HAWKEYE ON SAFETY

BE SAFE AND IF IT LOOKS UNSAFE... REACT!

SEPTEMBER 4, 2025 | CORALVILLE, IA

Prediction Power: Leading Indicators to Combat Strains, Heat, and Forklift Risk Using Wearables

Sept 4, 11am, Oakdale 123

HAWKEYE ON SAFETY
BE SAFE AND IF IT LOOKS UNSAFE... REACT!

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MākuSafe - The Leader In Workforce Wearables

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Prediction Power: Leading Indicators to Combat Strains, Heat, and Forklift Risk Using Wearables Oakdale 123

What if your safety program could predict and prevent the most common injuries before they occur? This breakout session presents a forward-thinking but grounded approach to preventing MSDs, heat illness, and forklift incidents through wearable technology. By tracking motion, environmental conditions, and worker exposure data—without collecting PII—organizations are gaining insight into hidden risks. We'll share how leading companies are turning this data into action, reducing claims, and shaping safer, smarter workplaces with tech that's as practical as it is powerful.

- Understand how to operationalize leading indicators using real-time data from wearable technology to identify and address the root causes of musculoskeletal injuries, heat stress, and forklift-pedestrian interactions.
- Learn practical strategies and case-based examples of how safety teams are using motion, environmental, and exposure data—without tracking individuals—to drive timely interventions and reduce costly claims.

Description

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What if …?

What if you could reduce incident frequency by 50% and cut claims severity by 90%, delivering the best workers' comp year in over a decade?

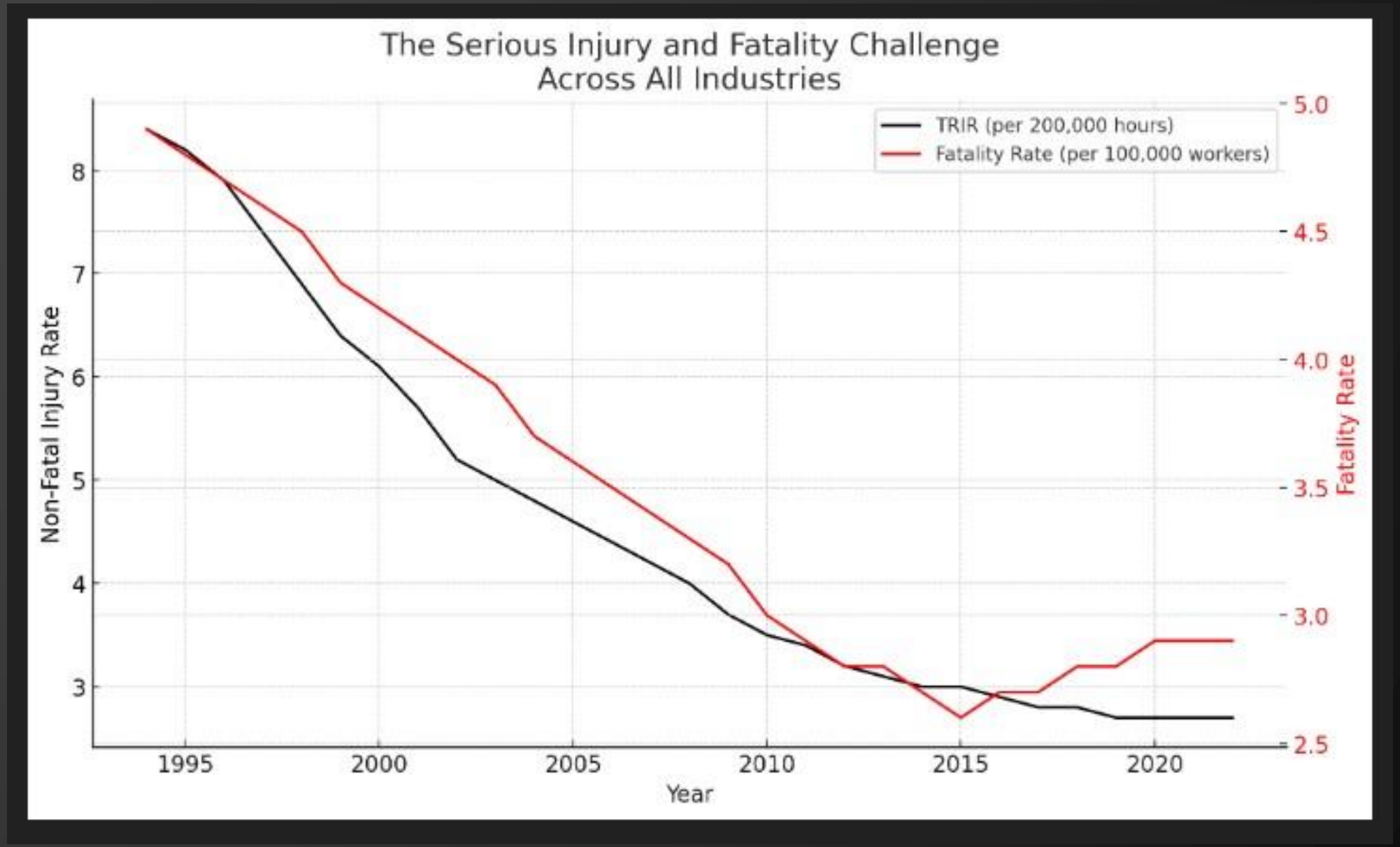
What if you could identify hidden heat risks in real time - personalized to each worker - and prevent heat-related illness before symptoms ever appear?

What if your safety program could see early signs of strain, exertion, high force, and repetition - and eliminate MSD injuries entirely for three years straight - while also uncovering measurable productivity gains?

What if you could drive your TRIR all the way to zero, and sustain that milestone for years across complex operations?

What if you could transform frontline engagement, increasing near-miss and good-catch reporting tenfold - giving leaders a true predictive view of risk?

What if you could cut forklift-pedestrian interactions by 86% in just six months, all while maintaining throughput and efficiency on the floor?


The Serious Injury and Fatality Challenge
Across All Industries
TRIR (per 200,000 hours)
Fatality Rate (per 100,000 workers)
Non-Fatal Injury Rate
Fatality Rate
Year
8
7
6
5
4
3
5.0
4.5
4.0
3.5
3.0
2.5
1995
2000
2005
2010
2015
2020

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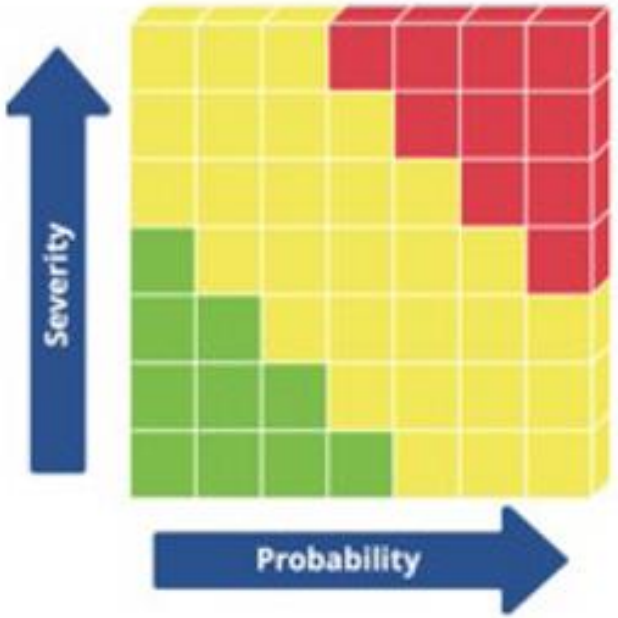
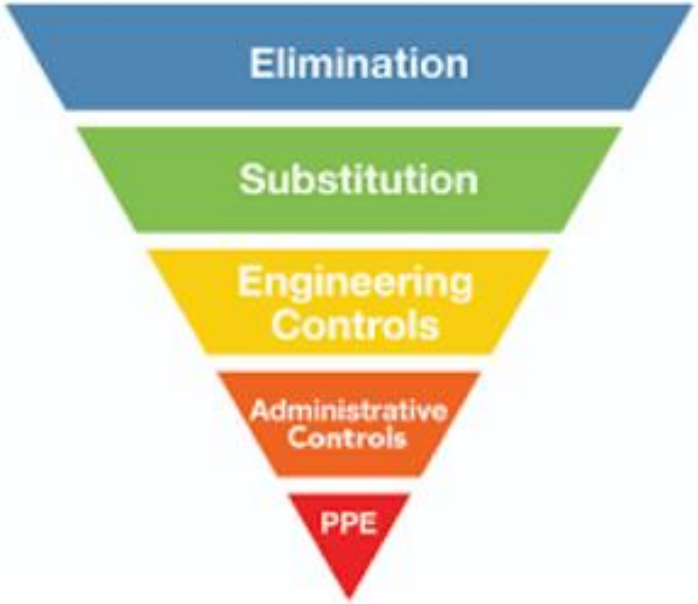
Identify Hazards



Assess the Risk



Control the Hazard

Safety Management Process

People, Culture, Engagement, Mindset
Learning, Humble Curiosity, Positive Recognition

