

AI for Industrial Safety

Executive Workshop for EHS Professionals

Sensor Applications in Industrial IoT (IIoT)



Technology Roadmap and Maturity

Source: Verdantix

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EHS Technology Roadmap

- Maturity Phases

1. Research & Development

Early innovation with experimental prototypes and limited pilots; commercial viability not yet established.

2. Launch

Market entry phase where solutions demonstrate initial business value and competitive positioning emerges.

3. Growth

Accelerated adoption driven by validated use cases and expanding ecosystem participation.

4. Maturity

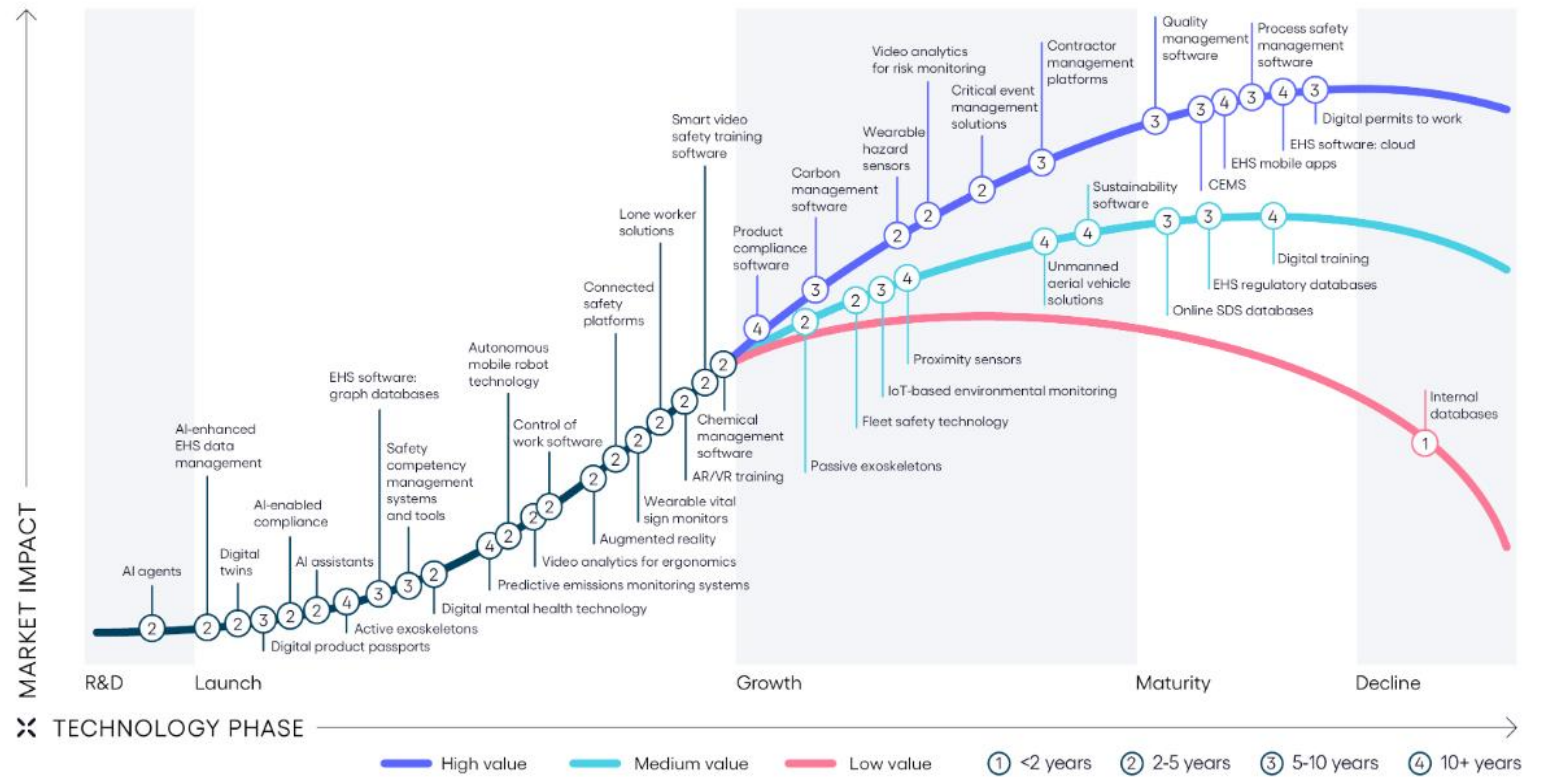
Mainstream adoption with stable demand, standardized solutions, and consolidated vendor landscape.

5. Decline

Market contraction as superior technologies drive substitution and legacy usage diminishes.

EHS Technology Roadmap

Tech Roadmap for EHS technologies



Source: Verdantix (2025)

Source: Verdantix analysis

EHS Technology Roadmap

- By Solutions

Technologies	Maturity phase	Business value	Pace of innovation
Compliance, regulatory and product management			
AI-enabled compliance	Launch	Promising	2-5 years
Carbon management software	Growth	High	5-10 years
Digital product passports (DPPs)	Launch	High	5-10 years
EHS regulatory databases	Mature	Medium	5-10 years
Product compliance software	Growth	High	10+ years
Quality management software (QMS)	Mature	High	5-10 years
Sustainability software	Growth	Medium	10+ years
Data analysis, monitoring and platforms			
AI-enhanced EHS data management	Launch	High	2-5 years
Continuous emissions monitoring systems (CEMS)	Mature	High	5-10 years
Digital twins	Launch	Medium	2-5 years
EHS software: cloud	Mature	High	10+ years
EHS software: graph databases	Launch	Promising	5-10 years
Internal databases	Decline	Low	Less than 2 years
IoT-based environmental monitoring	Growth	Medium	5-10 years
Predictive emissions monitoring systems (PEMS)	Launch	Medium	10+ years
Proximity sensors	Growth	Medium	10+ years
Unmanned aerial vehicle (UAV) solutions	Growth	Medium	10+ years
Video analytics for risk monitoring	Growth	High	2-5 years

Source: Verdantix (2025)

EHS Technology Roadmap

- By Solutions

Mobile worker solutions			
Augmented reality (AR)	Launch	Low	2-5 years
Autonomous mobile robot (AMR) technology	Launch	High	2-5 years
Connected safety platforms	Launch	Medium	2-5 years
EHS mobile apps	Mature	High	10+ years
Lone worker solutions	Launch	Medium	2-5 years
Safety and workflow management			
AI agents	Research and Development	Promising	2-5 years
AI assistants	Launch	Promising	2-5 years
Chemical management software	Launch	High	2-5 years
Contractor management platforms	Growth	High	5-10 years
Control of work software	Launch	High	2-5 years
Critical event management (CEM) solutions	Growth	High	2-5 years
Digital permits to work	Mature	High	5-10 years
Fleet safety technology	Growth	Medium	2-5 years
Online SDS databases	Mature	Medium	5-10 years
Process safety management (PSM) software	Mature	High	5-10 years

Source: Verdantix (2025)

EHS Technology Roadmap

- By Solutions

Worker health and wellbeing			
Active exoskeletons	Launch	Low	10+ years
Digital mental health technology (DMHT)	Launch	Medium	2-5 years
Passive exoskeletons	Growth	Medium	2-5 years
Video analytics for ergonomics	Launch	Promising	2-5 years
Wearable hazard sensors	Growth	High	2-5 years
Wearable vital sign monitors	Launch	Medium	2-5 years
Workforce training			
Augmented reality (AR)/virtual reality (VR) training	Launch	Promising	2-5 years
Digital training	Mature	Medium	10+ years
Safety competency management systems and tools	Launch	Medium	5-10 years
Smart video safety training software	Launch	Medium	2-5 years

Source: Verdantix analysis

Source: Verdantix (2025)

Autonomy / Agency Spectrum in AI System



Quick mental model

- **AI Assistant** = Helpful friend who answers questions
- **AI Agent** = Reliable employee who completes assigned tasks
- **Agentic AI** = Competent manager who owns the entire goal and delivers the result

This progression is exactly why companies in 2026 are moving from **ChatGPT**-style assistants → **single agents** → full **agentic workflows** for real business impact.

AI Assistants for EHS

Definition: Cognitive engines leveraging **NLP** to provide context-aware actions or prescriptive plans

Maturity Phase — Launch Phase

77% of organizations have deployed chatbots (Verdantix 2024)

Business Value (Promising)

Reduces human errors caused by fatigue (~13% of US workplace injuries)

Supports worker resilience and remote assistance without extra staffing

Enhances safety, compliance, and operational efficiency in EHS environments

Innovation Pace (2–5 Years)

Rapid improvements in **LLMs**, **retrieval-augmented generation**, and **GenAI** platforms

The image displays two side-by-side screenshots. The left screenshot shows a web-based incident management interface. The main heading is "Forklift nearly backed into pedestrian" with a sub-heading "INC0989 | Incidents". Below this, there are fields for "Brief Title" (Forklift nearly backed into pedestrian), "Date/Time of Incident" (01/09/2024 08:29 PM), and "Primary Person Involved" (Mike Case). Further down, there are fields for "Nearest Company Location/Site" (HSI HQ), "Location/Area Details" (The racking at the back of the warehouse, second row from the end), and "Attachment(s)" (N/A). The interface includes a sidebar with navigation options like Dashboard, Actions, Activity, Assets, Checklists, Documents, Incidents, Observations, and Reports. At the bottom, there is an "Investigation Summary" section with a search bar and a table listing items like "Donesafe Admin: Closing Summary" with a "Complete" status.

