



Your Mission, Our Purpose



Navigating Digital AI Transformation in EHS: Best Practices and Success Stories!

February 18th 2025



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Agenda

Session Description

Machine intelligence, including AI, machine learning, neural networks, and IoT, is revolutionizing Environmental, Health, and Safety (EHS). The session will illustrate the practical application of AI technology in diverse operational environments through various case studies and success stories that highlight the transformative power of advanced technologies, their impact on EHS management, and ethical considerations related to data privacy.

Attendees will benefit from real-world examples and learn from experienced EHS leaders about leveraging technological innovations to drive improvements and achieve greater advancements in the field. Don't miss this opportunity to revolutionize your organization's approach to technology and drive growth in the digital era.

Agenda

- 2:00 – 2:10 Kick-off & AI Market insights
- 2:10 – 2:25 Quick Tour & AI Demonstration
- 2:25 – 2:45 Navigating Digital AI Transformation: GE Vernova EHS Best Practices
- 2:45 – 3:00 Q&A & Closing





AI's Progression: Understanding It's Role and Influence in EHS

Artificial Intelligence (AI) is a branch of computer science involved with the design of computers, programmed devices and software applications having the ability to imitate human intelligence and thought. It encompasses various subfields, including machine learning and natural language processing, to simulate cognitive functions and improve performance over time.



2021: Rapid Advancements

AI models like GPT-3 and DALL-E illustrate large language models and generative AI.



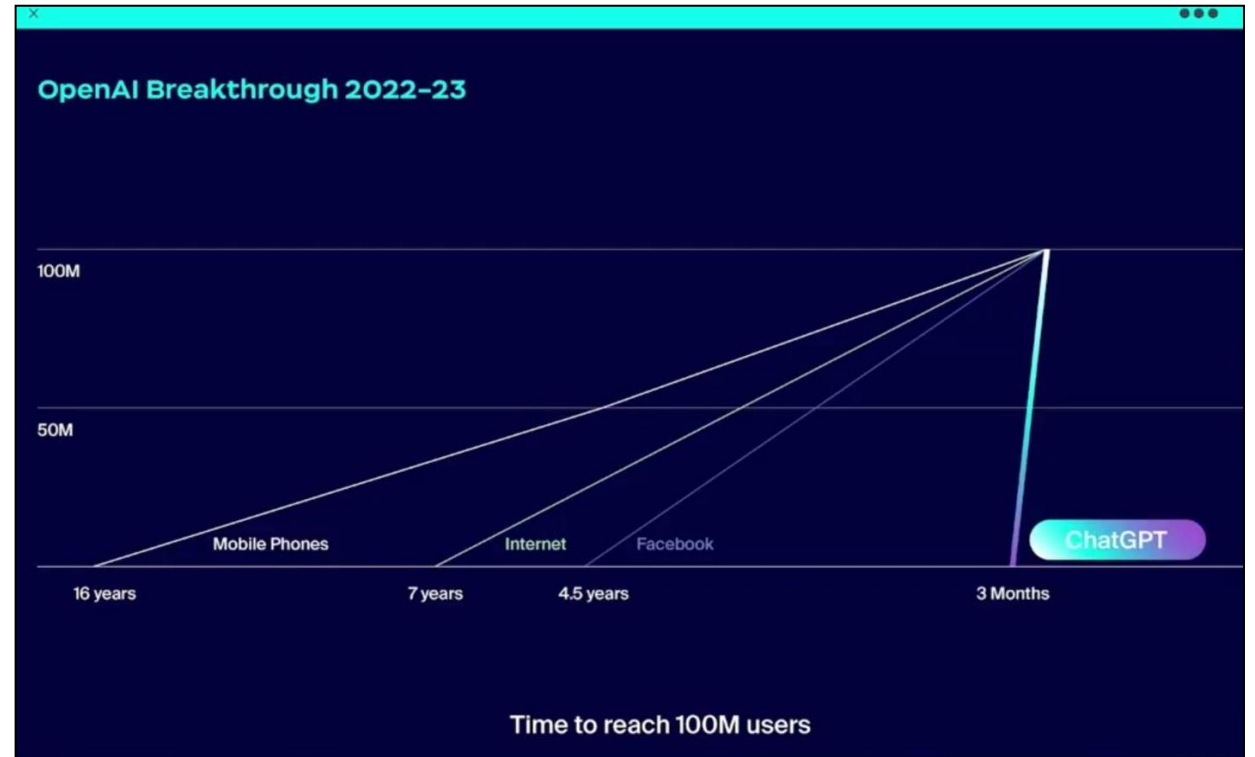
2022: AI Goes Mainstream

Implementation of AI-powered chatbots, virtual assistants, and image generation tools are now widely accessible to the public.



2023 – 2024: AI Tackles Complex Problems

AI is being used to address global challenges in EHS, healthcare and finance.



Increased Adoption in Various Domains:

EHS

AI has been adopted in EHS through the use of predictive analytics, wearables, and automation for monitoring safety conditions.

Healthcare

AI-powered diagnostics, drug discovery, and personalized medicine transform patient care.

Transportation

Autonomous vehicles, traffic optimization, and logistics automation revolutionize mobility.