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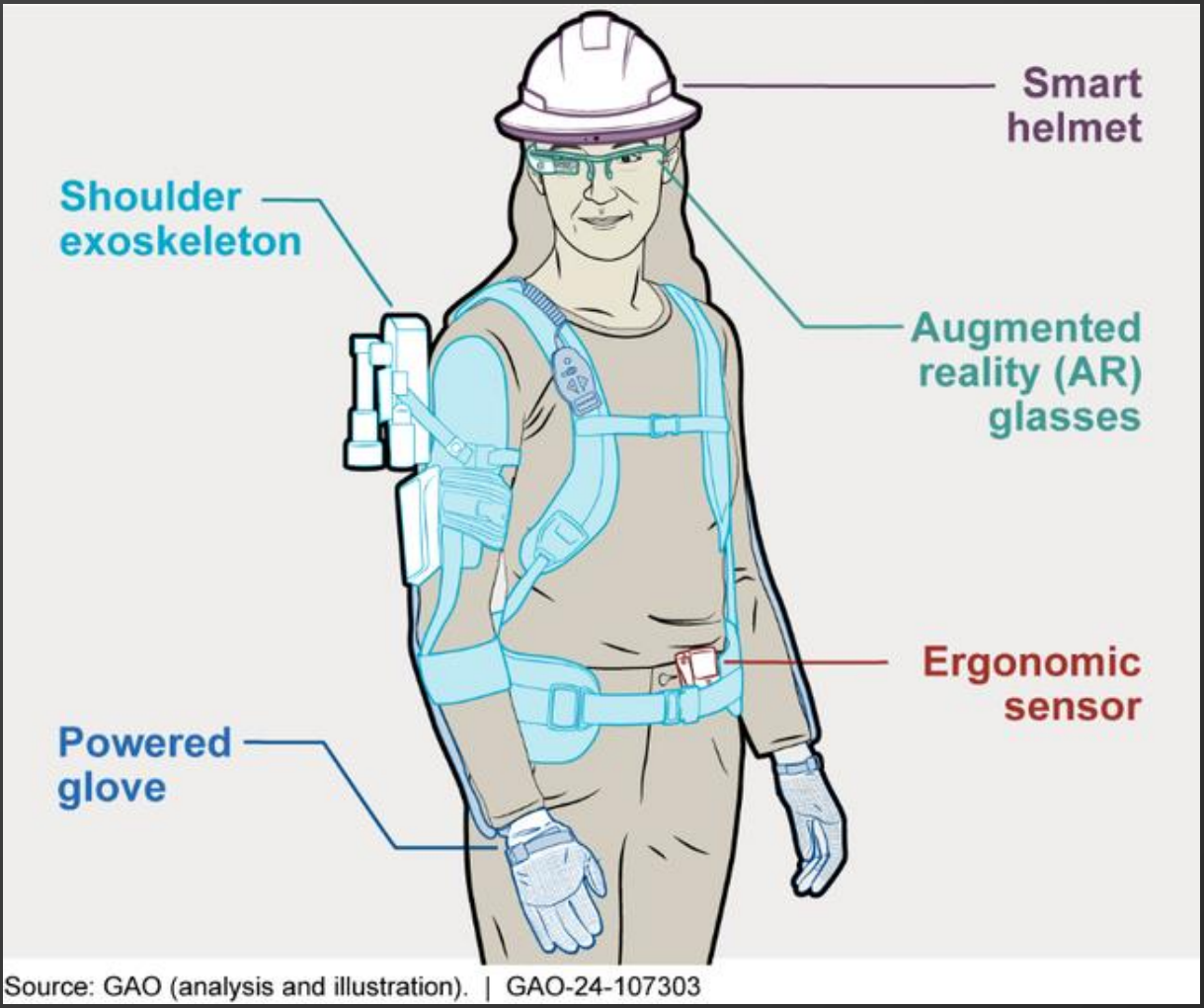
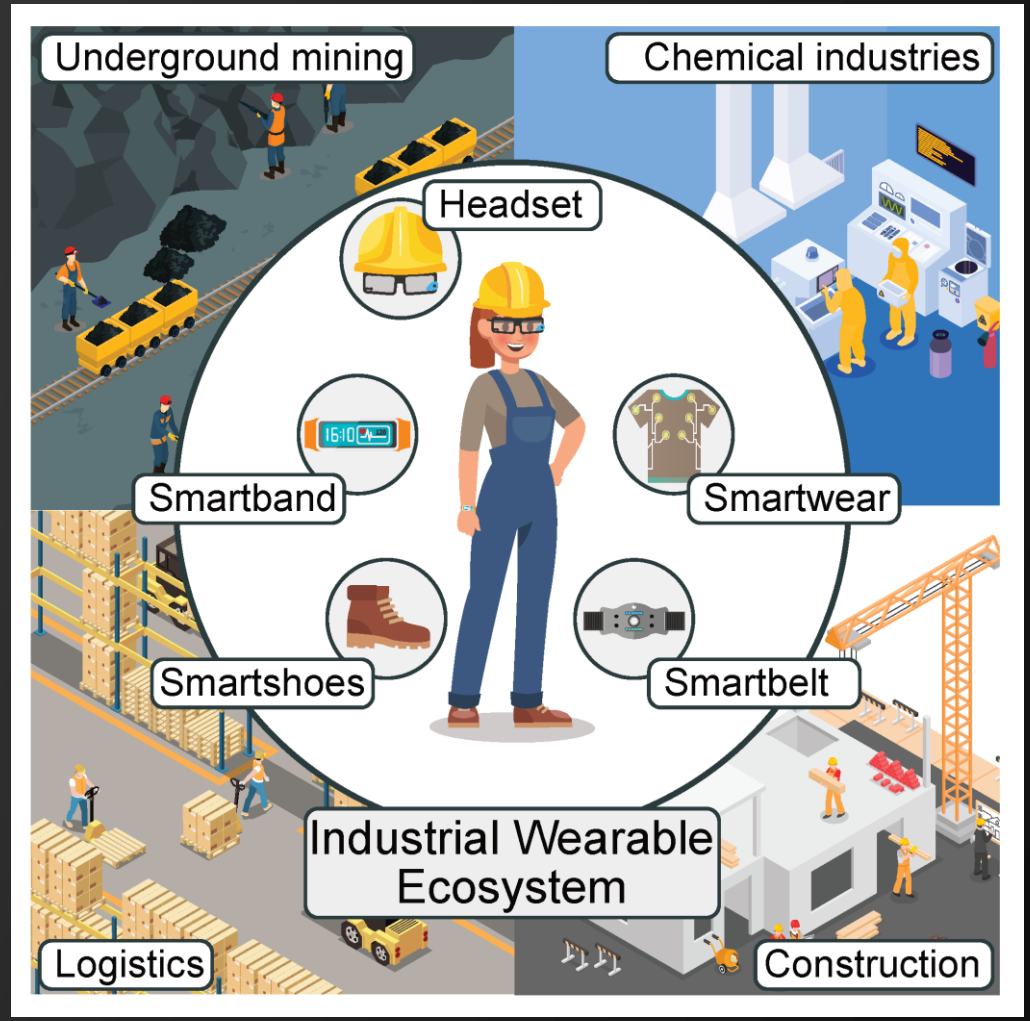
New Thinking, Tools, and Approaches to Safety Management

It’s time to evolve.



GAO 2024, https://www.gao.gov/products/gao-24-107303



https://www.mdpi.com/1424-8220/21/11/3844

Safety and Wearable Technology: Impact, Applications, and Implementation in Industry

By Gabriel Glynn, Mark Frederick, Tom West
Copyright 2025, 1st Edition
CRC Press

"Technology is available today that automates hazard identification and risk assessment, and provide insights and focus based on EHS leading indicators... However, the most advanced technology is meaningless without the leadership, culture, and systems in place to support it. Innovation in safety starts—and succeeds—with people."

— Tom West

A roadmap to understand, adopt, & use wearable safety tech!

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Wearable Safety Tech:

More Effective & Efficient Data-Driven Management

Enabling Safety Management 2.0 & HOP

Providing Meaningful EHS Leading Indicators

Reducing Incidents & Claims

Human-Centric to Improve Safety Culture!

Tech with the right approach, can be human-centric, and enable success!