The right screenshot shows a chatbot interface. The chatbot asks, "Hi Preview! What can we help you with today?" and provides a "Get Support" button. It then says, "We would be happy to assist you. Please type your question below." and provides an "Add a member" button. The chatbot then asks, "Can you please clarify what you would like to add a member to?" and responds with "Bot - Just now." The chat interface includes a "Write a reply..." input field and icons for attachments, voice, and emojis.

AI Agents in EHS — Key Highlights

Definition

- AI agents are **autonomous software systems** that perceive their environment, collect data, and execute goal-oriented actions within human-defined boundaries.
- Unlike AI assistants, agents **self-determine actions** while escalating sensitive or high-risk decisions to humans.
- Represent a shift from *decision support* → *decision execution*.

Maturity Phase — Research & Development

Executive Implication controlled experimentation in 2025

Business Value — Promising but Emerging

- Near-term value : **administrative automation and operational efficiency**:
- Significant **future applicability to EHS workflows**

Strategic Impact on EHS Functions

- Potential to automate routine, rule-based practitioner activities.
- Enables scalable interaction with employees while maintaining human oversight.
- May reshape workforce roles from execution → supervision and governance.

Pace of Innovation (2–5 Years)

- **one of the most disruptive digital technologies** in EHS.
- Adoption dependent on:
 - Cost reduction of underlying AI models
 - Organizational trust and accountability frameworks
 - Maturity of AI governance and regulation
- Trust expansion will be reflected by gradually reduced operational constraints placed on agents.

From GenAI to Agentic AI (1 of 2)

- multiple sources (based material from Verdantix with collaboration with ChatGPT and Grok)

Aspect	AI Assistant	AI Agent	Agentic AI (Agentic System)	Example Use Cases of Agentic AI
Core Nature	Reactive conversational responder	Autonomous task executor (single entity)	Goal-driven outcome owner (often multi-agent orchestra)	Automatically runs an entire product launch: researches market, creates content calendar, books ads, monitors ROI, and adjusts strategy in real time until revenue target is hit
Autonomy Level	Low – waits for user prompts	Medium – can loop, use tools, follow instructions	High – independently sets sub-goals, makes decisions, recovers from failures	A personal CFO agent that receives “I want to save \$50k this year” and then creates budget, finds side-income opportunities, negotiates bills, and invests automatically
Scope & Focus	Single-turn or short conversation	Specific tasks or multi-step workflows	End-to-end outcomes & complex projects	Full software development: takes a product idea, writes specs, codes frontend + backend, deploys to cloud, writes tests, and launches a live MVP
Planning & Reasoning	None (or very basic chain-of-thought)	Basic planning (ReAct, tool calling loops)	Advanced multi-step planning, reflection, and replanning	Travel agent that books your dream 2-week trip in Southeast Asia: researches flights, visas, hotels, activities, creates daily itinerary, monitors price drops, and rebooks if better deals appear
Tool & Resource Use	Minimal or none (just knowledge cutoff)	Uses tools/APIs in a controlled loop	Dynamically discovers, spawns, and coordinates tools + sub-agents	Enterprise sales agent: scrapes leads, qualifies them, writes personalized emails, books meetings, updates CRM, prepares proposals, and closes deals with minimal human input

From GenAI to Agentic AI (1 of 2)

Aspect	AI Assistant	AI Agent	Agentic AI (Agentic System)	Example Use Cases of Agentic AI
Adaptability	None – stuck if prompt is unclear	Handles simple errors with retries	Self-corrects, changes strategy, learns from outcomes	Crisis-response agent for a brand: detects PR issue on social media, drafts responses, coordinates legal & PR teams (via sub-agents), monitors sentiment, and reports resolution
Memory & Learning	Short conversation context only	Session or simple vector memory	Long-term memory + reflection + continuous improvement	Personal life agent that over months: tracks health goals, books doctor appointments, adjusts meal plans based on bloodwork, finds workout partners, and reports progress every Sunday
Collaboration	None (single model)	Usually single agent	Multi-agent orchestration & dynamic team formation	Company “Growth OS” that spawns specialized agents (marketing, sales, product, finance) to collectively grow monthly recurring revenue by 25% in 90 days
Human Supervision	High – every response needs review	Medium – user triggers or approves steps	Low – user only sets high-level goal and receives final outcome	Legal contract agent: given “secure a \$2M vendor deal”, it drafts contract, negotiates terms with counterparty’s AI, flags risks, gets human sign-off only on final version, and executes e-signature

AI Readiness Assessment

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The Importance of AI Readiness in EHS

Key Challenges & Statistics

- Up to 95% of AI projects fail due to poor data readiness, misaligned metrics, and integration issues. Poor data quality is the #1 reason for 80% of AI projects failing before production.
- Gartner predicts 60% of AI initiatives without AI-ready data will be abandoned by 2026.
- In EHS, unprepared AI can lead to safety risks, compliance violations, or ineffective hazard predictions—costing lives, fines, and billions.

Benefits of Readiness

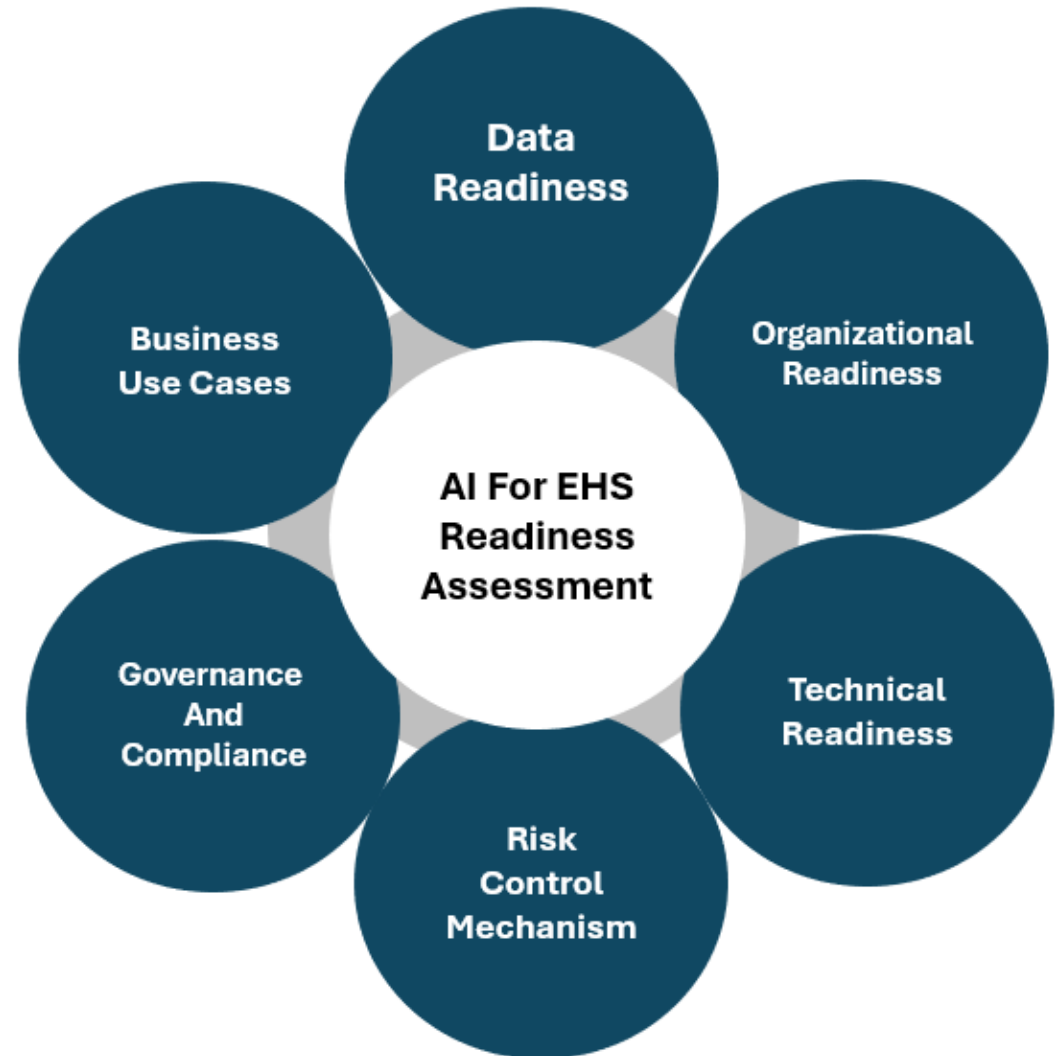
- Reduces failure rates by up to 47% with proper assessments.
- Enables trustworthy AI: Safe, ethical, and scalable for EHS applications like predictive maintenance or risk monitoring.