Finance

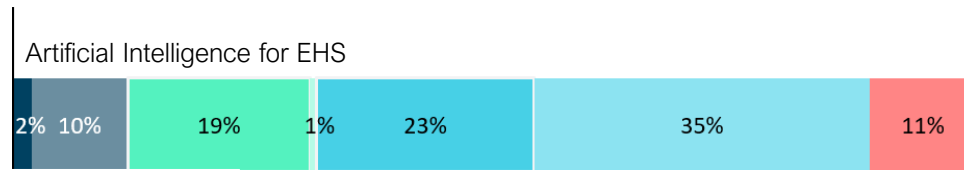
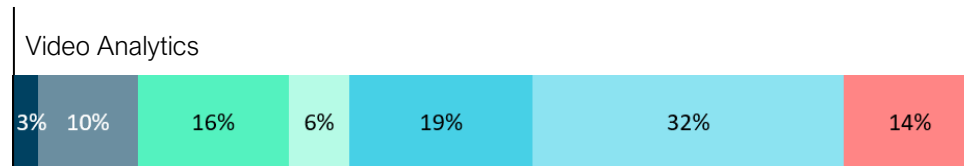
AI-driven investment strategies, fraud detection, and risk management improve financial decisions.



EHS AI Market Insights

Verdantix Digital Technology Adoption Report: August 2024

EHS Leaders: To what extent will your firm roll out the following digital technologies in 2024?



- Fully deployed across applicable areas across the organisation
- Already widely rolled-out across the organisation
- Partially rolled out, looking to increase
- Partially rolled out, not looking to further disseminate technology
- Piloting technology
- No current plans to roll out
- I don't know

verdantix

General AI EHS Deployment Trends

- ✓ 30% have deployed AI technology
- ✓ 25% partially rolled out and piloting AI technology
- ✓ 45% aren't sure yet

EHS Leaders Engaging with Artificial Intelligence

- ✓ 12% already deployed AI across their organization
- ✓ 19% looking to increase implementation

Video Analytics

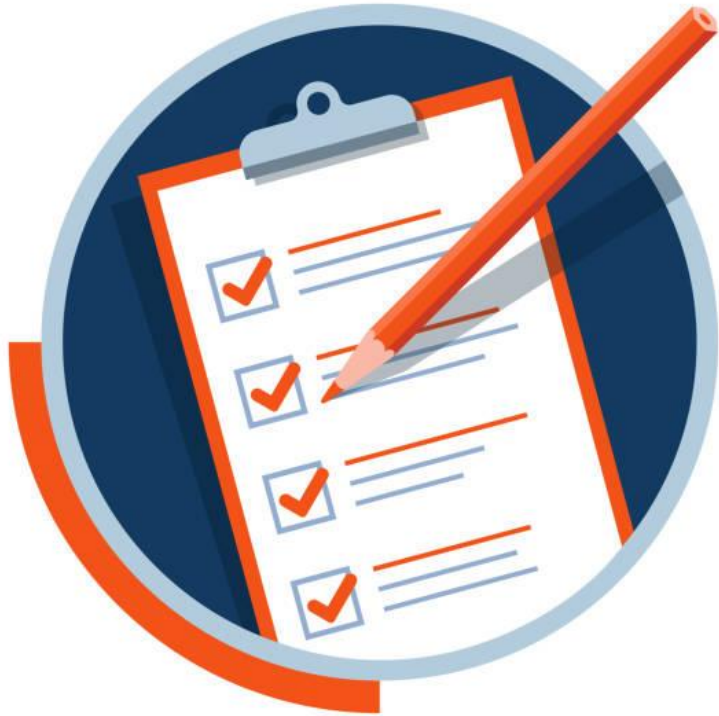
- ✓ 13% already deployed
- ✓ 19% actively rolling out

“AI Won't Replace Humans – But Humans With AI Will Replace Humans Without AI”

Karim Lakhani, Co-chair of the Digital Data Design Institute at Harvard and Professor at Harvard Business School



Share Your Perspectives



Take a poll!

Where are you on your Artificial Intelligence Journey?