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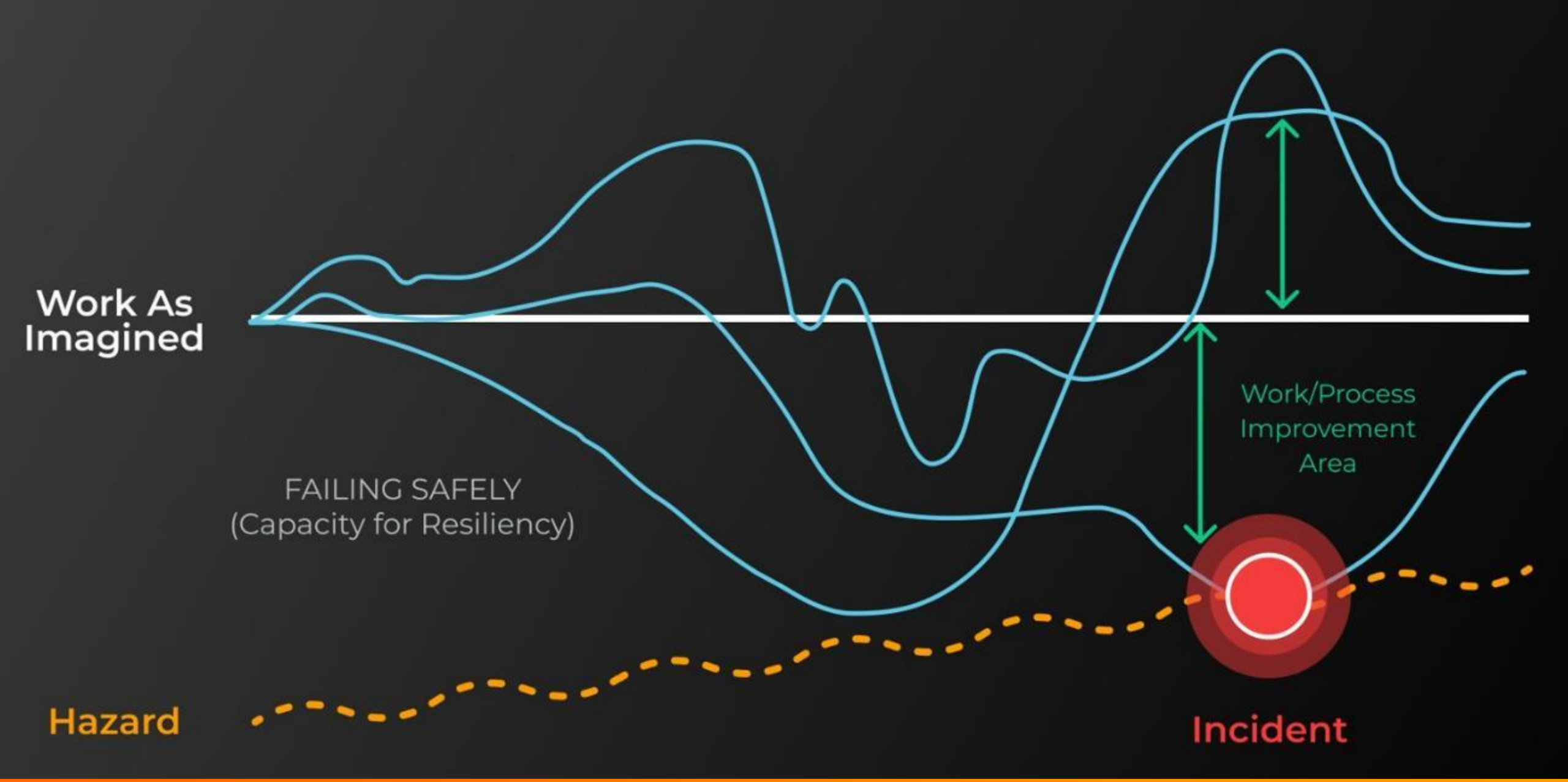
Human and organizational performance (HOP)
is a risk focused OPERATING PHILOSOPHY
which recognizes that to ERROR is human
and that an organization's
PROCESSES AND SYSTEMS greatly influence
employee actions and choices,
and consequently, their likelihood of success.

Key Principles of HOP:

1. People are fallible, and even the best make mistakes
2. Workers are masters at adaptive problem solving
3. Context drives worker actions and behaviors
4. Leadership’s response to failure matters
5. Blame Fixes Nothing
6. Improvement happens through learning



Work As Imagined vs. Work in Reality – Conklin/Edwards/Fisher

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Safety? The absence of errors in outcomes, or presence of capacity and resilience in systems to ensure things go well?

Investigations? Only failures, or normal work?

Focus? Containing sources of energy, or engagement participation and learning?

People? The problem to be fixed, or masters adaptive problem solving and therefore the solution to be harnessed?

SHMS? Compliance and bureaucratic accountability upward, or ethical responsibility downward?

What's happening when nothing bad is happening?

Change the work, not the people.


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SMART. SAFE. MĀKUSAFE.

Wearables can be a powerful tool for identifying hazards and risk

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In every work environment there are clues...

...leading indicators & near-misses that we collect automatically, analyze and use...

...to predict & prevent injuries & claims.

Workers check out and return wearables from kiosks

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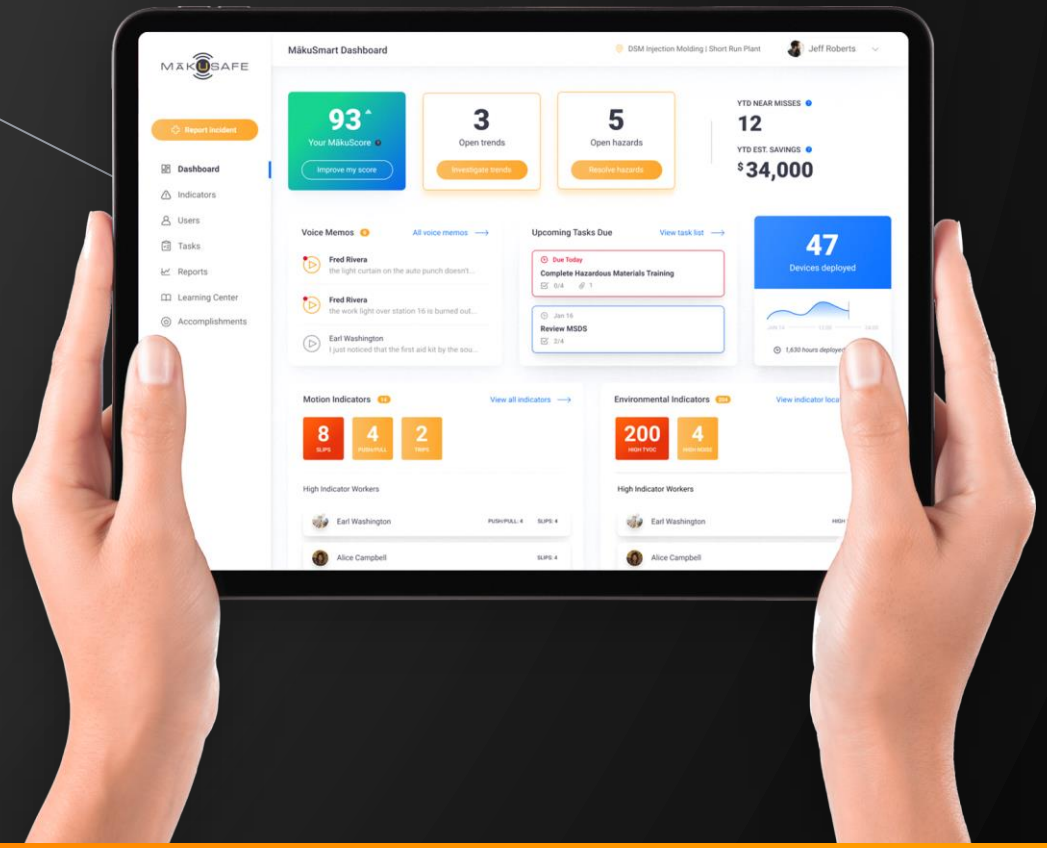
Dedicated COSS Support Mgr.

MākuSmart Cloud

Wearable

Base Station

MākuSmart Web & Mobile Application



Connected Safety Ecosystem

The Ally™ gathers & transmits data in real-time to the MākuSmart Cloud

Motion Detection

- Slips, Trips, and Falls
- Repetitive Motions
- Worker Physicality
- Forceful Exertion

MyVoice™

- Audio Messaging
- Voice-to-text
- Push-to-talk

Battery

- 22 Hour Battery
- Multiple Shifts

Spatial Awareness

- Location Identification
- Worker-to-worker Proximity
- Access Control & Factory 4.0
- Scout Forklift Safety ™

Environmental Sensors

- Ambient Light
- Air Quality (TVOC & CO2)
- Noise / Sound Dosage
- Air Pressure
- Humidity
- Temperature