AI for EHS Readiness Assessment

The 6 Pillars (Wheel Diagram):

- Data Readiness: Quality, governance, privacy.
- Business Use Cases: Strategy, impact assessments.
- Technical Readiness: Talent, tooling, TEVV.
- Organizational Readiness: Literacy, accountability, reporting concerns.
- Governance & Compliance: Ethics, risks, policies.
- Risk Control Mechanism: Prioritization, monitoring, inventory, suppliers.

(enhanced with NIST AI RMF and ISO 42001)



TEVV – Test, Evaluation, Verification, and Validation (NIST)

- **What is TEVV?** Iterative processes to rigorously assess AI systems for trustworthiness and risk mitigation.

- **Key Goals (NIST Alignment):**

- Ensure validity, reliability, safety, security, explainability, fairness, and privacy.

- Provide evidence-based insights for risk management across the full AI lifecycle.

- **Why Critical for EHS AI?**

- Prevents failures in high-stakes safety predictions (e.g., hazard detection, compliance monitoring).

- Enables mid-course corrections and post-deployment monitoring.

- **Test** → Experiments, simulations, red teaming, adversarial testing.

- **Evaluation** → Metrics for performance, trustworthiness (fairness, robustness, safety, etc.), qualitative/quantitative assessment.

- **Verification** → Confirm system built correctly (meets specs, code/data integrity).

- **Validation** → Confirm system solves the right problem in real-world context (generalizes safely).

How to Apply the Tool: From Assessment to Action

- **Assessment Process:** Use discovery questions (e.g., "How do you manage third-party AI risks?") to score sub-criteria 0-5.
- Calculate averages: 0-29 Low (build foundations), 30-59 Moderate (develop roadmap), 60-75 High (scale AI safely).
- An assessment tool you can use

AI READINESS ASSESSMENT FRAMEWORK

This framework evaluates an organization's readiness for implementing AI successfully. Each criterion is scored from 0 to 5 based on defined maturity levels. [Draft Mei-Li Lin, PhD]

1. DATA READINESS





Sub-Criterion	What to Assess	Sample Discovery Questions	Scoring Guidance (0-5)
Data Availability	Presence of relevant structured and unstructured data	What types of data do you collect? Are these data sources centralized or siloed?	0 = No access, 5 = Multiple, centralized and accessible sources
Data Quality: Completeness	% of missing values, sparsity	What percentage of your data is complete?	0 = Sparse, 5 = Near 100% complete
Data Quality: Consistency	Uniformity in formats, values	Are formats and values consistent across systems?	0 = High inconsistency, 5 = Fully harmonized
Data Quality: Accuracy	Validity of recorded values	Has your data been validated against ground truth?	0 = Not validated, 5 = High trust in data
Data Quality: Timeliness	Freshness and update frequency	How often is the data refreshed?	0 = Stale, 5 = Real-time updates
Data Quality: Uniqueness	Duplicates and ID management	Do you have issues with duplicate records?	0 = Common duplicates, 5 = Fully deduplicated
Data Quality: Validity	Format compliance	Are there format rules for data fields?	0 = No validation, 5 = Strong enforcement
Data Quality: Relevance	Business use-case alignment	Is this data relevant to your AI goals?	0 = Misaligned, 5 = Highly relevant

Global AI Governance Human-Centered Ethics Checklist

- Policy alignment
- Data privacy & security
- Bias monitoring
- Human-in-the-loop validation
- Audit & accountability

Source: OECD AI Principles
<https://oecd.ai/en/ai-principles>

Values-based principles

	Inclusive growth, sustainable development and well-being >
	Human rights and democratic values, including fairness and privacy >
	Transparency and explainability >
	Robustness, security and safety >
	Accountability >

Recommendations for policymakers

	Investing in AI research and development >
	Fostering an inclusive AI-enabling ecosystem >
	Shaping an enabling interoperable governance and policy environment for AI >
	Building human capacity and preparing for labour market transition >
	International co-operation for trustworthy AI >

1. *Drift Detection and Lifecycle Management*
 1. Predictive models degrade as conditions evolve.
2. *Fairness, Bias, and Responsible Use Reviews*
 1. Expanding upstream indicators increases the risk of unintended bias or demographic skews.
3. *Explainability and Interpretability Requirements*
 1. As upstream signals grow more complex, interpretability becomes essential for model credibility.
4. *Decision Boundaries and Human-in-the-Loop Controls*
 1. Even in the most advanced AI-assisted environments, safety-critical decisions must retain human oversight.
5. *Data Pipeline Quality, Version Control, and Auditability*
 1. Model reliability depends on stable and well-governed data flows.

AI Enabled Technologies

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Digital Twin

Definition: Virtual replicas of physical assets or systems powered by **IoT real-time data feeds**

Enable live visualization, monitoring, and simulation of operational environments

Maturity Phase — Launch Phase

Innovation Pace (2–5 Years)

Accelerated by advances in:

- Sensors

- AI & analytics

- Computing power

Increasing enterprise investment
New solutions emerging (e.g., digital twins for product safety & traceability)

Bottom Line

👉 Digital twins are becoming a critical platform for **safer, smarter, and more resilient industrial operations**, with rapid innovation expected in the near term.



Autonomous Mobile Robots (AMRs)

Definition: Application of **AI (Machine Learning & Natural Language Processing)** to improve EHS data lifecycle:

- Data extraction & aggregation
- Data cleansing & quality improvement
- Insight generation & trend analysis
- Forecasting and decision support

Maturity Phase — Launch Phase

Bottom Line: AMRs are a **high-value, rapidly evolving technology** that improves safety, efficiency, and compliance while enabling humans to focus on higher-value tasks.

Business Value (High)

Enhances **safety, compliance, productivity, and quality**
Performs hazardous or repetitive tasks → reduces injuries, labor costs, and errors

Cobots ensure **safe human-robot collaboration**

RPA automates routine tasks; intelligent automation expands potential for end-to-end systems

Pace of Innovation (2–5 Years)

Improvements in **robotic intelligence, environment interaction, and human collaboration**

Adoption challenges: expertise gaps, risk management, and operational uncertainty

Early successes show **cost savings, efficiency, and safe human-robot collaboration**

Future: AMRs expected to handle **more complex tasks**, becoming integral in industrial environments

Edge Computing:

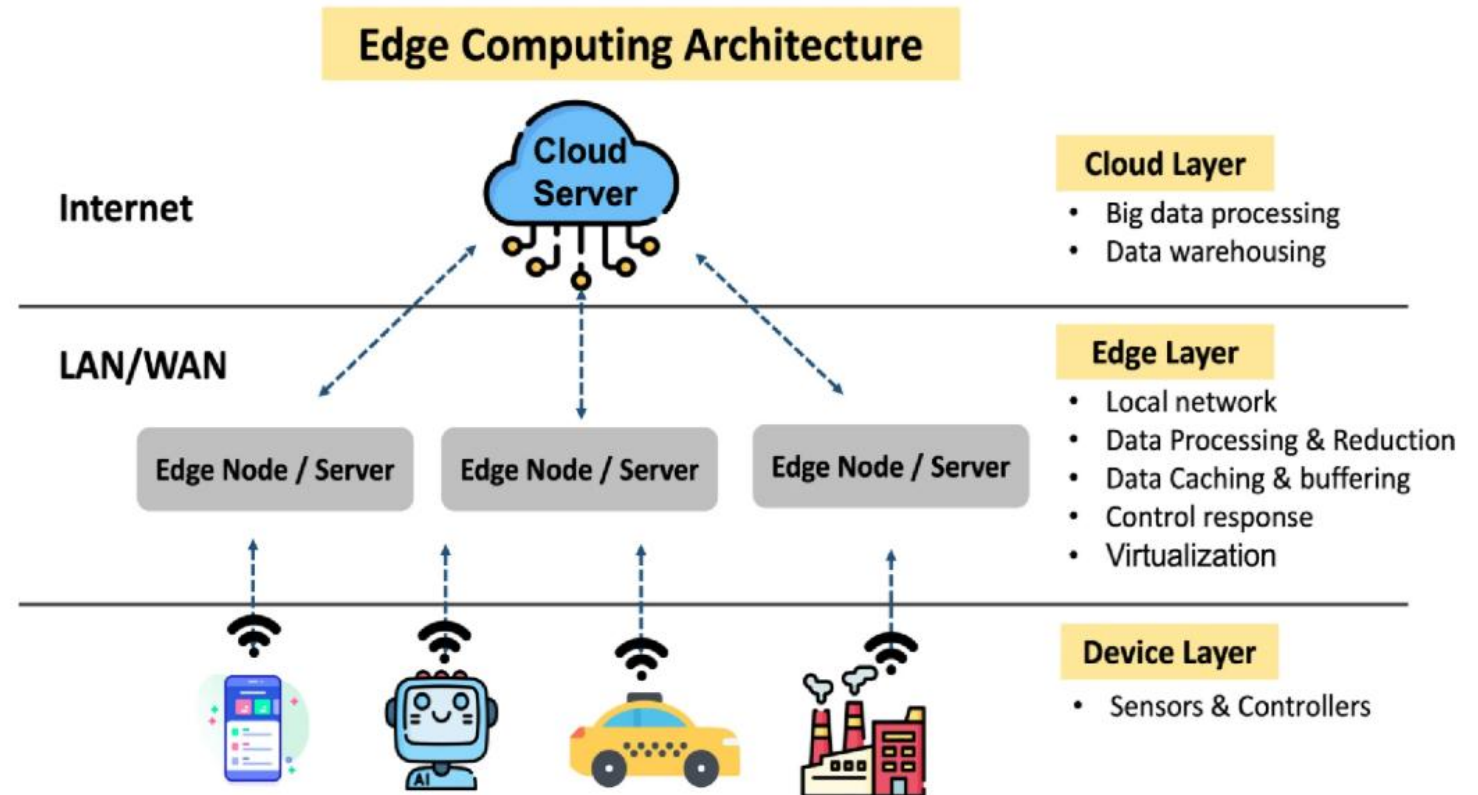
Enabling Real-Time Autonomy in the Device— AI–Edge Triad