- Implementing
- Actively Exploring
- Observing

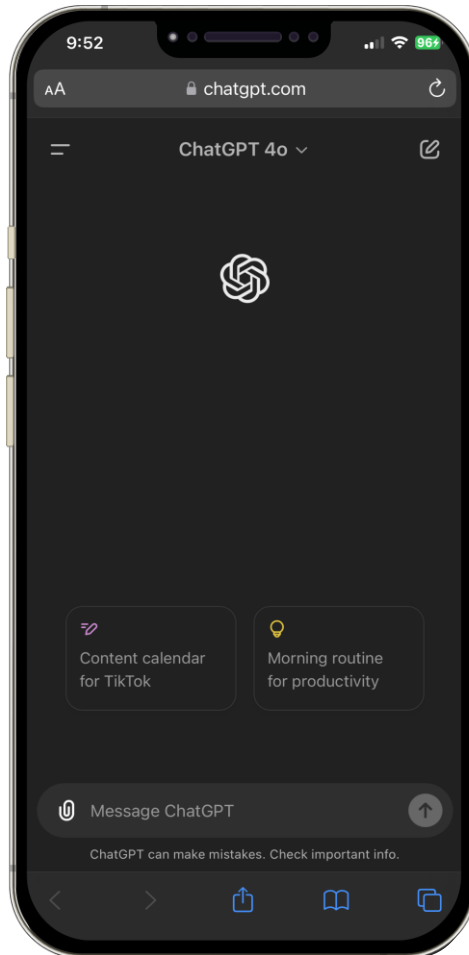
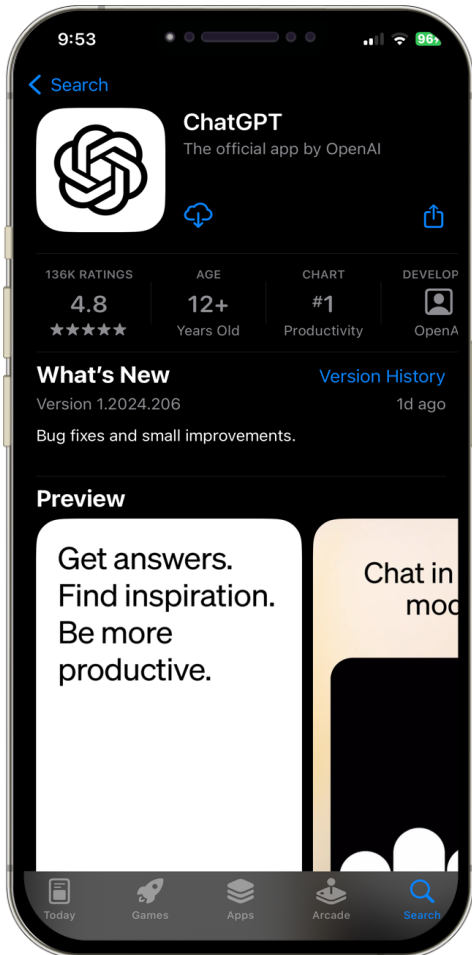
How are you using AI today?

What Can ChatGPT Do for You?

Reduce time spent manually researching and searching various resources for answers.

Download ChatGPT on Your Device Now!

Or Type in this URL: <https://chat.openai.com/> in your browser



Using ChatGPT

This tool can be used in many ways, from writing an email to planning a trip to identifying risks in a single image!

Tips on creating your prompts:

- Be Clear and Specific: Clearly state what you need in your prompt to avoid ambiguity.
- Specify the context, required details
- Ask Direct Questions: Formulate your prompt as a direct question or set of instructions.

Let's try it out now!

Using ChatGPT to Analyze Risk in a Picture




What can I help with?

 Message ChatGPT 


 Create image

 Summarize text

 Help me write

 Brainstorm

More

ChatGPT can make mistakes. Check important info. 



Let's Take it a Step Further: Translating the Summary into PowerPoint

crucial for coordinated movement and safety, especially when handling machinery and heavy materials.

Recommendations for Improvement:

- Ensure that all workers wear gloves to protect against concrete exposure.
- Cover or mark tripping hazards like exposed cables and rebar.
- Make sure workers have stable footing, possibly by creating temporary platforms or leveling the area before work.
- Confirm that all workers have suitable protective footwear to avoid foot injuries.

Overall, the workers seem to be following some important safety protocols, but there are additional steps they could take to enhance safety on the site.



Message ChatGPT



ChatGPT can make mistakes. Check important info.

How Can You Use AI

Integrate AI into your company processes

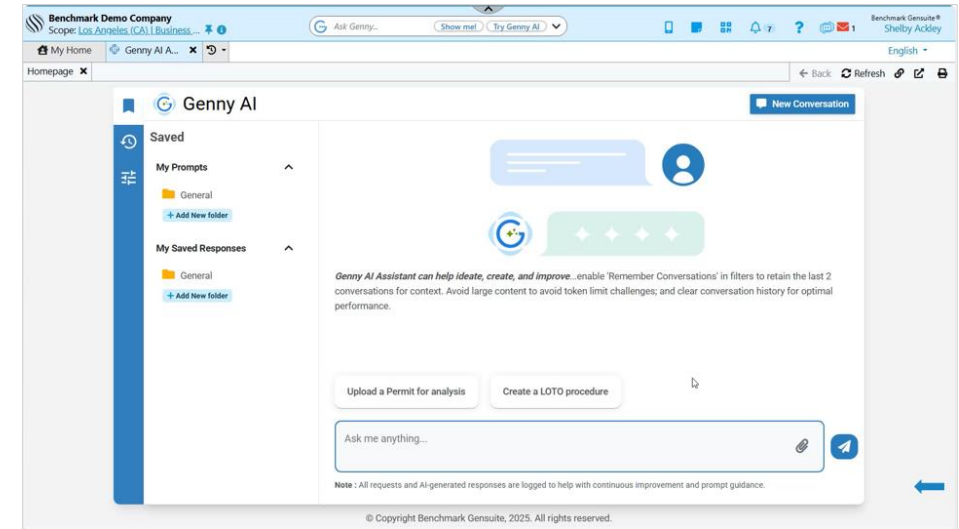
Securing Sensitive Data

- Companies are increasingly deploying AI models on their own internal servers or private cloud environments to maintain data privacy
- Hosting AI models on internal servers keeps data within the company, minimizing data breaches