A Sensor-Packed Data-Gathering Ally™

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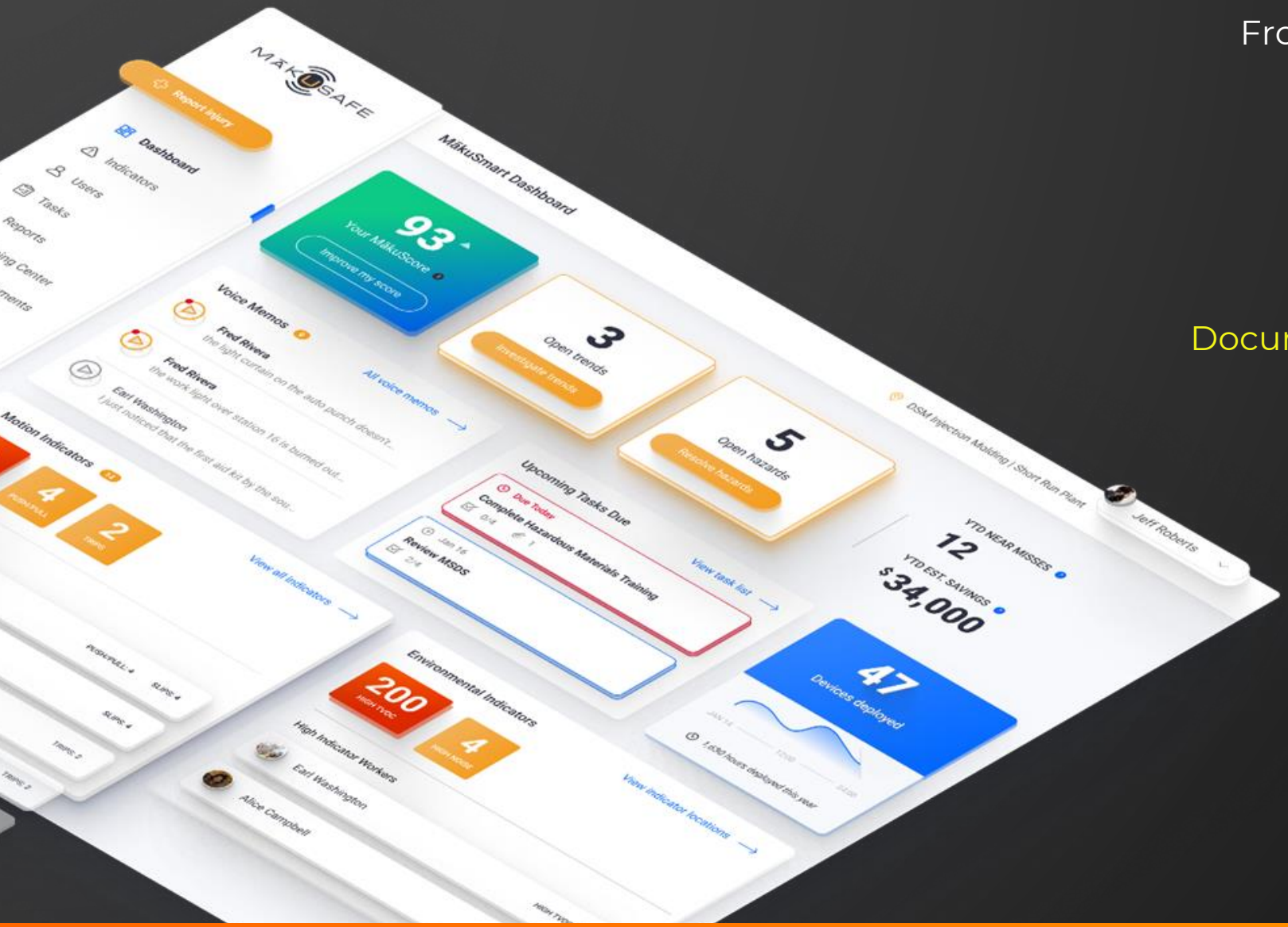
MākuSafe Does Not:

- Collect anything personal (No PII)
- Monitor any biometrics
- Deliver any negative feedback to the worker; haptic, visual, or auditory
- Assume the worker is the problem, or knows what to do to correct it
- Continuously track the individual



Frontline communication via Voice Memos

Real-Time Alerts

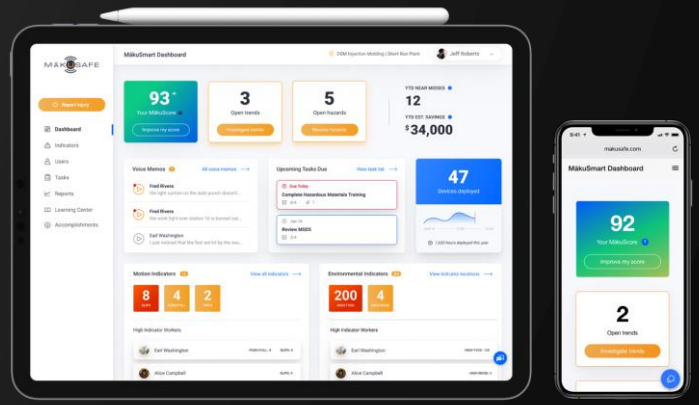
Location Conditions

AI-Driven Trends

AI-Driven Motion & Physicality Analysis

Document Incidents, Injuries, Tasks & Hazards

Reporting & Analytics



Support for Multiple Devices

MākuSmart Cloud Application

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Heat & Environmental Exposure

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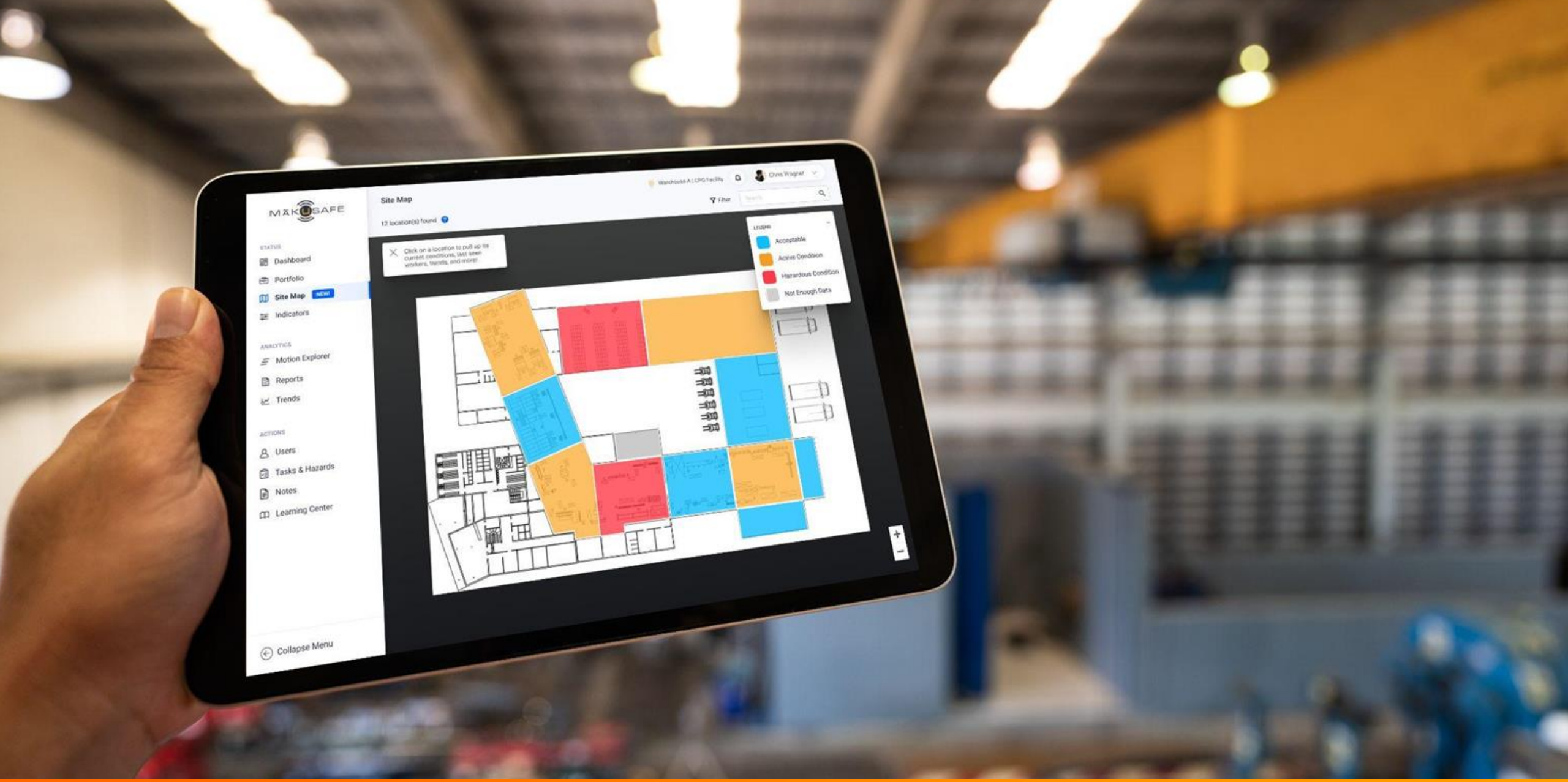

Location Services & Environmental Hazards

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- Lowest Workers' Comp Claims in 12 Years: FleetPride had its best safety year in over a decade, with one distribution center logging 365+ days without a single incident, including no strain or exertion injuries.
- Enterprise-Wide Rollout in Under 6 Months: Rapid pilot success led to full deployment across six distribution centers and over 300 employees, making MākuSafe part of standard PPE.
- Real-Time Data Drove Facility Improvements: Environmental data led to airflow, lighting, and air quality enhancements, directly improving working conditions and reducing exposure to heat and volatile compounds.
- 350+ Frontline Hazard Reports via MyVoice™: Worker engagement in safety communication skyrocketed, tripling the number of actionable tasks resolved in just 60 days.
- Leadership Engagement Boosted ROI: A direct correlation was observed between MākuSafe engagement scores and year-over-year reductions in claims, reinforcing the value of a data-driven, culturally aligned approach.

nsc National Safety Council

Case Study

MSD Solutions Lab an nsc program

Effective Use of Wearable Technology in Heavy Parts Distribution

What's the Risk?

Employees at FleetPride, the nation's largest distributor of heavy-duty truck and trailer parts, faced several safety challenges within their distribution division, including risks of strains, exertion injuries, and heat-related illnesses. Due to the size and irregular dimensions of a vast majority of inventory, employees at FleetPride's distribution centers frequently perform manual material handling (MMH) of heavy-duty truck and trailer parts. This reliance on MMH greatly increases the propensity for musculoskeletal disorders (MSDs), making it a top focus for risk mitigation. As such, FleetPride was eager to better understand the risks and mitigate them through the implementation of new technology, data analysis, and response strategies for its distribution centers.