- **Core Concept** — On-device / onboard processing delivers sub-100 ms decisions, independent of cloud latency.
- **Key Value in Industrial Safety:**
 - Real-time hazard response & autonomy (e.g., anomaly detection → immediate action on drone).
 - Reliable operation in harsh/remote environments (GPS-denied, signal dropout).
 - Reduced cloud dependency → 85–95% data reduction, lower costs, enhanced security/privacy.
- **Triad Synergy** — Robotics provides access → AI interprets data → Edge executes instantly.
- Source: Adapted from industry architectures (e.g., XenonStack, NVIDIA Edge AI)

Edge Computing for EHS

– The Real-Time Decision Engine for EHS Enabling Instantaneous Autonomy in Hazardous Environments

- **Detects hazards** and responds instantly without human delay.
- **Reliability in Remote/Harsh Zones:** Operates offline during signal dropout where connectivity fails.
- **Reduced Human Exposure:** Enables closed-loop autonomy
- **Bandwidth & Cost Efficiency:** Minimizes cloud uploads → faster decisions, lower data costs, enhanced privacy/security.
- **Overall Impact:** Transforms reactive monitoring into predictive, zero-incident operations.



edge computing makes everything happen instantly, right where the action is.

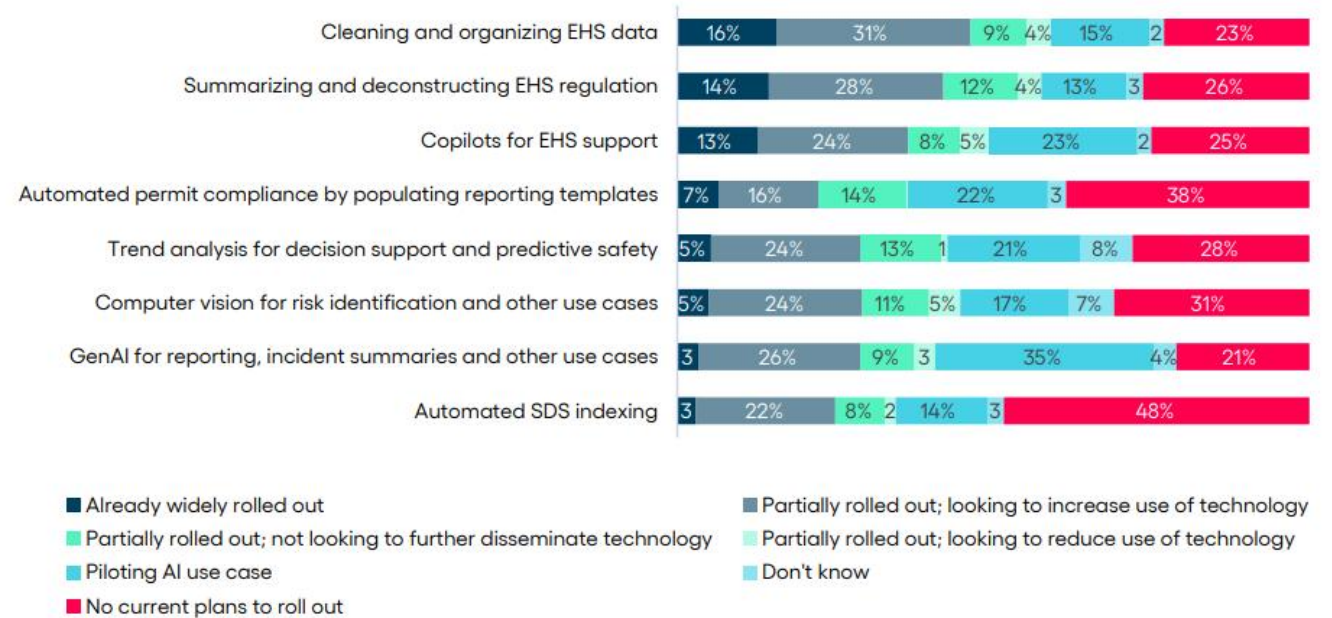
AI Industrial Applications

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AI use cases in EHS

- Legacy Systems & Poor Integration Fragmented
- Data Privacy & Security Risks
- Skills & Talent Shortages and Low AI Literacy
- Cultural & Psychological Resistance
- Unclear ROI & Proven Value
- Governance, Trust & Maturity Gaps

To what extent will your firm deploy AI for the following use cases over the next two years?



Note: Data labels are rounded to zero decimal places; percentages less than 4% are written as numbers.

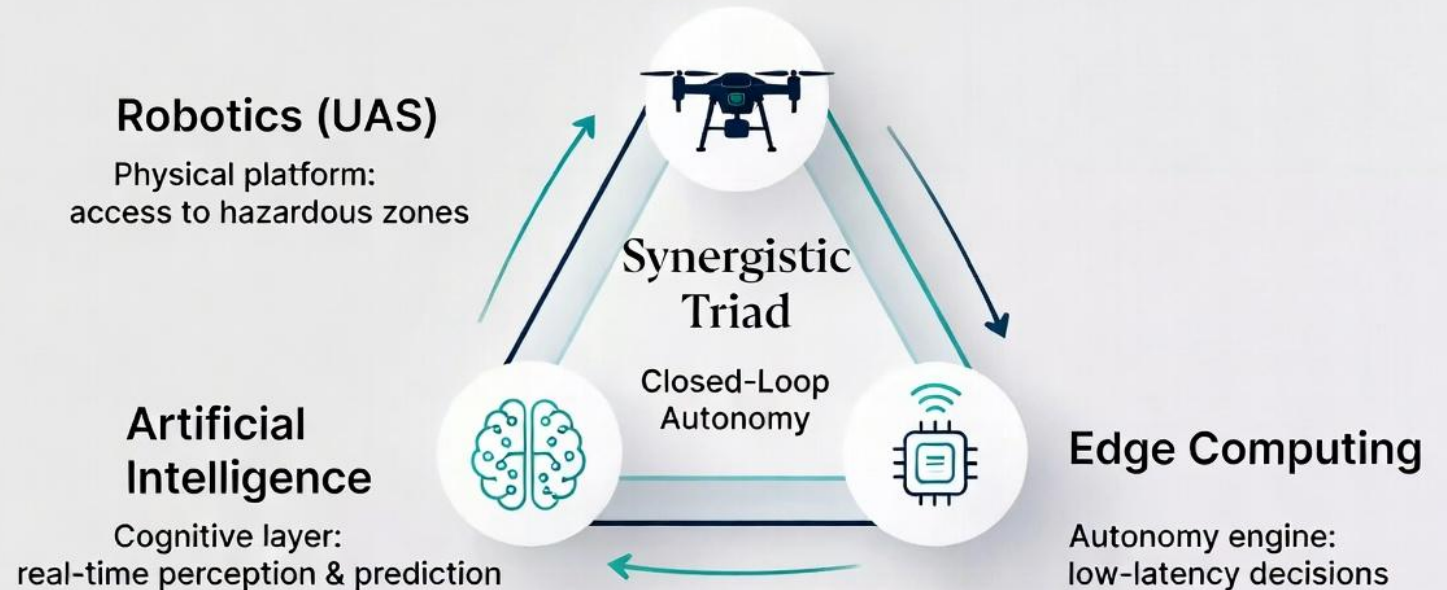
Source: Verdantix Global Corporate Survey 2025: EHS Budgets, Priorities And Tech Preferences

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Industrial Applications – UAS

The Robotics-AI-Edge Triad

Harnessing Synergy for Proactive Risk Mitigation in Industrial Safety



Robotics, AI, and Edge Technology Triad



Component	Role in EHS	Synergistic Impact	Reference
Robotics (UAS)	Physical platform: agile flight, multi-sensor integration, payload deployment	Grants access to inaccessible or hazardous areas (e.g., heights >50m or toxic zones)	FAA UAS Integration Report, 2025 ^[1]
AI	Cognitive layer: real-time perception, anomaly detection, adaptive learning	Transforms raw data (e.g., thermal/LiDAR) into predictive insights	IEEE AI for Robotics Survey, 2024 ^[2]
Edge Computing	Autonomy engine: on-board processing, low-latency execution	Facilitates <100 ms responses independent of cloud latency	NVIDIA Edge AI Whitepaper, 2025 ^[3]

Robotics, AI, and Edge Technology Triad

- The whole is greater than the sum:
 - **Robotics** ensures physical reach
 - **AI** deciphers complex patterns (e.g., gas dispersion models)
 - **Edge** enables split-second actions like evasive maneuvers.
- This yields **closed-loop autonomy**, evolving drones into proactive **EHS guardians**.