Implementing AI

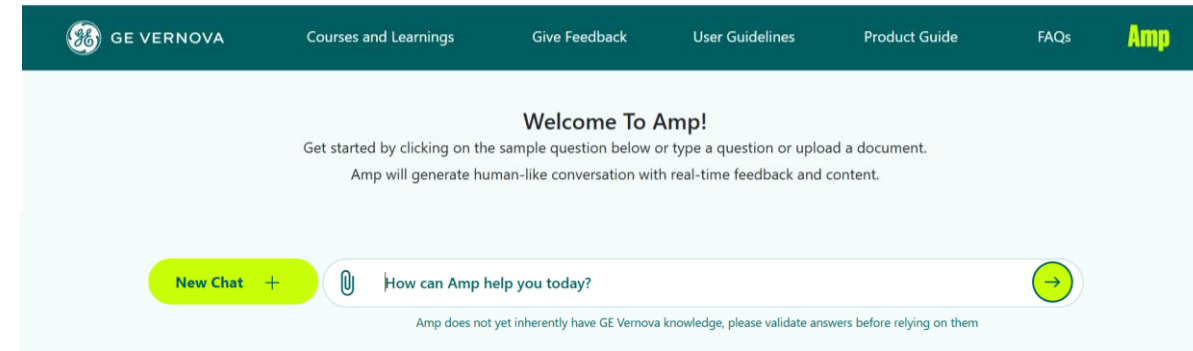
- Many AI services offer APIs that allow companies to securely connect AI functionality into their own systems and applications
- Software Development Kits provide tools and libraries that make it easier to integrate AI services into applications
- Host your AI model on internal servers or private cloud platforms like AWS, Google Cloud or Azure. This will keep all associated data within company's firewall

Benchmark's TeamGPT Genny AI Assistant



Powered by AWS Bedrock OpenAI

GE Vernova's AMP



Genny[®] AI: Integrated AI Solutions for EHS and Sustainability

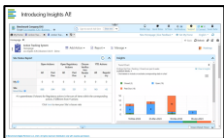
Functional domain-centric AI capabilities
 leveraging cutting-edge Large Language Models (LLMs), fit-for-purpose AI Models, and partner AI solutions

“Helper” AIs

Assist Users with tasks and responsibility execution

- Generate summaries
- Extract insights, and predict trends
- Flag data irregularities
- Interactive purpose-built bots
- Streamline forms; auto-fill input fields
- Assist in intelligent task prioritization

Insights AI



Describe It w/ Writing Help AI ★



Doc Summary AI



Sustainability & Disclosure Reporting AI



Significant Incident Communication AI



Optical Character Recognition



“Model” AIs

Specialized assessments and decision support

- Real-time analysis & alerting
- Risk assessment & mitigation strategies
- Image & video AI analysis

PSE AI & Risk AI ★



Computer Vision ★



Currently Partnering with:

3motionAI

avathon.

GLYNT.AI

Stantec

Protex AI

DataRocking

Interaptix
AGGREGATED REALITY



PRACTICAL AI APPLICATIONS

Safety Oculus

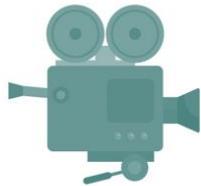
Safety Oculus

- *Proactive evaluation of unsafe conditions and behaviors vs. standards*
- *Leverages AI technology to identify and evaluate concerns, to learn and mitigate hazards and prevent incidents*

How it Works...



avathon.



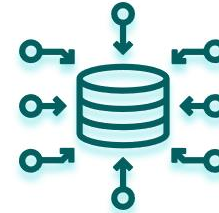
ACQUIRING THE IMAGE

Live video feeds from Camera are captured for analysis



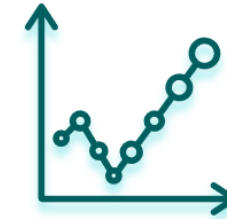
ANALYZING THE IMAGE

The images, videos are fed into the Artificial Intelligence trained computer vision model for analysis and anonymization



DATA INSIGHT

The analyzed images are created as a concern report in the Gensuite application



CONCERN REPORT

A concern report is raised in Gensuite and report is analyzed as per site EHS policy