Implementation of Wearable Sensor Technology

FleetPride began an initial pilot study with MākuSafe wearable sensors on January 4, 2024, seeking to enhance workplace safety, reduce workers' compensation costs, and gain greater visibility into risks across multiple locations. The pilot program launched the rollout of wearable sensors at one distribution center with just under 100 employees. Wearables were distributed, teams were trained on their use by MākuSafe personnel, and shortly after, FleetPride leadership and safety teams were able to analyze the

60 days, and then
curred at 30-day
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senior operations
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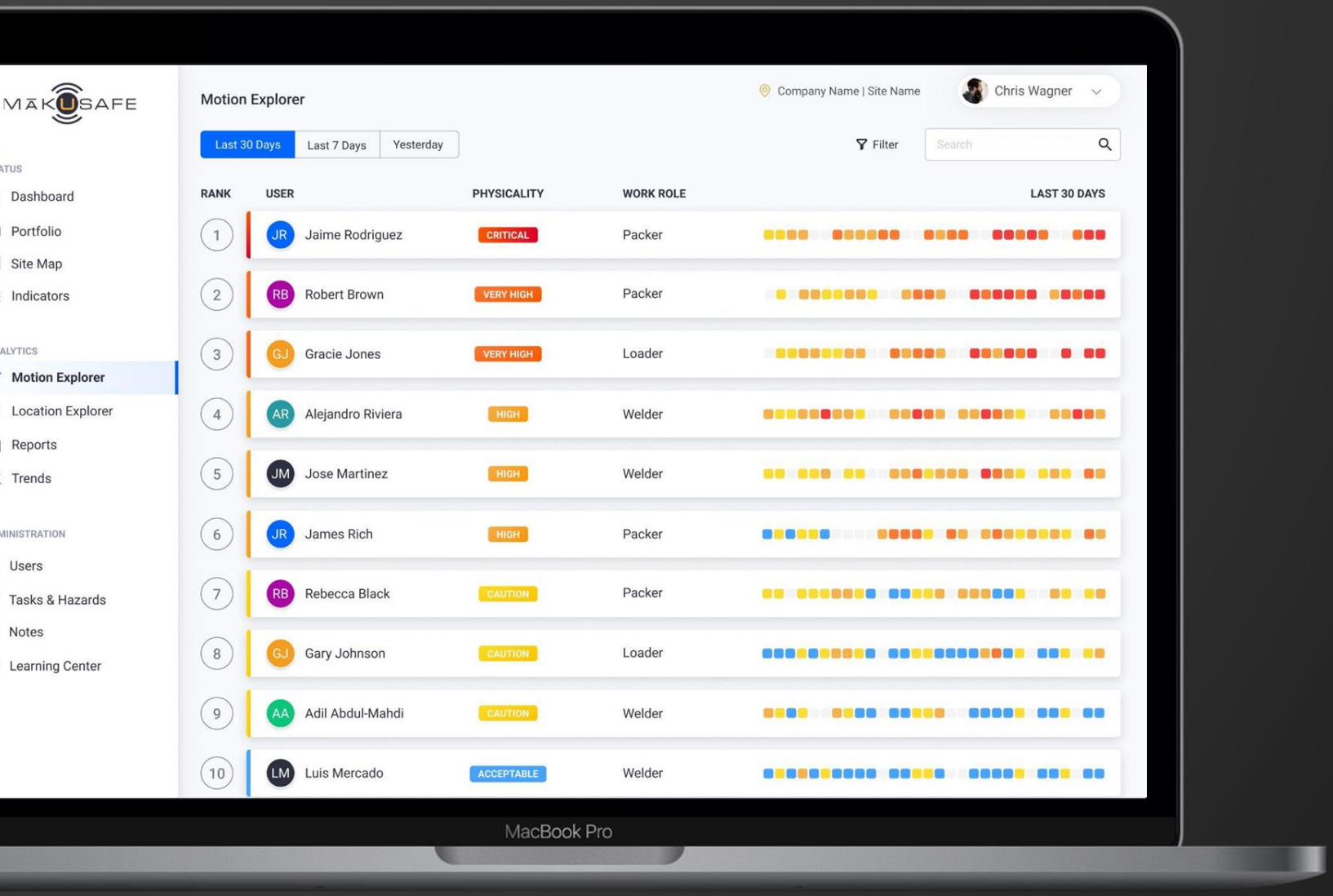
nd conduct

Return on Investment

2024 marked FleetPride's best workers' compensation year in over a decade, with the lowest number of claims in 12 years across its supply chain group. One site recorded over 365 days with zero incidents, including no strain or exertion injuries, which were previously a major concern. FleetPride attained such outcomes by engaging in proactive risk reduction through motion data by identifying hazardous movements, such as bending and twisting, and adjusting work processes before injuries occurred.

- Client Case Study
- Long standing construction client
- Deploying across numerous large data center projects
- Multi employer job sites
- ESG & Safety management program reporting to customer helps win projects
- Achieved and maintained 0.0% TRIR on sites where MākuSafe is being used
- 31 months



Visualize worker's expended effort and potential impact on them for the day

Motion Explorer

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Motion Explorer & Physicality Ranking

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- High-volume warehousing and distribution
- 86% Wear Time Adoption Rate: High engagement
- Zero Back & Shoulder Injuries: Strain and exertion injuries were eliminated at sites using MākuSafe, for the first time even during peak business periods.
- 22 Documented Near-Misses in First 6 Months: Early worker engagement through MyVoice led to proactive hazard mitigation and a culture shift toward prevention.

- Client Case Study done through their insurer
- Trucking & transportation
- Reduced strain & exertion injuries by 56% in year one.
- They realized $450,000 in WC savings per site

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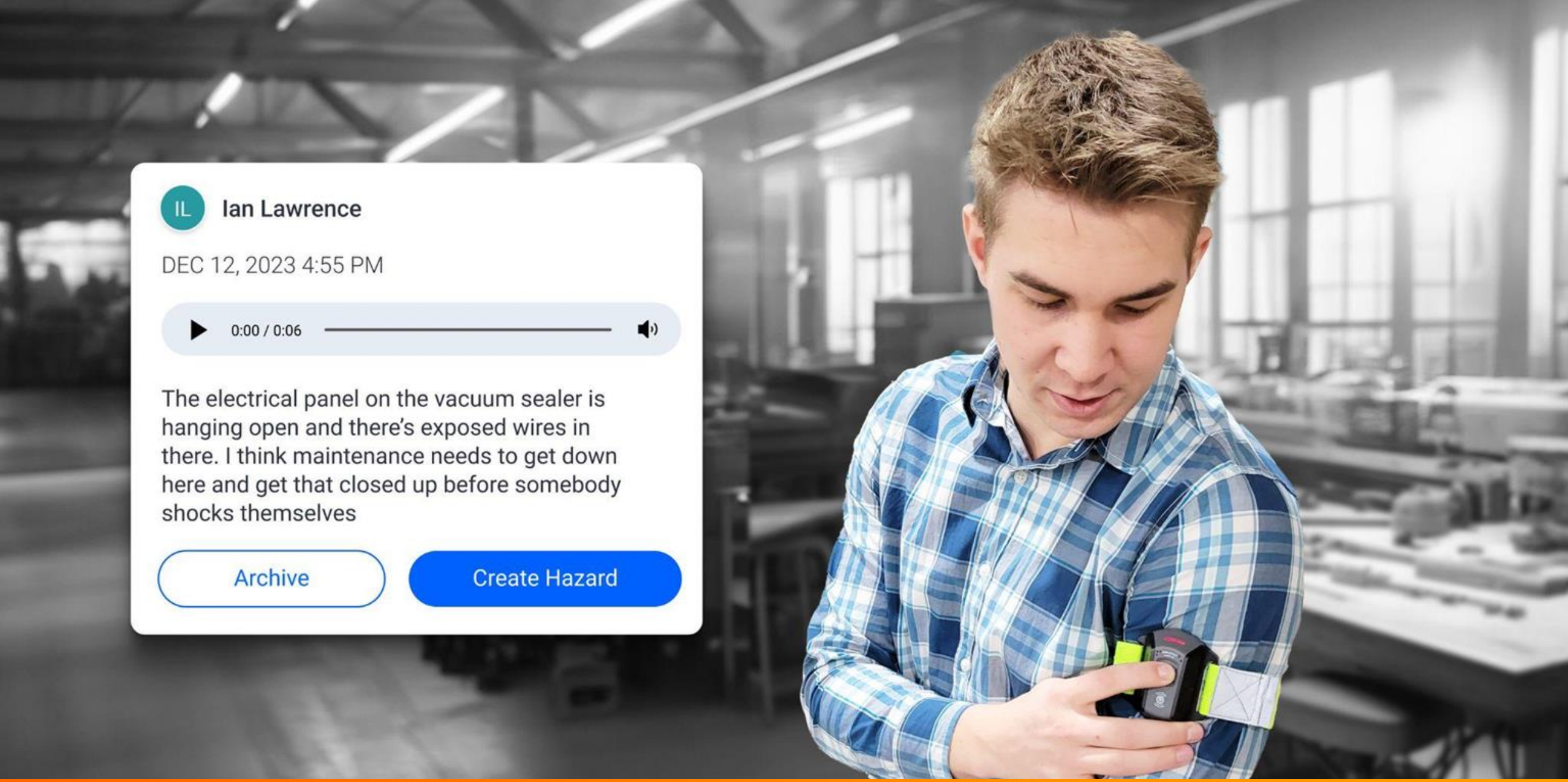

MyVoice™ Messaging

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- Client Case Study done with NSC
- Nationwide Logistics Organization
- Reduced lost time injuries by 74% in year one
- Continuous stream of feedback from the front lines
- Positive cultural impact documented

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- 60% Reduction in Workers' Comp Costs: From 2021 to 2023, while improving safety performance and reducing lost time.
- Recordable Injuries Cut in Half: The number of OSHA recordables dropped highlighting the effectiveness of using motion and ergonomic data to drive targeted interventions.
- 335 "Good Catches" Reported, 82% Resolved: Workers leverage MyVoice™ to report hazards in real time—up from just a few annually—transforming hazard awareness and resolution tracking.
- Ergonomic Improvements Across the Facility: Motion data led to the adoption of lift carts, work tables, and ergonomic tools, significantly reducing awkward postures and physical strain risks.
- Company-Wide Cultural Shift Toward Safety: wearables are now used across all departments, with daily reviews and collaborative data interpretation driving continuous safety improvements.

nsc National Safety Council

Case Study

MSD Solutions Lab an nsc program

Effective Use of Wearable Technology for Manual Material Handing

What's the Risk?