A 2025 MIT study confirms triad integration reduces human error by 87% in industrial inspections.^[4]

Intelligence: The New Era of Robotics
Defining Physical Intelligence
The fusion of digital AI with the tangible world of robotics.
It represents a paradigm shift from simple, repetitive automation to true, embodied autonomy, where robots can perceive, reason, and act in the physical world.

Elevating the workforce, not replacing it.
Physical intelligence addresses shortages by having robots handle repetitive, and injury-prone work. It provides a new role for operators who manage and AI agents.

The Core Components of a Physically Intelligent Robot

Types of Industrial Robots:

- SCARA Robot:** SCARA robots are characterized by a design optimized for extreme speed, precision, and repeatability within a horizontal (X-Y) plane. AI helps them handle high-mix product variations.
- Cartesian/Gantry Robot:** Designed for heavy payloads across expansive, rectangular work envelopes. Primary application is high-volume logistics tasks, such as palletizing and automated storage. AI optimizes complex path planning and coordination across gantries.
- Mobile Robots (AMRs & Legged Robots):** Primary applications lie in intralogistics, material transport, sorting, and goods-to-person fulfillment in modern warehouses and manufacturing floors. Also extensively used for remote inspection and security patrols.
- Drones:** Primarily used in construction, agriculture, and inventory management. AI enables autonomous navigation, collision analysis, and data collection.

Technology & Implementation
What is the real-world impact of Generative AI on robot programming, and how will it change the skills needed from our factory floor experts?

Oil & Gas + Chemical

– Confined Space Zero-Entry & Emission Hunting

- Oil & Gas:** Flare-stack thermal imaging, tank/vessel inspections — 93% ↓ entry permits, \$2.1M+ annual savings per site.
- Chemical:** Fugitive VOC/emission detection with gas analyzers — 34% ↓ VOCs, rapid leak mapping.
- Triad in Action:** AI spots $>180^{\circ}\text{C}$ anomaly or corrosion via hyperspectral imaging → Edge enforces safety buffer & replans → Robotics executes targeted scan (98% accuracy in pilots).



Source: Elios2, Flyability

Mining & Rail

– Autonomous Slope Monitoring & Predictive Track Maintenance

- Mining:** LiDAR-based slope stability & stockpile monitoring — 95% ↓ worker exposure, 40% ↓ failures (Codelco-style operations).

- Rail:** Swarm or single-drone track/bridge scans — 300% ↑ defect detection, 65% ↓ risk.

- Triad in Action:** Robotics navigates dynamic terrain → AI generates 3D corrosion/erosion models → Edge plans optimal paths (cm-level precision).

- EHS Impact:** Zero-entry reactor-style inspections + predictive maintenance prevent incidents before they occur.



Source: Progressive Railroading

Wildfire Response & Maritime

– Perimeter Mapping & Offshore Platform Integrity

- **Wildfire:** Swarm fixed-wing/VTOL drones for perimeter mapping, hotspot detection & autonomous retardant deployment — 70% faster containment, 50% ↓ firefighter exposure (CAL FIRE pilots).
- **Maritime/Offshore:** Wave-tolerant UAS with sonar/thermal payloads — 82% ↓ diver interventions, \$1.5M+ savings (Equinor North Sea).
- **Triad in Action:** AI predicts fire spread from plume analysis; Edge adjusts for 40+ knot winds; Robotics deploys payloads safely.



UAS

Industry ROI, Future Vision & Activation Roadmap

ROI Summary (Triad-Enabled Outcomes):

- **Mining/Oil & Gas:** \$2–3M+ annual savings; 93–95% exposure reduction.
- **Rail/Chemical:** \$1.9–4.8M; 34–300% detection/risk gains.
- **Wildfire/Maritime:** 70% faster response; \$1.5M+ + lives/property saved.

3-Phase Roadmap:

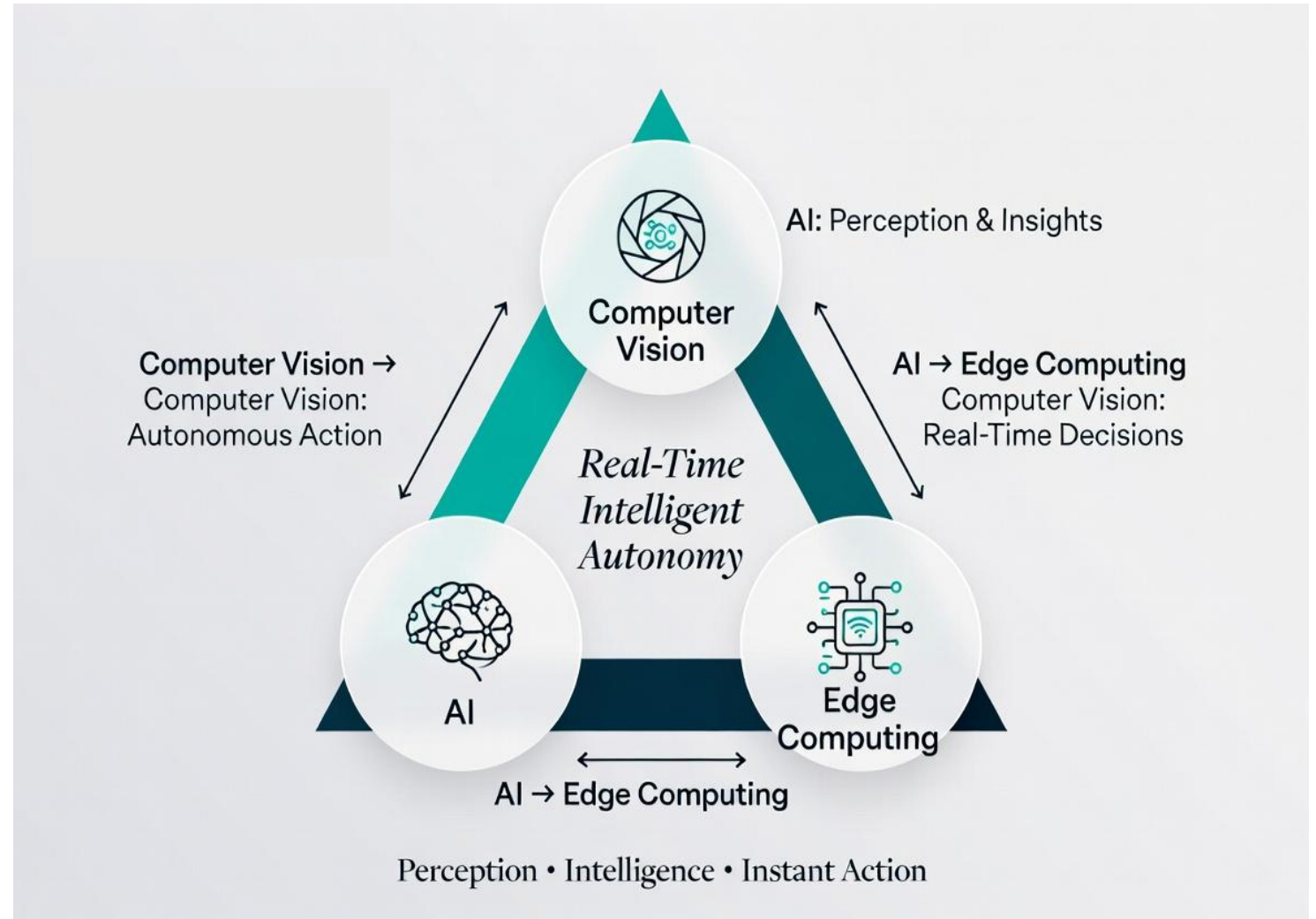
(0–3 mo) Pilot (Robotics + Edge) – 1–2 live use cases.

(4–12 mo) AI integration – 90% autonomy.

(12+ mo) Fleet scaling + BVLOS – ROI >300%.



Industrial Applications – Sensor & Computer Vision



Real-Time Visual Intelligence for Proactive Risk Mitigation

The Computer Vision Triad

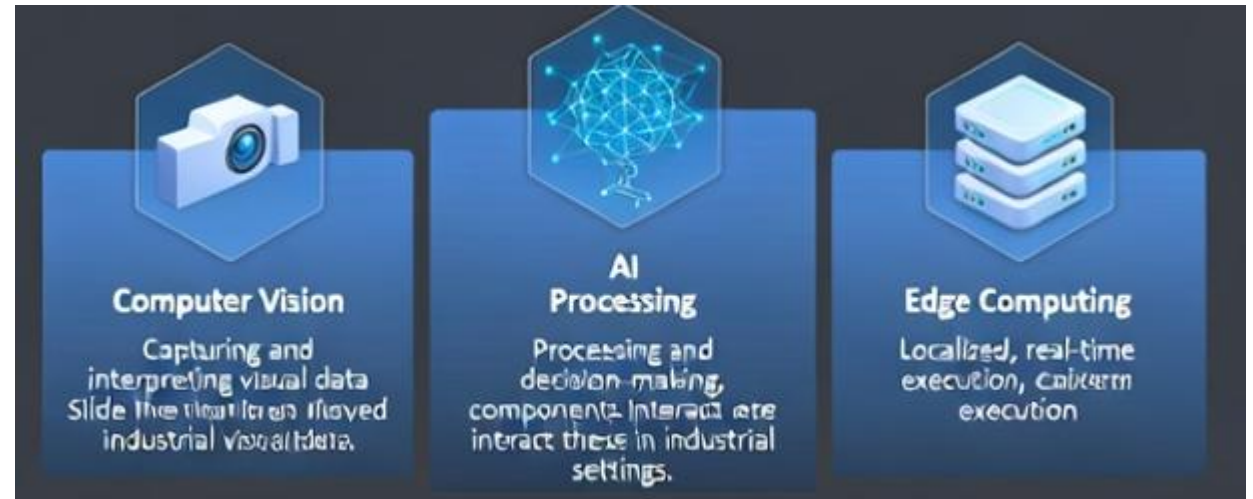
Sensors & Cameras: Fixed/PTZ + OGI/thermal for invisible threats.

