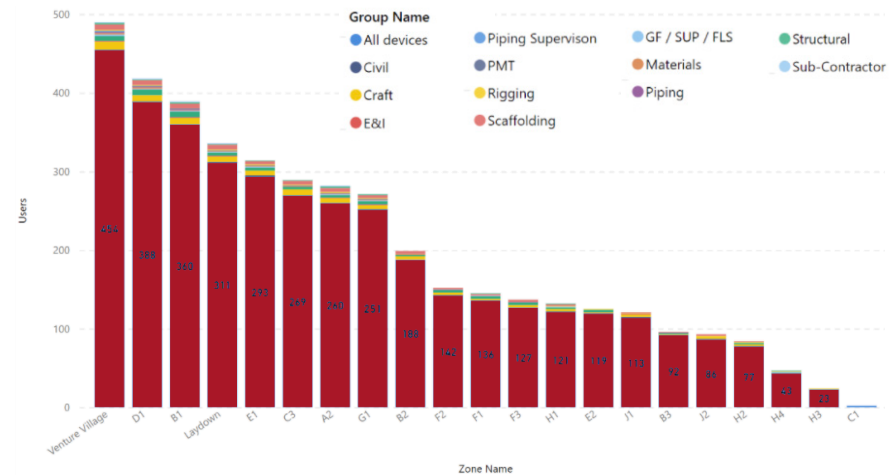
SHIFT MANAGEMENT: PROACTIVE ANALYSIS RECOVERS 1,000+ PERSON-HOURS

A fleet of 65 [Blackline Safety G7 connected multi-gas detectors](#) was deployed at a refinery unit turnaround. The facility owner sought greater visibility of craft activities with a particular emphasis on time spent outside defined work areas. Through the devices' data, the owner was able to:

- Identify all trips to zones outside of defined work areas by count and duration, and easily see that 1,100 hours were spent outside of defined work areas and 333 trips were taken to those areas with a round-trip duration of about 60 minutes.
- Recover direct labor person-hours by making workflow changes, introducing signage and adjusting contractor onboarding training.
- Realize a ROI of 10% of budgeted turnaround project person hours as the time spent outside defined work areas was reduced from 1,100 to 100 person-hours.

Custom Productivity Report

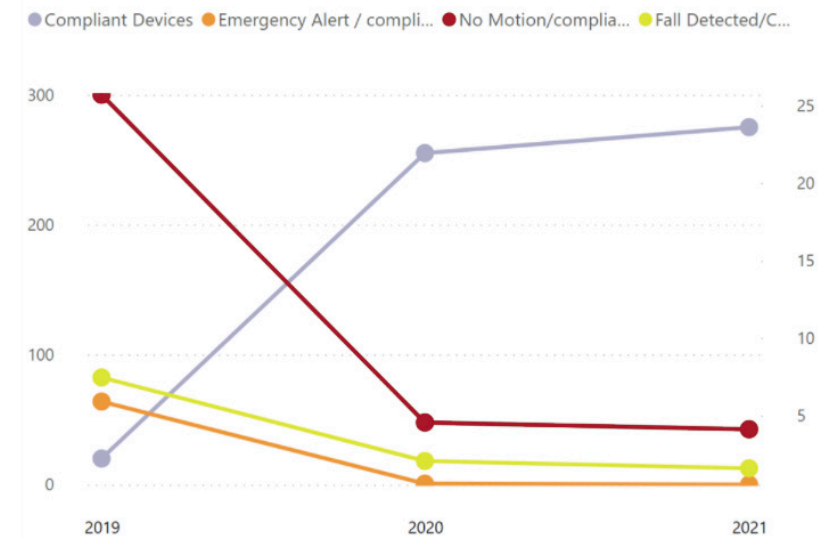
Zones where users are spending their time in