Computer Vision AI

Automated Reports

Notifications & Data Analytics

Real-time Notifications & Analysis

Concern Reporting
View Concern Report #857101

Concern Report #857101

Copy | Close | Edit | Delete | Print | PDF | Transfer

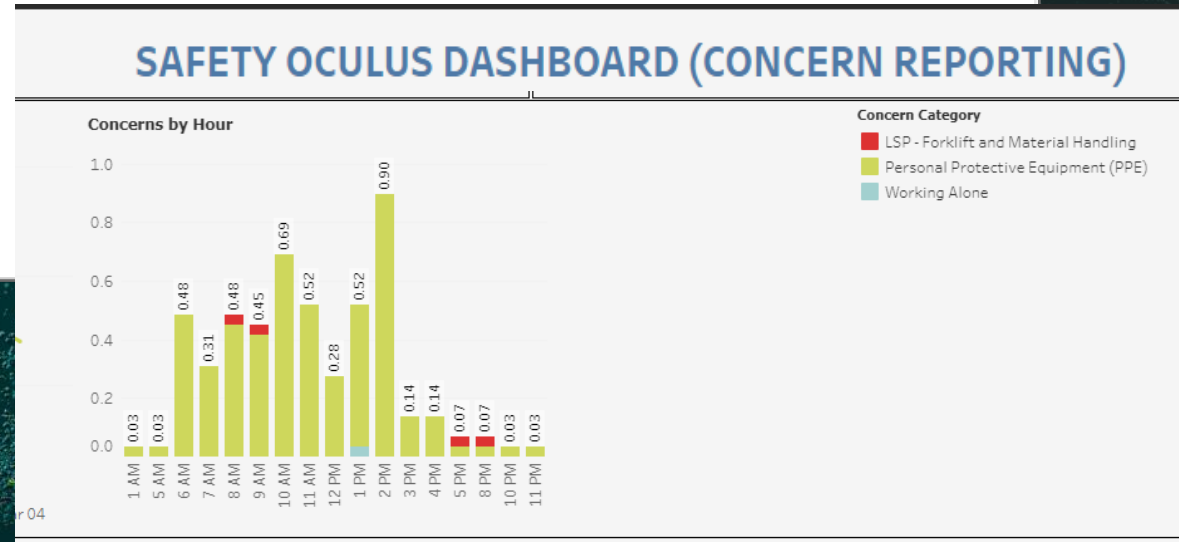
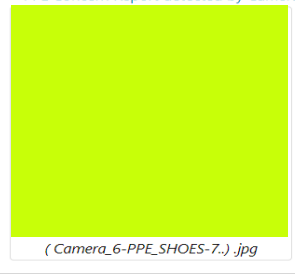
General Report Details

Type	Safety Concern	Dept	GBR-Generator Blades Rotor
Date	18-Oct-2022	Time	12:09 PM
Description	Worker was not wearing required and proper PPE (PPE_SHOES). This EHS concern was detected by Camera 6 at Blade - 24F, and reported automatically through computer vision system. The photo snapshot of the concern can be accessed through the link in the Attachments section.		
Actions Taken To-Date			
Was the Concern addressed (Find it Fix it?)	No	Recommendations for Follow-up	
What action was taken?			
Multiple CC	ernesto.ugalde@gensuitellc.com, javier.reyna@gensuitellc.com, jenny.yu@benchmarkdigital.com,		

File Attachments

> PPE Concern Report detected by Camera 6 at Blade - 24F

- ✓ Real-time trigger Hazard Identification & Notification (audible / visual alarms)
- ✓ Automatic upload of concerns to Gensuite
- ✓ Benchmark Gensuite Tableau Dashboard for Data Analysis



PSE AI Advisor Practical Example



PSE AI Advisor

Incidents & Measurements

Event Overview

Event ID
Event Type
Event Category
How was Event first reported?
Dept
Initiator
Site Responder
Occurrence Location Type
Related Customer(s)

Regulatory Agency Reportable?
Property Damage
Potentially Severe Event (PSE)?
GPS Coordinates
PSE AI Advisor Recommendation

Photo(s) :

If the event is a PSE, why? What could have happened?
The falling power box landed in the area where a rigger would have been standing if the 72T had completed its positioning. (2 minutes later)

Yes
 (93% recommendation confidence rating)



[Edit](#) | [Copy](#) | [Add](#) | [Email](#)