AI/CV Models: 96%+ PPE/anomaly detection.

Edge Computing: Sub-100 ms inference, 85–95% data reduction.

Synergistic Impact: Transforms passive cameras into proactive guardians — up to 96% accuracy in PPE detection and 20–40% injury reduction.

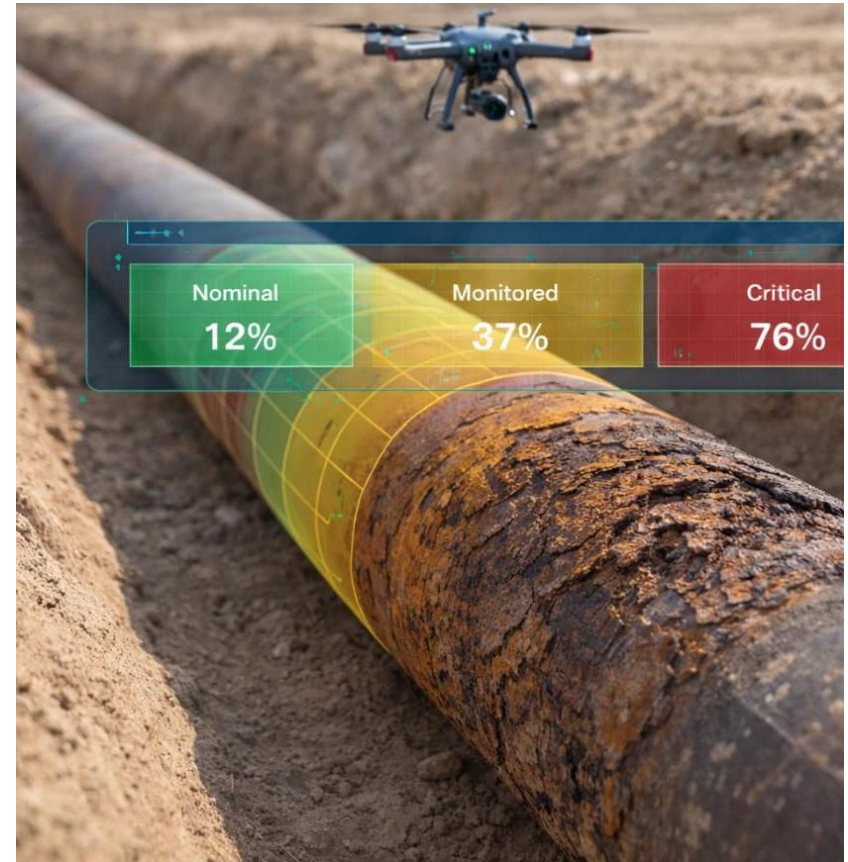
Computer Vision (CV) and Sensors acts as the perceptive brain in EHS — processing RGB, thermal, Optical Gas Imaging (OGI), and multimodal feeds with deep learning to detect hazards, defects, and unsafe behaviors instantly, integrated with edge AI for autonomous alerts and robotics/drones for action.



Oil & Gas + Chemical

– Automated Leak Detection & Asset Integrity

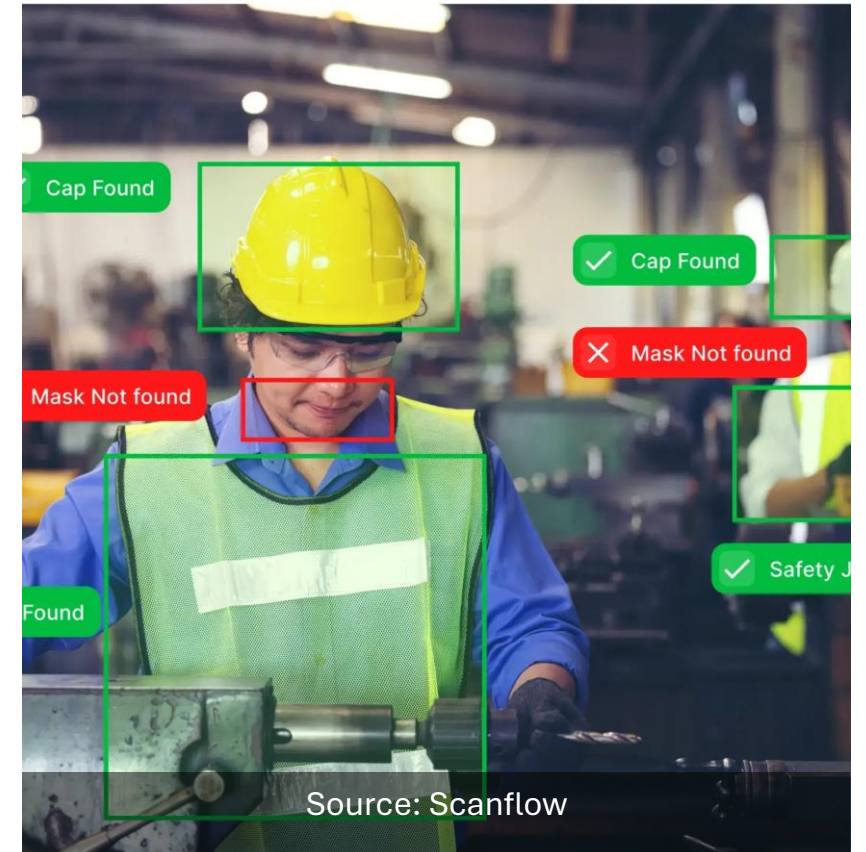
- Oil & Gas:** AI-enhanced OGI for methane/VOC visualization + corrosion mapping on pipelines, tanks, and flare stacks.
- Chemical:** Real-time fugitive emission hunting and micro-defect detection.
- CV in Action:** spot gas plumes or corrosion (≥ 0.05 mm) → Edge confirms and quantifies instantly → Triggers PTZ zoom or alerts (high accuracy in FLIR-style deployments).
- EHS Impact:** Eliminates manual inspections in hazardous zones, cuts regulatory fines, and prevents incidents before they escalate.



Construction & Manufacturing

– PPE Compliance, Hazard Monitoring & Defect Detection

- **Construction:** Real-time PPE detection (helmets, vests, harnesses), fall-hazard & proximity alerts, unsafe behavior monitoring on dynamic sites.
-
- **Manufacturing:** Assembly-line defect detection, machine-guarding violations, ergonomic posture monitoring.
- **CV in Action:** Edge AI analyzes live feeds at 96%+ accuracy → Instant alerts + automated shutdowns or PTZ zoom (Visionify-style deployments).
- **EHS Impact:** PPE compliance reaches 96%, 30–50% accident reduction, plus quality improvements from early defect catching.



Mining & Rail

– PPE Compliance & Hazard Monitoring

- Mining:** Real-time PPE detection, restricted-zone intrusion alerts, and visual slope stability monitoring.
- Rail:** Track/bridge defect detection and obstacle identification via fixed or mobile cameras.
- CV in Action:** Cameras feed video to edge models that analyze PPE compliance and unsafe behaviors at 96%+ accuracy → Immediate audible/visual alerts + 3D mapping support.
- EHS Impact:** PPE compliance jumps to 96%, with 30–50% accident reduction in dynamic environments.