Manual material handling is a well-documented risk for musculoskeletal disorders (MSDs). Overexertion, often resulting from manual material handling, ranks as the top cause of the most serious workplace injuries (those causing an employee to miss more than five days of work), many of which are MSDs. These injuries also cost U.S. employers nearly $12.5 billion annually in direct costs of medical and lost-wage payments.

Employees at Life Line Emergency Vehicles often complete work through a manual process that includes manual material handling, such as pushing, pulling, and carrying, as well as using a variety of hand tools such as sanders, drills, or other devices that can create repetitive movement and gripping-related risks. Many of the tasks required of employees involve risk of MSDs and subsequent soft-tissue injuries.

Implementation of Wearable Sensor Technology

Life Line Emergency Vehicles recognized that due to the risks their employees faced from manual material handling to complete their jobs, MSD prevention was paramount to keeping their workers safe. To address such risks, Life Line Emergency Vehicles sought a data-driven approach to assess risks and make plans for mitigation. After being introduced to wearable sensors by their workers' compensation insurance company as a means to lessen MSD risk, Life Line Emergency Vehicles decided to engage in a pilot of the technology with MākuSafe. At the onset of implementation in January 2021, MākuSafe held meetings with employees who would be donning the wearable sensors. During these meetings, the technology and its capabilities were explained, and employees were reassured that the sensors w
or productivity. However, some employees still had concerns
the data.

To circumvent concerns, Life Line Emergency Vehicles educa
sensor-collected data and its uses to implement positive safe
eliminate/modify risky job tasks). The MākuSafe wearable s
indicators of high force, acceleration, pushing and pulling, an
physicality compared to peers in the same work role. Employ
aided in gaining employees' trust about the technology. Māku
throughout the implementation process if questions arose.

The implementation at Life Line Emergency Vehicles started
2022, and now has 160 wearables being utilized across the e
wearable sensors are utilized by employees within productio
cabinetry, fabrication, paint assembly, welding, and engineeri

- **Personalized Heat Index Monitoring:** MākuSafe wearables continuously tracked temperature and humidity, calculating a personalized heat index for each worker. This enabled real-time alerts to supervisors and **led to measurable reductions in both the number and severity of heat stress alerts**.
- **Targeted Heat Risk Mitigation:** Data identified **high-risk jobs and areas**, prompting interventions such as cooling rags, extra breaks, added fans, and hydration schedules. These proactive accommodations **directly reduced worker exposure and improved heat safety outcomes**.
- **Reduction in Recordable Incidents:** Within **6–7 months**, Fratco reported **drastic reductions in incident rates and DART cases**, including those tied to heat stress, falls, slips, and trips, showing both broad safety gains and specific success in mitigating heat-related risks.
- **Reduced Work Comp: by 60% in two years.**
- **Scalable Results Across Facilities:** Beginning with 20–25 wearables at one site, Fratco validated strong results before expanding adoption to additional facilities, **demonstrating replicable ROI and heat safety improvements** at scale.

nsc National Safety Council

Case Study

WORKtoZERO an nsc program

DATA ANALYTICS AND WEARABLES FOR HEAT STRESS MITIGATION

What's the Risk?

At Fratco, extruders are used to melt and shape clay, plastics and other materials during the manufacturing process. These machines are extremely hot (400-500°F), contributing to the ambient heat inside the facilities. Furthermore, during the summers, outside air temperatures often reach daytime highs of 90°F, offering workers little reprieve from the extreme heat. In general, occupational heat stress is associated with negative health, safety and productivity outcomes. For example, excessive heat exposure has been linked to a number of illnesses and injuries, including:

- Heat cramps
- Heat rash
- Heat exhaustion
- Heat stroke
- Death (NIOSH, 2020)1

After opening a new plant in Iowa, Fratco observed an influx of frequent injury reports and sought an innovative way to identify and manage their risks. Supported by a financial grant, the company began piloting the MākuSafe system, which combines wearable technology with data analytics to provide real-time and predictive EHS data, including:

- Environmental conditions (e.g., heat, humidity, light, noise)
- Any hazardous motions experienced by, or performed by, a wo
- The location of the worker at the time of an event
- Voice memos from workers about the conditions they are exp

[1] National Institute for Occupational Safety and Health. (2022b). *Heat related illnes* of Health and Human Services. https://www.cdc.gov/niosh/topics/heatstress/heatr


Front Line
Conversations
Build Culture, Engagement, and Mindfulness

Shifting Safety Culture

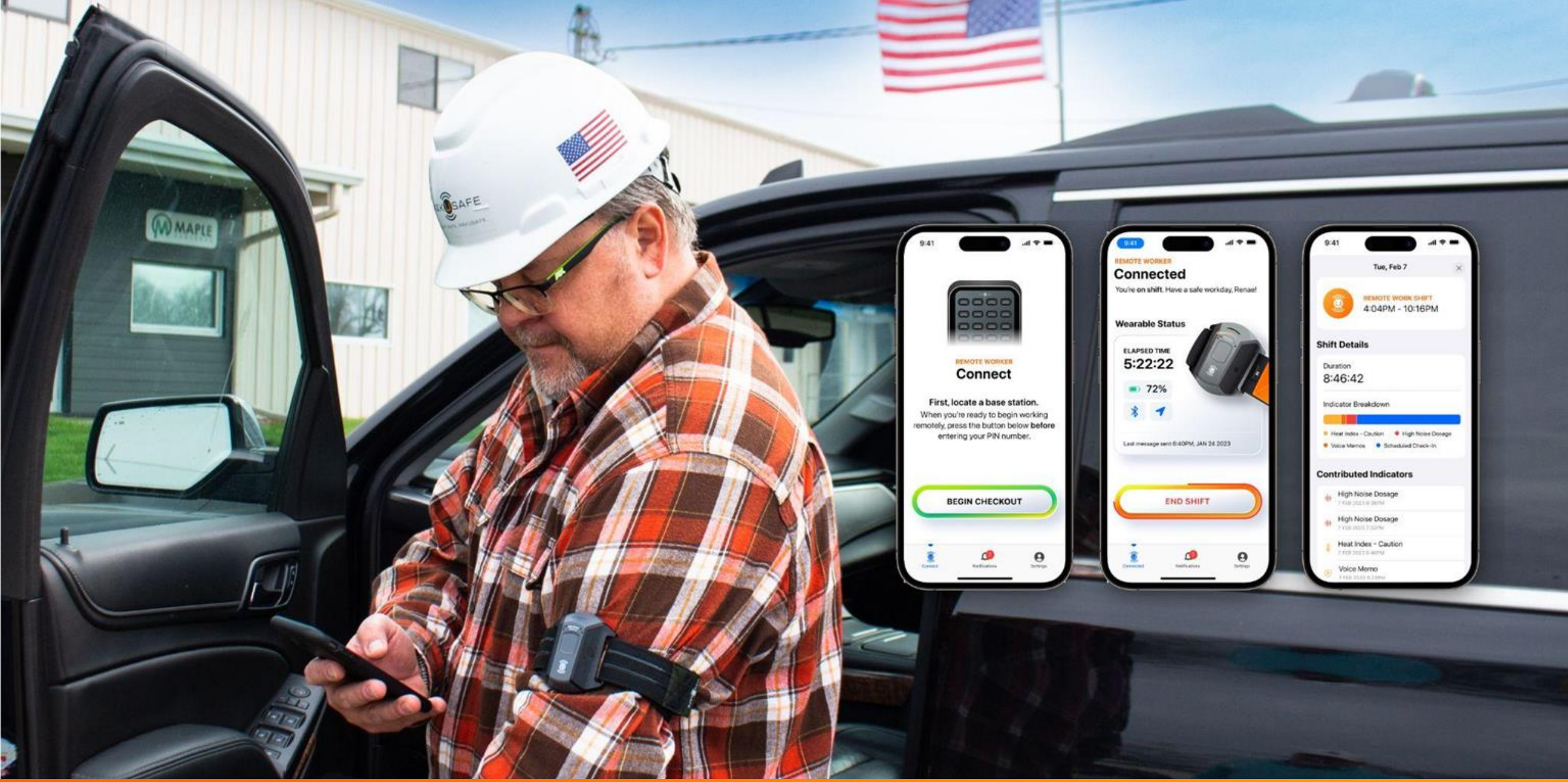
- 0 +

Shifting Safety Culture

\- 0 +

Stronger Cultures + Safety Mindfulness + Worker Engagement =

14X Safer Workplaces with 70% Incident Reduction
Higher Quality & Higher Productivity