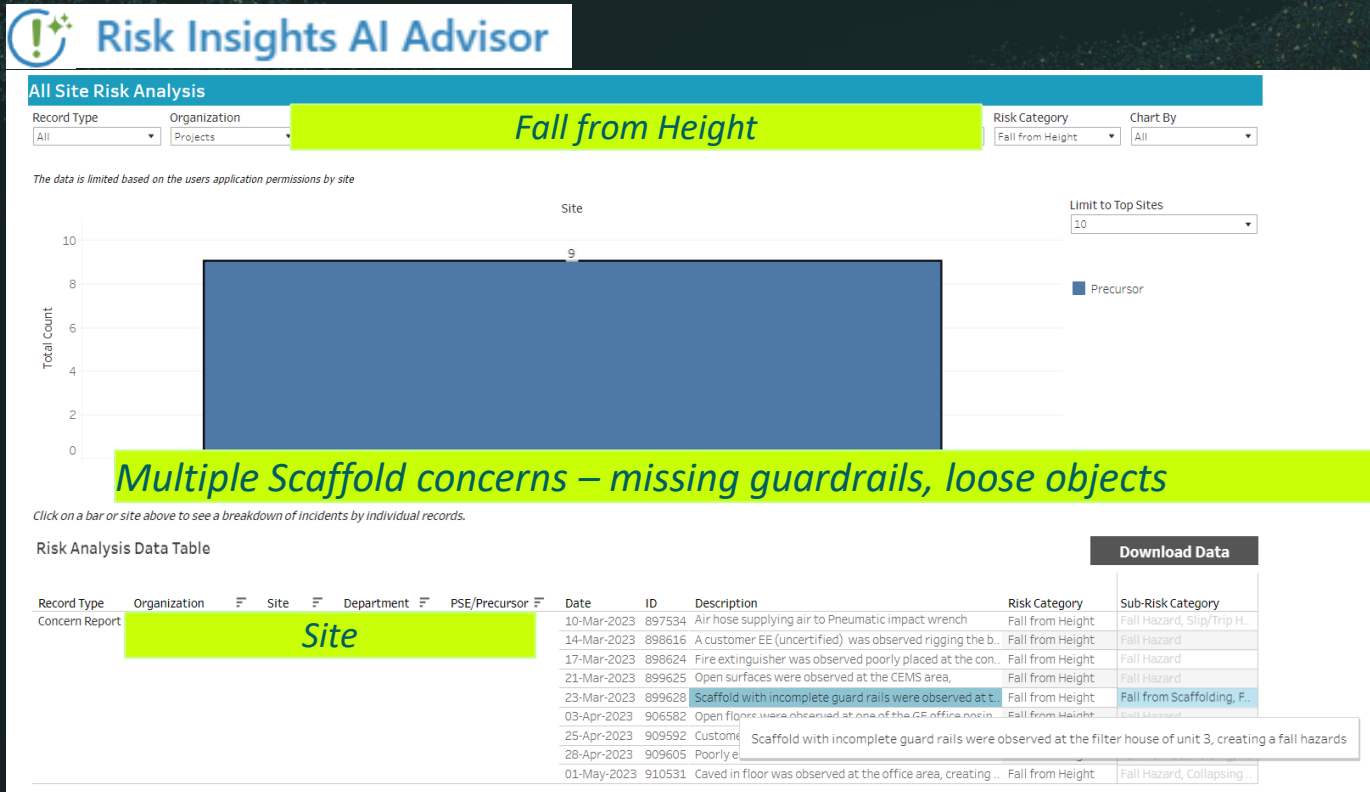
Event Date	12-Jan-2024 6:43 PM
Reported Date	17-Jan-2024 11:58 AM
Building	
Initiator Job Title(s)	Ops Leader
Site Responder Job Title(s)	Cell Leader
Shift	Second
Description and Scope of Event	Between retaining ring installation operations, it is common practice to pick the generator rotor up and spin it around 180° to position it next to the induction heating machine. EE1 was in the process of positioning the 72T crane and spreader beam to lift generator. EE2 decided that the smaller 15T gantry crane in the area needed to be relocated so that there was more room to perform the generator lift. EE2 was unaware that the 72T crane spreader beam was already positioned in the travel path of the 15T crane. While moving the 15T crane to the west, contact was made between the 15T crane and the cables of the 72T. The contact caused a festoon system on the 15T crane to break. As a result, the power box (5lbs) and cables, supported by the festoon, fell to the floor (20ft) striking the generator rotor that was to be lifted.
Immediate Response	Employees notified department leads, cell leader and site EHS. 15T crane was isolated and a crane inspection contractor came to assess damage
Event Level	Near Miss Level Descriptions
Project Phase	

PSE AI Advisor More Insights

Severe Injury Match Count (Industry-wide Knowledge Base)	7395	Fatality Match Count (Industry-wide Knowledge Base)	855
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Risk Insights AI Advisor Practical Examples

Site Level Insights | Predict & Prevent



THE LIFE SAVING RULES
WORK AT HEIGHT

Assess, prevent and protect against falls from height

- I confirm scaffolds, personnel lifts, platforms and ladders are inspected, and barriers and guardrails are in place
- I verify an exclusion zone is established
- I inspect my personal fall protection equipment and confirm rescue plan
- I maintain 100% tie off to approved anchor point while outside protective barriers
- I secure tools and materials to prevent dropped objects

WE START WORK ONLY WHEN IT'S SAFE, AND STOP WHEN IT'S NOT.

Work Platforms and Scaffolding

I confirm scaffolds, personnel lifts, platforms and ladders are inspected, and barriers and guardrails are in place

Analyze → Predict → Prevent



THE LIFE SAVING RULES ARE PUBLIC!

- ➔ To raise industry-wide safety standards
- ➔ To ensure the tools and knowledge to work safely, are always available
- ➔ To protect everyone - everywhere!



Business Level Insights | Predict & Problem Solve

Risk Insights AI Advisor

All Site Risk Analysis

Record Type: All | Organization: (All) | Sub-Organization: (All) | Site: (Multiple values) | **Electrocution Risk** | Risk Category: Electrocution Risk | Chart By: All

The data is limited based on the users application permissions by site

Site	Precursor	PSE	Total
Site 1	12	0	12
Site 2	4	2	6
Site 3	1	5	6
Site 4	4	2	6
Site 5	1	4	5
Site 6	2	3	5
Site 7	2	1	3
Site 8	1	2	3
Site 9	2	1	3

Click on a bar or site above to see a breakdown of incidents by individual records.

Risk Analysis Data Table Download Data

Record Type	Organization	Site	Department	PSE/Precursor	Date	ID	Description	Risk Category	Sub-Risk Category
Concern Report						31	Pallets are kept behind the electrical panel (MCC) in the ...	Electrocution Risk	General Elec..
						73	Walk in grit blast booth # 377 found water on electrical ..	Electrocution Risk	General Elec..