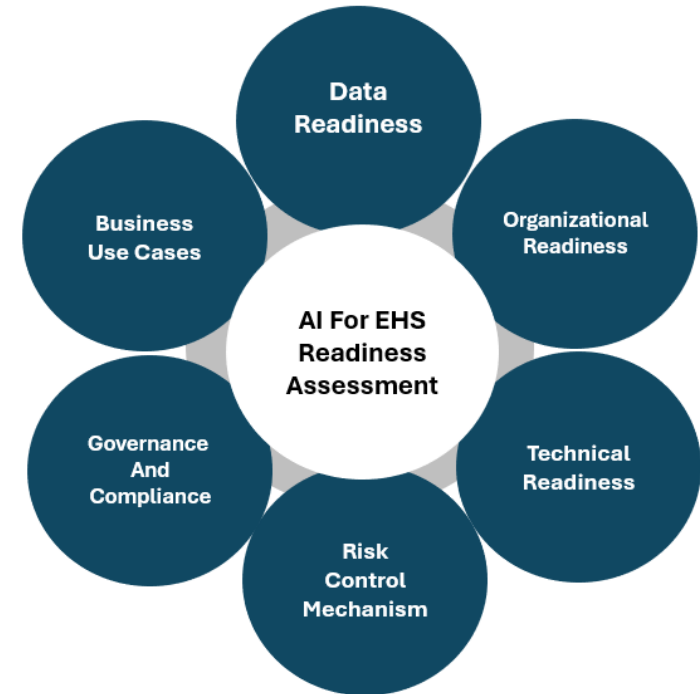


Source: Ripik Vision AI

Case Study:

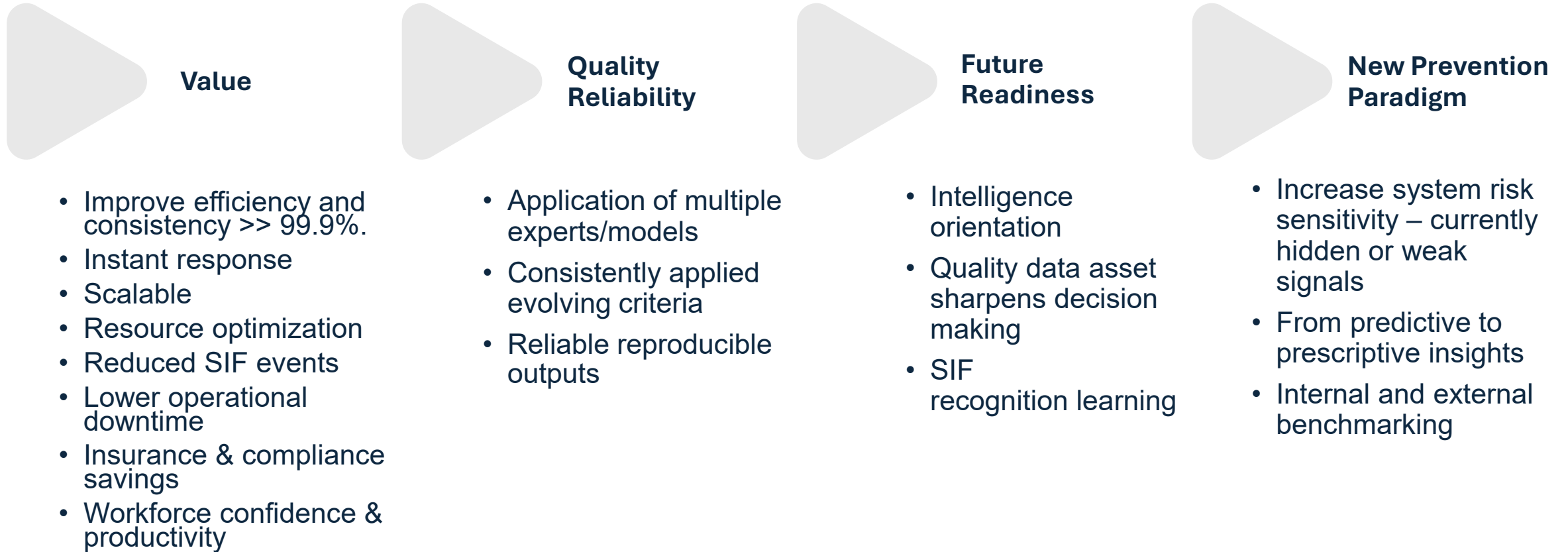
AI for Serious Injury and Fatality Prevention

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Business Value

Why use an Intelligent SIF Prevention Application?



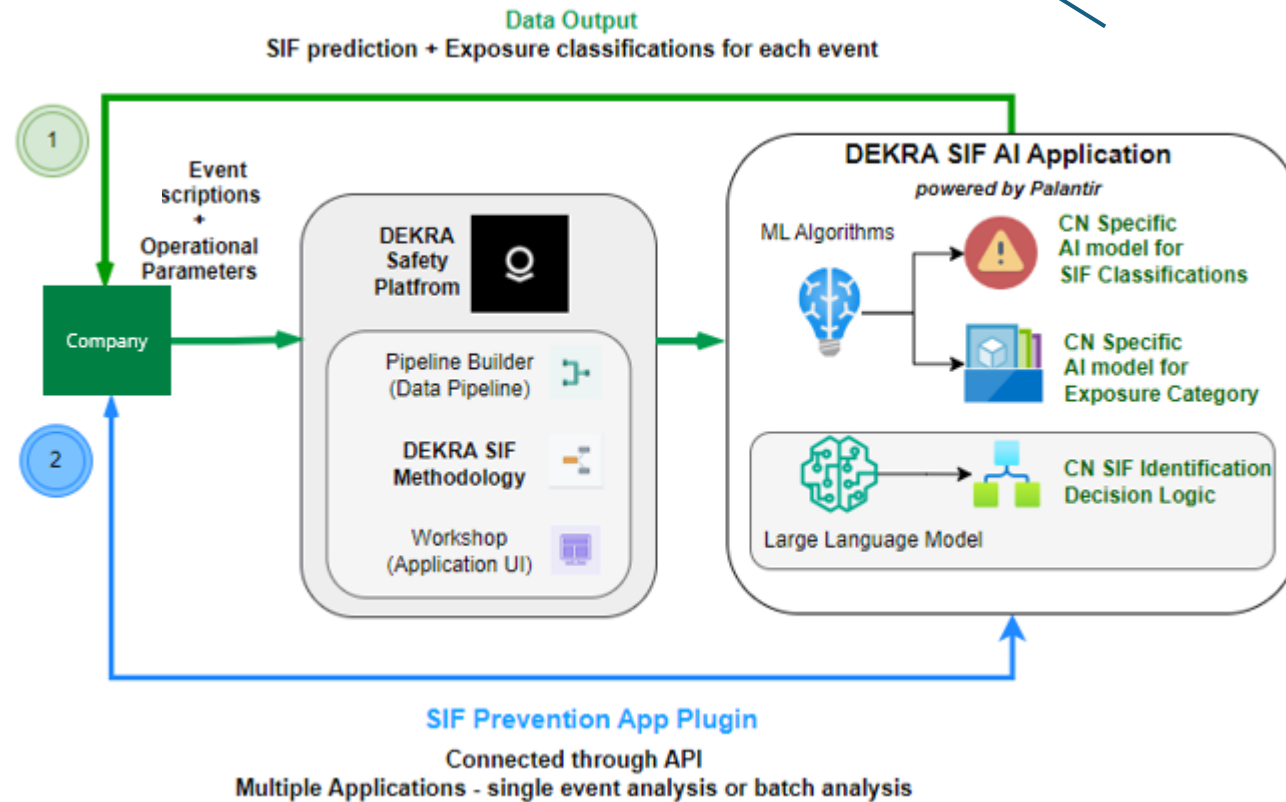


• AI SIF Prevention Application

With prevention AI tool ready, organization can access, interact, download data with the SIF intelligent tool to classify SIF potentials and exposure categories to benefit from industry benchmarks

The Intelligent SIF prevention tool can be plugged in to an organization's management system via API to interact directly with the tool and access model outputs

AI models specifically trained on Organization data specific event descriptions.