Remote Worker

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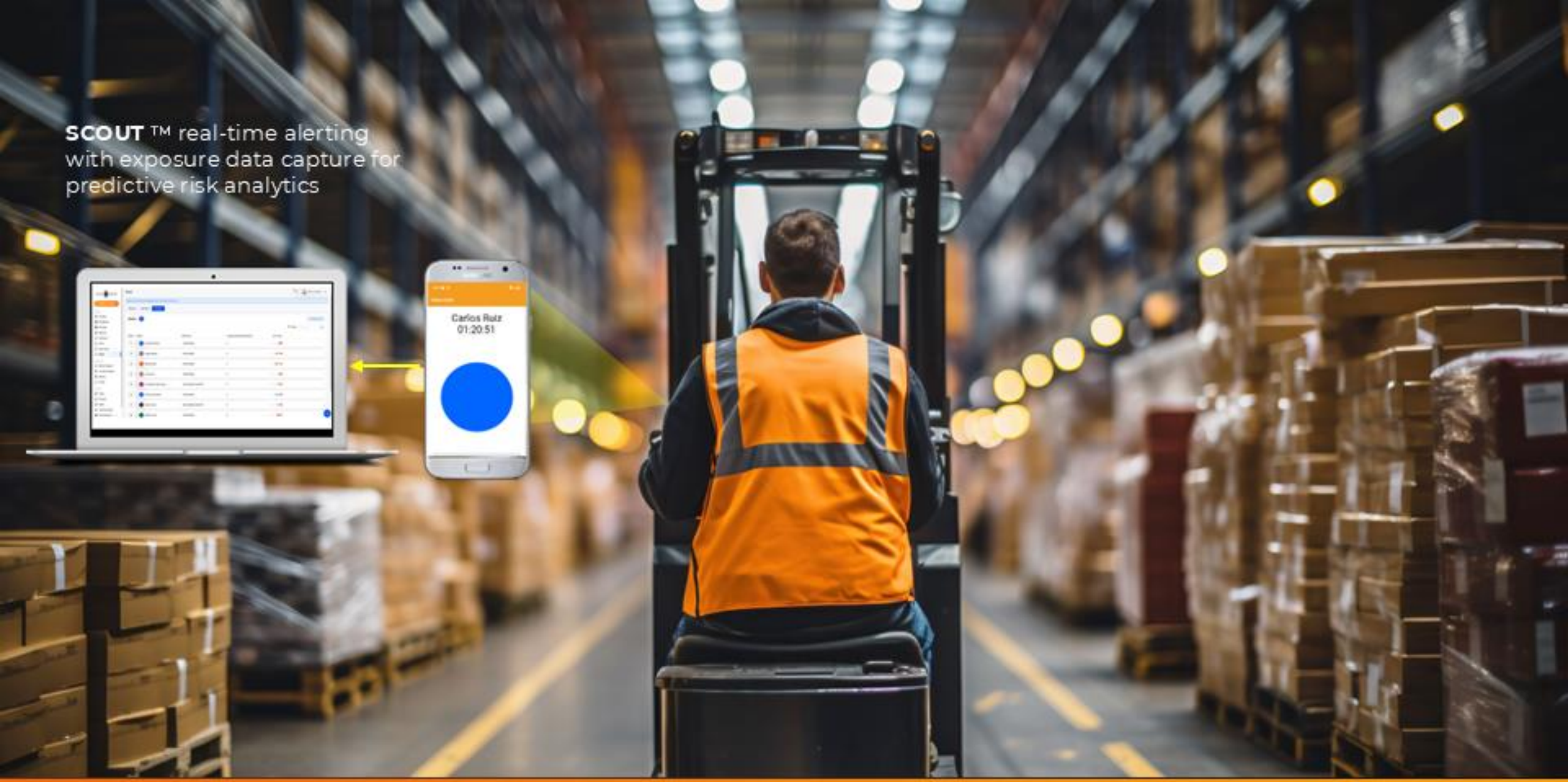

Forklift Safety With SCOUT™

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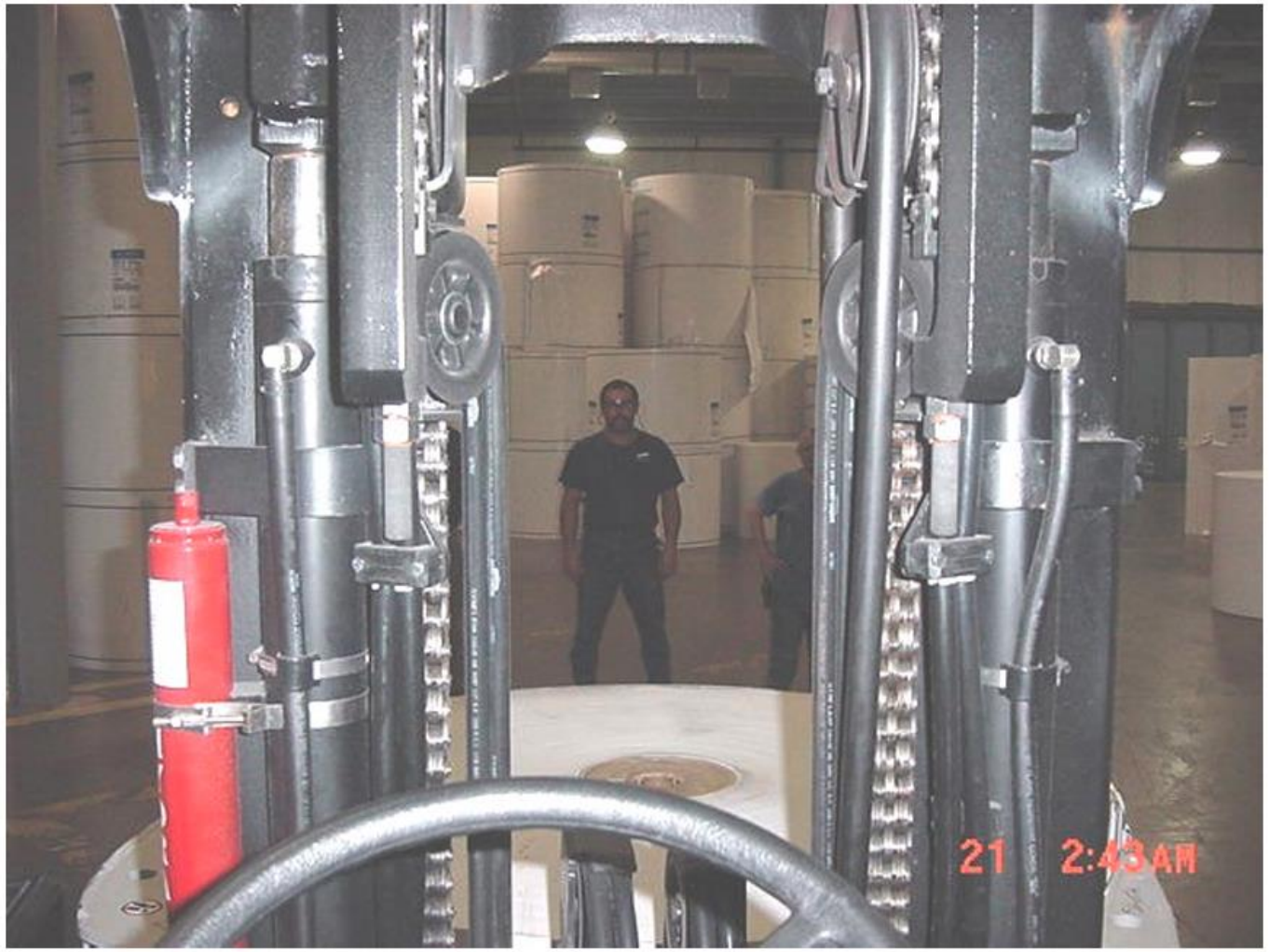
“MākuSafe has delivered a very practical, easy, and useful solution in Scout.

It has helped us reduce forklift-pedestrian interactions by 86% within six months, without sacrificing productivity of drivers or workers on foot.