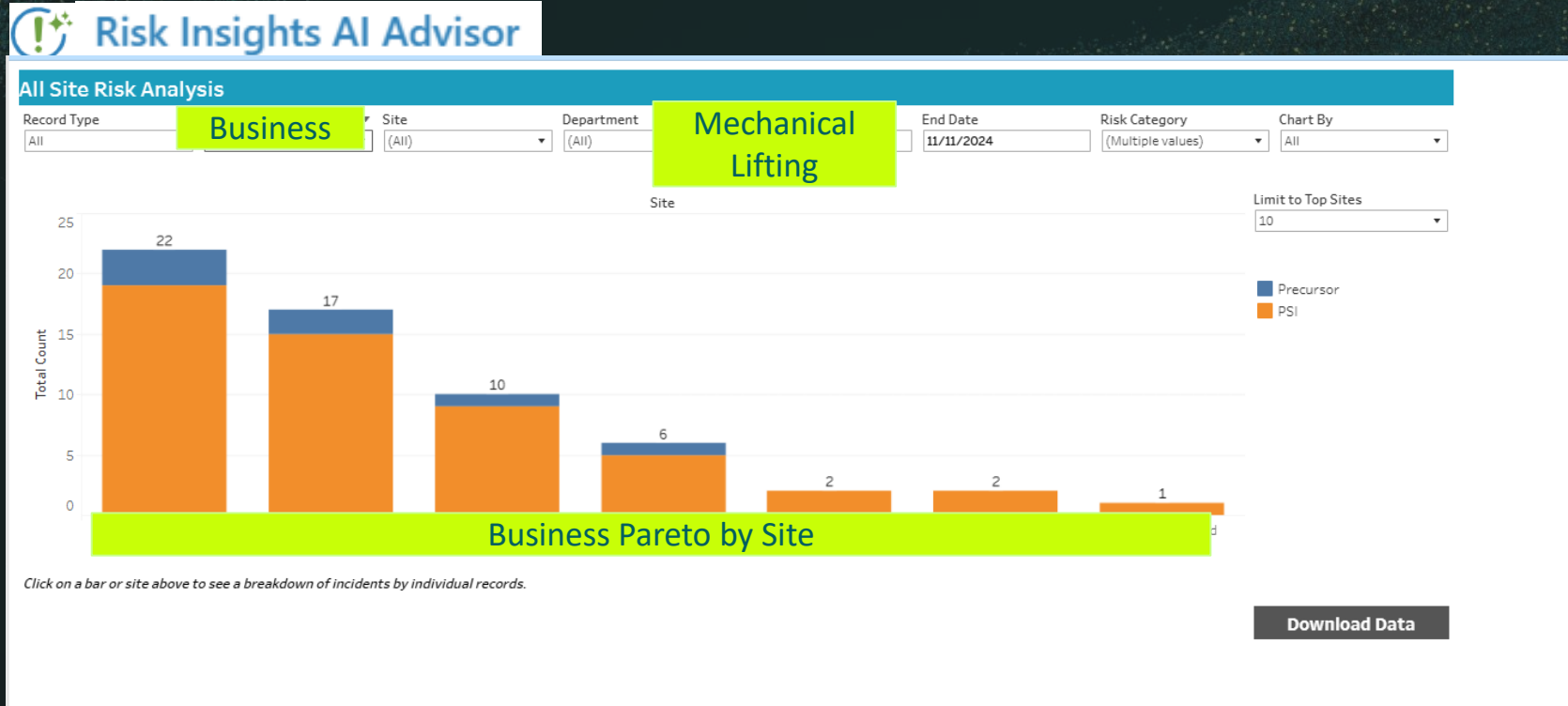
Water in electrical panel in from roof leak

Walk in grit blast booth # 377 found water on electrical panel due to leak on the roof and also the water reached inside the booth and potential could lead to Electrical shock if it's get contact with electrical items.

ELECTROCUTION RISK

- ✓ Action taken from an Arc flash Electrical Event
- ✓ Applied Risk AI to identify other potential Electrocution Risks specific to water infiltration in electrical panels
- ✓ Business Pareto used to identify common maintenance issues, problem solve and plan for design fix

Business Level Insights | PSE Reporting



MECHANICAL LIFTING RISK

- Precursors (PSE leading indicator data) being under-reported compared with number of potential PSEs
- Actual PSEs are being under-reported (PSI AI Advisor reporting significantly more PSEs) = Events are being reported but not identified as PSEs

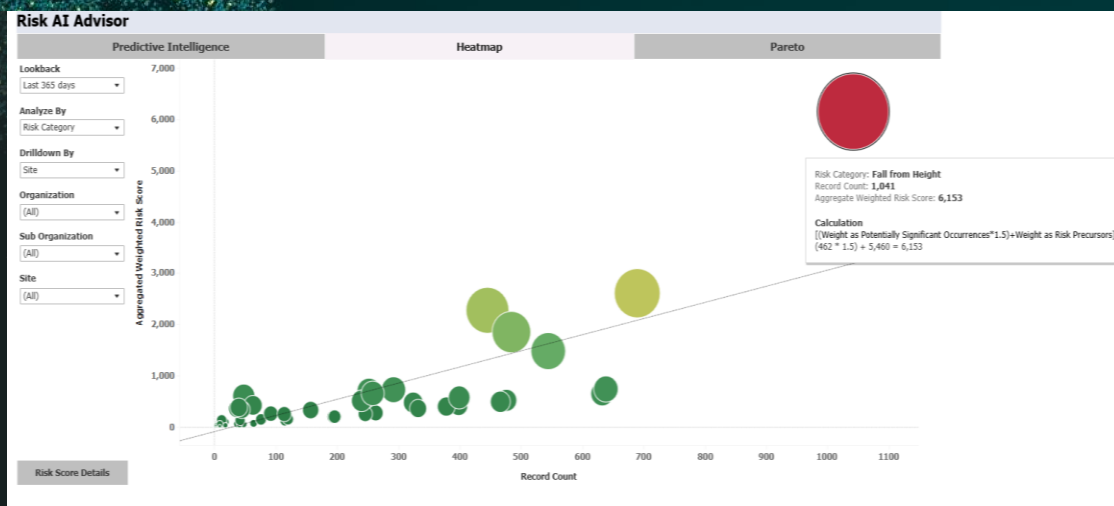
What Good Looks Like...