COMPLIANCE MANAGEMENT: THE LINK BETWEEN DEVICE USAGE AND ALERTS

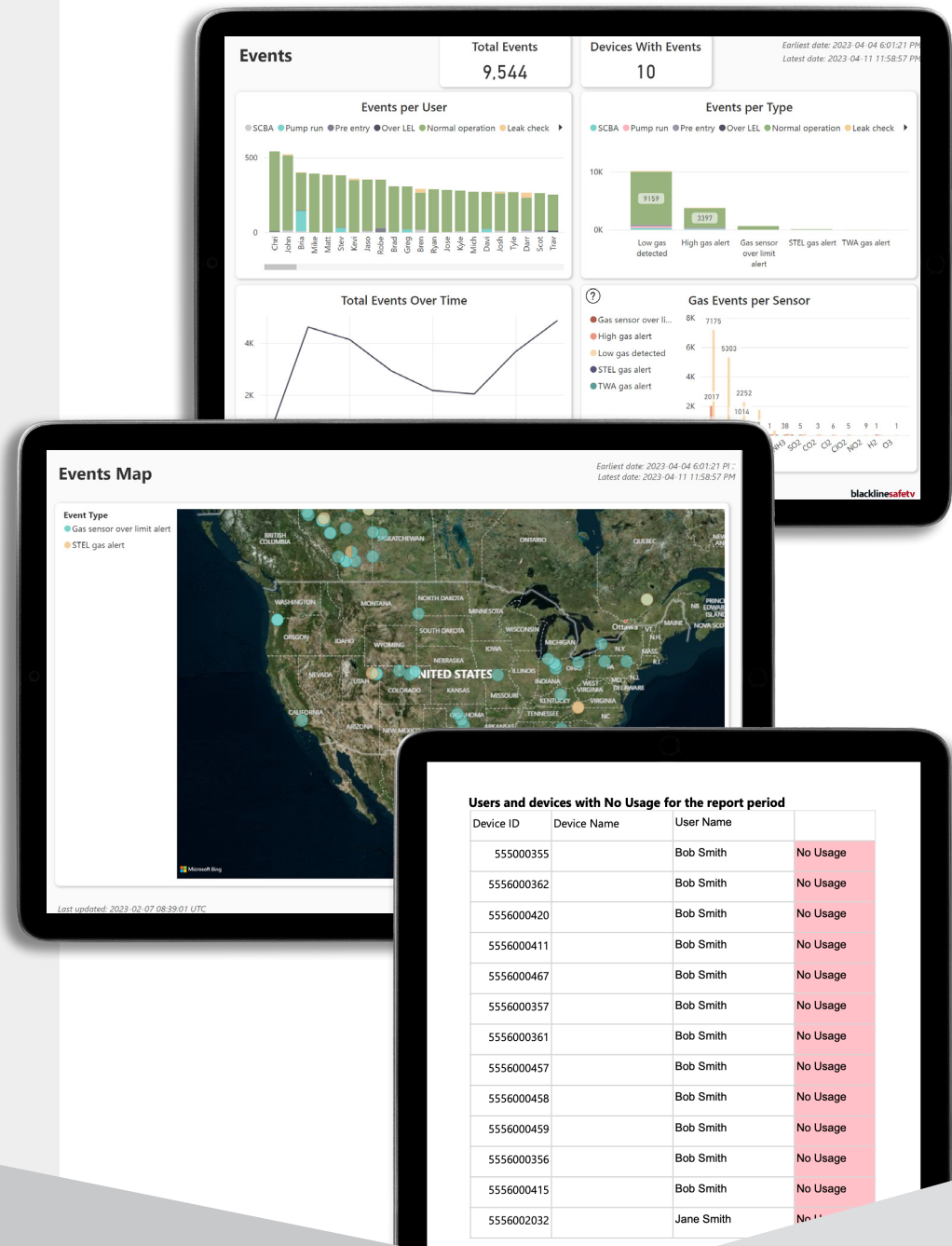
- A large North American oil and gas producer followed their safety alert trends over a three-year period from their employee's connected devices.
- By overlaying the alerts with device's standard usage and compliance reports they were able to demonstrate that the more the devices were used, the fewer the number of alerts.
- They were able to leverage this information to change worker behavior to boost device compliance and usage.

Alerts by Compliant Devices



CHANGE MANAGEMENT: USAGE ANALYTICS DRIVE TRAINING AND SUCCESSFUL ADOPTION

- A national refrigeration and cooling technologies company introduced [Blackline Safety's G7 multi-gas monitors](#) to protect their service technicians from lone worker and gas hazards.
- The change was a challenge as field techs were spread all over the country and training needed to be customized to ensure proper use, reduce false alarms, and accommodate a variety of use cases.
- Working with their Blackline Safety Client Success Manager, the company was able to utilize out-of-box essential analytics reports to track which field techs had low or no usage of their new monitors as well as track which techs were experiencing the highest number of false alarms.
- The usage report was emailed weekly to the area managers, giving them an accountability tool to drive change management.
- The events report showing which field techs experienced the greatest number of alarms during early training was used to modify configuration settings over the air, personalizing the G7 to that worker, group or area – as requested by area managers.
- Using analytics during early implementation stages unlocked awareness into the field for the HSE managers, increased accountability for the area managers and drove buy-in from field technicians as they felt heard and supported.



A man with grey hair, wearing a light blue button-down shirt and a high-visibility yellow and red safety vest, is looking down. A Blackline safety device is clipped to his vest. He is also holding a pair of safety glasses and a white hard hat. The background is an office setting with large windows and framed pictures on the wall.

READY TO HARNESS DATA-DRIVEN SAFETY?

Contact us today for more information
on ways to better protect your people
and get more efficient.

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