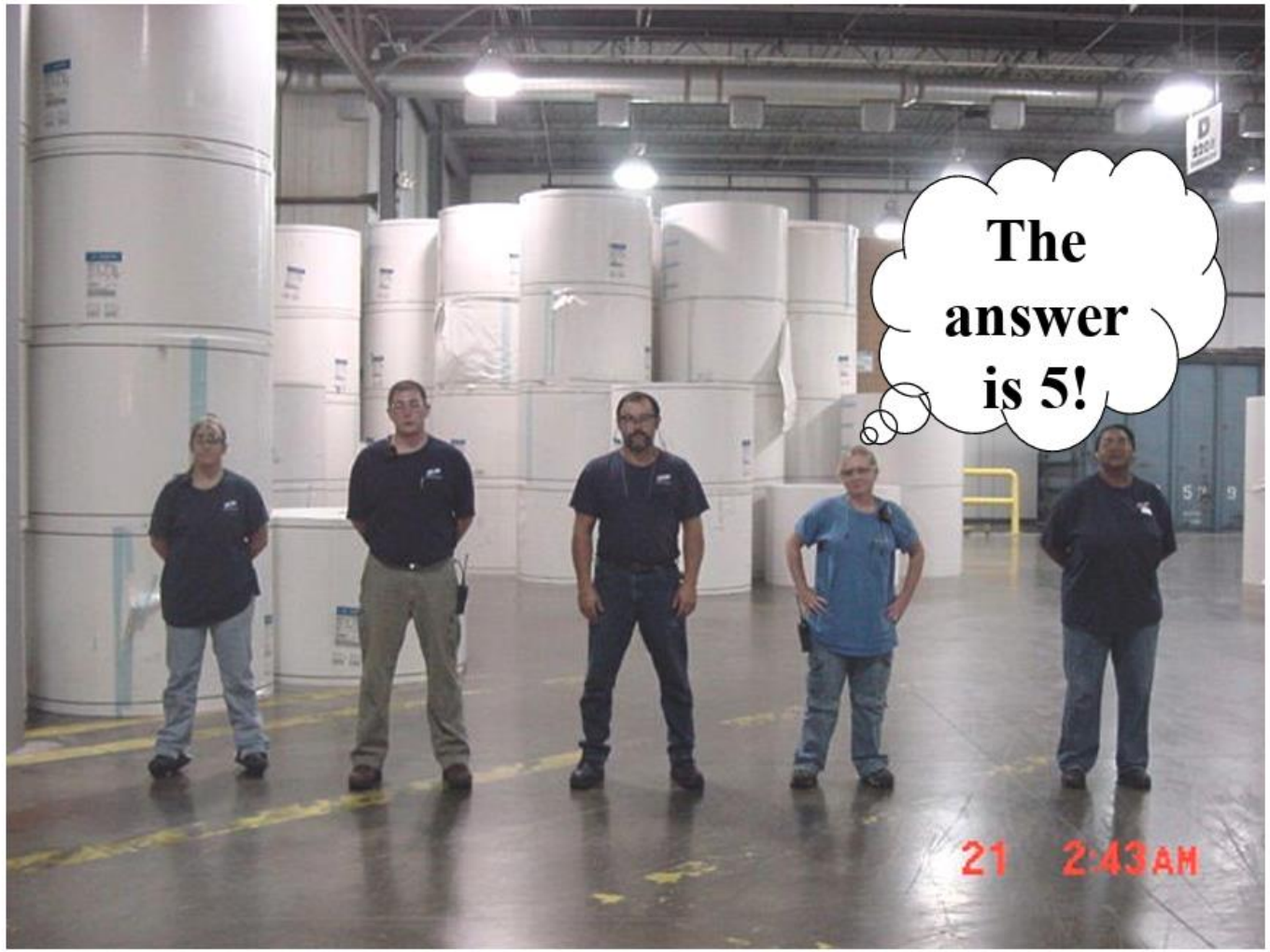
We have been able to use actionable insights delivered by Scout to re-engineer work processes and eliminate risk!”

- Regional Logistics EHS Manager

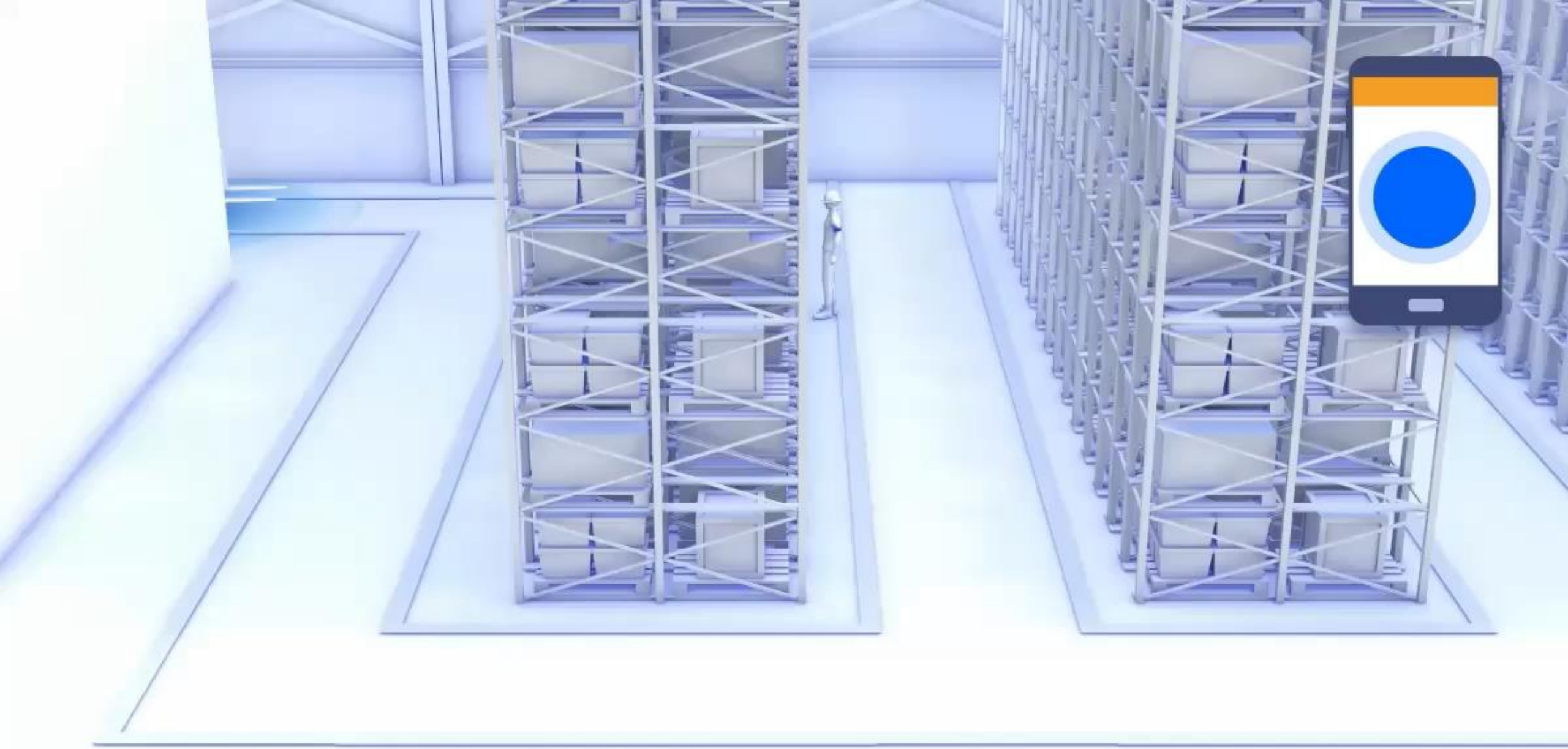
* Labor Savings Alone: Average productivity gains of 6% resulted in over $700,000 in annual labor savings per site, delivering significant return on investment



How many people do you see??



OSHA Occupational Safety and Health Administration



Forklift Safety with Scout ™

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EGGER OSB
EGGER

MĀKUSAFE

Is Wearable Safety Technology Right for Your Organization?

·**Begin with why?** What challenges are you trying to address, how will we measure.

·**Cross-Functional Value:** Look for tools that provide benefits across safety, operations, HR, and risk - maximizing internal stakeholder buy-in.

·**Worker-Centric Design:** Choose solutions designed for comfort, minimal disruption to workflow, and engagement rather than surveillance.

·**Protects Worker Privacy:** Leading solutions collect no PII or GPS, focusing on *conditions*, not individuals, to build trust and support adoption.

·**Economical with High ROI Potential:** Wearables help reduce injuries, claims, and downtime - unlocking real cost savings and productivity gains.

·**Actionable, Understandable Data:** Real-time insights from wearables are clear, easy to interpret, and immediately useful for proactive safety management. Platforms should be intuitive for supervisors to interpret and act upon, even without deep technical expertise.

·**Culture-First Deployment:** Wearables are only effective if worn - leaders must communicate *why* they matter and inspire frontline participation.

·**Supports a Learning & Reporting Culture:** Empowers workers to notice, report, and prevent hazards - enhancing awareness, mindfulness, and safety ownership.

·**Integration Capabilities:** Existing safety systems and analytics platforms (e.g., SHMS, EHS dashboards).

·**Practical & Scalable:** The right wearables can be compact, non-intrusive, and easy to pilot - scaling across teams and locations as results emerge.

The Ally™ gathers & transmits data in real-time to the MākuSmart Cloud

Motion Detection

- Slips, Trips, and Falls
- Repetitive Motions
- Worker Physicality
- Forceful Exertion

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- Air Pressure
- Humidity
- Temperature

Battery

- 22 Hour Battery
- Multiple Shifts

QUESTIONS?

A Sensor-Packed Data-Gathering Ally™

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— Tom West

A roadmap to understand, adopt, & use wearable safety tech!

MĀKUSAFE

Thank You!

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OVERVIEW FLYER

PRODUCT SUMMARY

MANUFACTURING USE CASES

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Vice President, MākuSafe
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