ALL SEVERE RISK CATEGORIES

- ✓ **Good Reporting Culture**
 - Higher ratio of PSE precursors reported to the ratio of PSEs
- ✓ **Good capture & recognition of PSEs**
 - ✓ Alignment between levels of PSEs from PSI AI advisor to actual PSEs reported

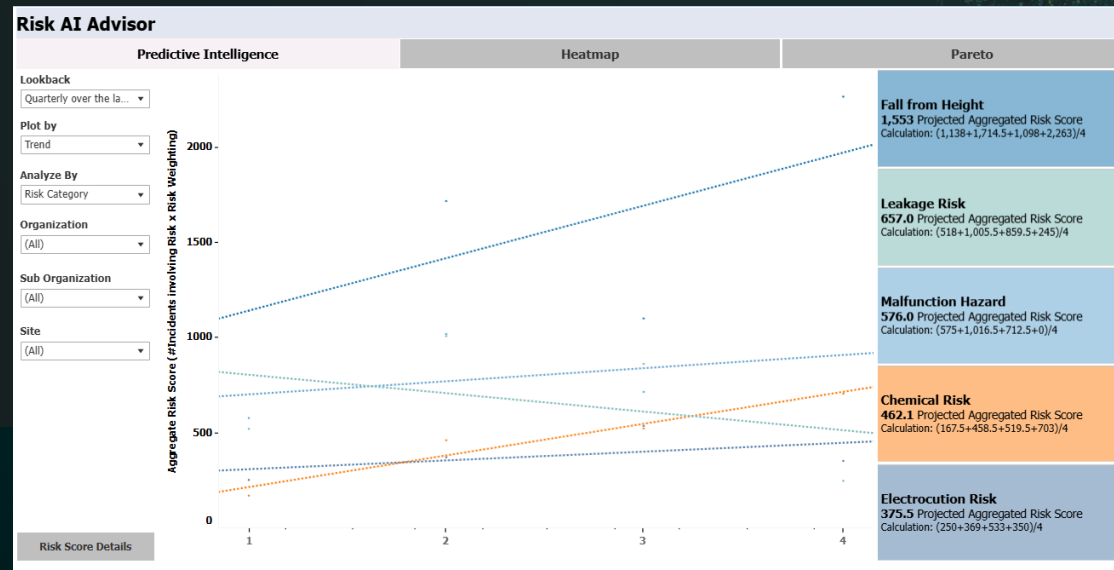
Predictive Analytics



Risk AI - Score Details

Risk AI Advisor - Score Details

Predictive Intelligence					Hi
Lookback	Risk Record Type	Risk Category	Risk Sub Category	Risk Sub Category Weig.	Percent
Last 365 days	Grand Total				9.0
Risk Record Type	All	Concern Report	Total		8.2
	All	Acid Exposure Risk	Total		4
Risk Category	All	Acid Exposure Risk	Inproper Star...	1	1
	All	Acid Exposure Risk	Utilization of A...	1	1
Risk Sub Category	All	Acid Exposure Risk	Potential Acid ...	1	1
	All	Acid Exposure Risk	Total		1
Organization	All	Acid Exposure Risk	Acid Exposure	1	1
	All	Acid Exposure Risk	Acid Exposure...	1	1
Sub Organization	All	Acid Exposure Risk	Acid Exposure...	1	1
	All	Acid Exposure Risk	Acid Storage...	1	1
Site	All	Acid Exposure Risk	Chemical Storage...	1	1
	All	Acid Exposure Risk	Fall Hazard, Ac...	1	1
Aerial Lift Risk	All	Fall from Height	Total		1
	All	Fall from Height	Fall from Height	1	1



Key Learnings

- **Predictive data analytics** applied to Leading Indicator data (Concerns/Stop Works)
 - Predict/Prevent the **next PSE** or **Severe Event**
 - Large CR/SW data volume narrow to the **critical few**
 - Identifies “**Missed Opportunities**” – affected by Human error/bias/language
 - Avoid reliance on drop-down menus/Tableau or manual processes for insights
- **Risk Insights AI Advisor** has better performance when it is coupled with **Describe-It AI** and **PSE AI Advisor**

Insights

- Continue to learn, apply, use... quick/easy data insights...Heat Maps, Roadmaps, Action Plans into **Daily Management**
- Flag / Notification of **Repeat Events**
- Learning Journey “What good looks like...”
- Evaluate the ratio of valuable concern/stop works reported – focus resources on **Life Saving** opportunities
- Apply **Risk Insights AI Advisor** for EHS Management System & Life Saving Rule Audit/Validations
- Next Phase – Risk AI Advisor **Actions** to prevent Severe Events