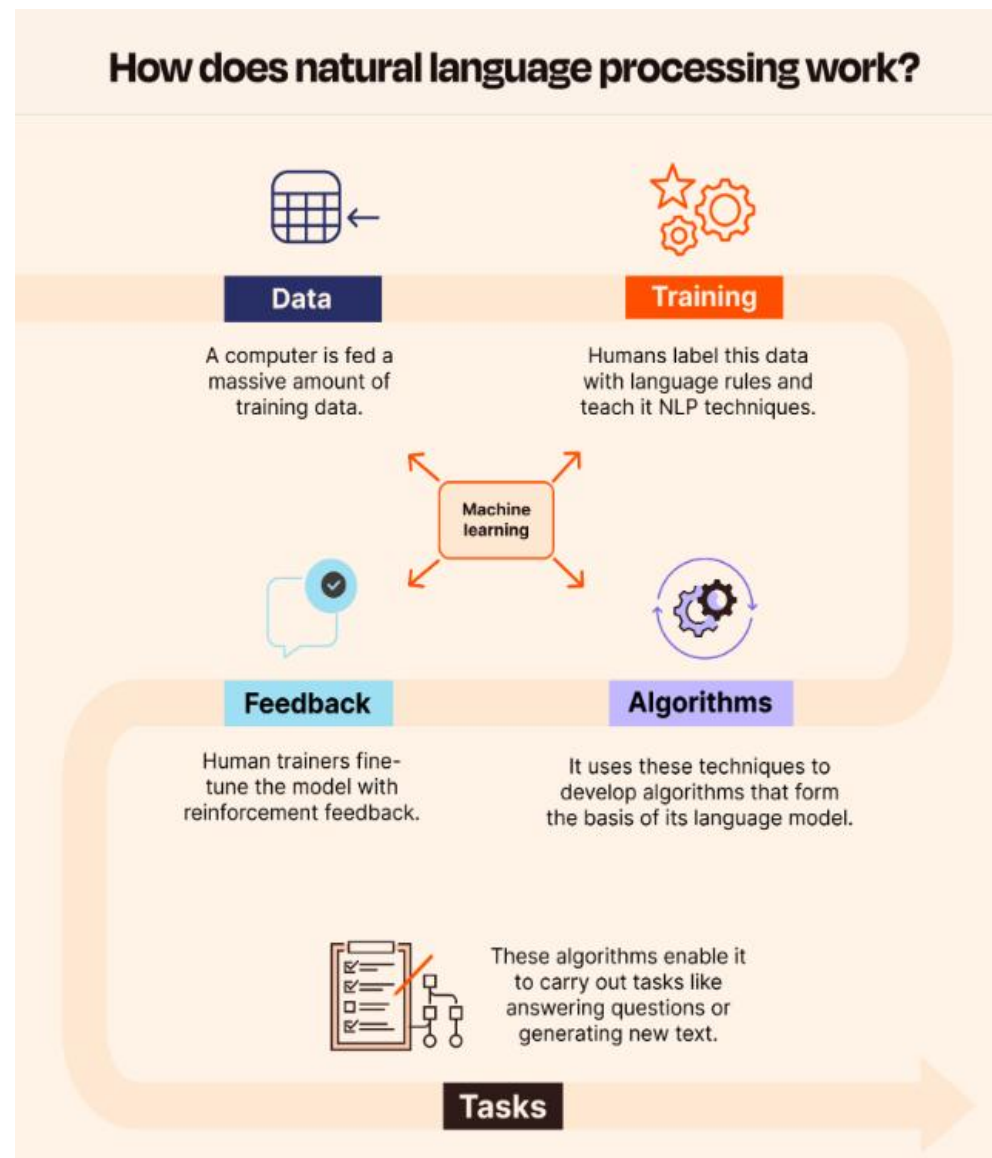




- **DEKRA SIF Prevention Expertise**

- Powered by Palantir Platform

- Rapid Data Injection
- Multiple AI Predictive Models
+ SIF prevention decision logic
- Continuous Learning from and for human and machine
- Intelligence at the incident entry point and throughout SIF prevention life cycle
- Progress together with evolving risk profiles





SIF Prevention

- Data Upload UI

The screenshot displays the SIF Prevention Data Upload UI. A modal window titled "Upload" is open, showing a "Select File:" field with a "Browse" button and a "Sample File:" section with a "Download Sample File" button. Below the modal are "Upload" and "Cancel" buttons. The background shows a table with columns for File Id, Status, Time, Message, and Action. The table contains several rows of data, including file names like "Test 50 incidents_Mike K_11-03-2025__1 02.xlsx" and "500 test cases 8-18-2025.xlsx".

File Id	Status	Time	Message	Action
527		01/12/2026 14:44:30 PM		
526	SIF Hosting Company	01/09/2026 11:14:36 AM	01/09/2026 11:28:08 AM	
525	SIF Hosting Company	01/08/2026 20:11:04 PM	01/08/2026 20:25:47 PM	
504	SIF Hosting Company	12/17/2025 21:48:00 PM		
500	SIF Hosting Company	12/17/2025 21:04:58 PM	12/17/2025 21:08:50 PM	
498	SIF Hosting Company	12/17/2025 17:58:39 PM		
467	SIF Hosting Company	11/04/2025 00:07:18 AM	12/16/2025 02:03:15 AM	



AI Prediction Augmented Expert Review Exercise

- Option for Randomized Review

The screenshot displays a software interface for an AI Prediction Augmented Expert Review Exercise. A central dialog box titled "Random Selection" is open, allowing users to configure review parameters. The dialog includes the following fields and options:

- Data Lineage:** A dropdown menu currently showing "-- Select Data Lineage --".
- Number of cases:** An input field containing the value "10".
- From Date:** An input field containing "01/23/2026".
- To Date:** An input field containing "01/23/2026".

At the bottom of the dialog, there are three buttons: a blue button labeled "Continue & Skip Random Selection" with a double arrow icon, a green button labeled "Continue" with a right-pointing arrow icon, and a white button labeled "Cancel" with a close icon (X).

The background interface shows a sidebar on the left with navigation options: "Upload", "Review" (highlighted in green), "Results", and "SIF Reasoning". The top right of the interface features a navigation bar with icons for "Incident Analysis", "Digital PHA", "Dynamic Risk R...", "TEST APP", and "Adaptive Tools".



AI Prediction Augmented Expert Review Exercise

- Human in the Loop
- Review & Re-Training

SIF Potential		SIF Exposure		
Company	Description	SIF Potential Prediction	SIF Reviewer Label	Validate / Overwrite
	third party supplemental company (triple m) employee wa walking back to his machine when he fell and injured his leg .	0		
	while walking in conveyor tunnel contractor struck their head on a metal box causing a headache .	0		
	the ip wa talking to two colleague in the engineering workshop . there wa a light hearted exchange and the ip started to laugh and then felt the need to cough . he walked into the workshop office to cough , then he went rigid and fell backwards , hitting his head on the floor and potentially the chair leg .	1		
	a machinist wa performing maintenance work on the 500 unit 501 fin fan . he wa in the process of attempting to remove a shiv off a taper using a hammer when he felt something pop in his shoulder and his arm started to go numb . he reported to his supervisor who directed him to medical for evaluation . medical referred him to bhp medical off-site for an x-ray	0		
	while doing inspection (rtr) in the alcohol pl area , a mistras employee accidentally backed into steam tracing tubing between p6-550 and p6-551 (657 tank transfer pump) . this incident caused a small burn on the back of the employee 's neck . the employee began to apply cold water to the burn and reported the incident to his supervisor and the pl shift supervisor . the employee wa taken to offsite medical for evaluation . after being evaluated the employee ha been released to full duty . mistras will monitor the employee 's burn daily for any further issue a a safety precaution	0		
	on 23 september , 2024 a forge shop employee wa loading a new bundle of raw billet steel (approximately 9,300lbs) into the tsune saw for processing . once the material wa placed on the rack , the employee began to remove the 2 @ x8 @™ double wrapped metal banding from one end of the steel using a large set of manual snip . when the banding wa cut completely through , the stored energy whipped the band material around the bundle and back towards the employee on the ground , striking them in the chest and causing a small puncture wound that required outside medical treatment to close . _x000d_	1		
	third-party employee wa lying down welding on a steel platform , when employee left arm contacting welding rod , sending shock through arm .	1		



• Identify SIF Potential in Textual Data

Narrative Today, Video and Telemetry Tomorrow

New data added to your narratives includes an expert SIF label, an AI prediction of SIF potential, and a confidence statistic

Enrich today's data with SIF potential classification using AI models trained by industry specific data

<input type="checkbox"/>	Description	SIF Label	Predicted SIF Potential	SIF Potential	Dekra Exposure	Data Source
<input type="checkbox"/>	aluminum cone, that was lodged in the second step, while walking down a set of stairs. This caused the employee to twist his right leg and fall the remaining 3 stairs. Employee immediately notified his shift manager who called safety and medical. Upon investigation it was found that the aluminum cone had traveled 22 feet over to the stairs from the Degas alloy area. Employee stated that he was using the hand rails when this happened and that he didn't see the cone while walking. Employee was transferred to Oakwood Hospital for further evaluation	SIF	Non SIF	30%	Hazardous Substance Contact	master
<input type="checkbox"/>	an employee was walking across the parking lot, slipped on ice and fell injuring the left knee.	SIF	SIF	90%	Missteps and Fall - Same and Different Level	osha
<input type="checkbox"/>	an employee was walking and fell breaking a rib and puncturing a lung.	SIF	SIF	100%	Ergonomic Risk Factor	osha
<input type="checkbox"/>	an employee was catching veneer material off a moving table. when the table moved upwards and then down, the employee's pinky fingertip was caught under the tabletop, resulting in a fingertip amputation.	SIF	SIF	100%	Struck Against/Struck By/Personal Contact	osha
<input type="checkbox"/>	an employee was helping unload a delivery truck while an all-terrain forklift was being used to remove a stuck side gate from the truck. the forklift began to raise the gate, which was caught on a pallet. the gate came loose from the pallet and struck the employee under the chin resulting in a broken jaw.	SIF	SIF	100%	Struck By/Contact With Power Equipment or Tool	osha



AI for SIF Prevention Decision Highlight

- Confidence Scores
- User Experience

Upload

Review

Results

SIF Reasoning

SIF Positive Confidence

0.00 1.00

124.58K Total Incidents

Exposure Category: All

SIF Breakdown: (Blank) SIF 15%, 1.22% Non SIF 83.79%

Description Filter

InjuryDate	Description	SIF Prediction	SIF Prediction Confidence	Exposure Prediction
1/1/1900 12:00:00 AM	A 1½" diameter steel air pipeline broke while it was being purged with air at 7 bar. T-piece of pipe broke on the screw thread at a 90° bend and struck the injured on the right ankle.	SIF	0.91	Struck By
1/1/1900 12:00:00 AM	A 1½" diameter steel air pipeline broke while it was being purged with air at 7 bar. T-piece of pipe broke on the screw thread at a 90° bend and struck the injured on the right ankle.	SIF	0.91	Struck By
1/1/1900 12:00:00 AM	a large floating structure wa noticed in the water 1-2 mile away from the platform . on inspection of the floating structure wa an abandoned pontoon boat .	SIF	0.58	Struck By
1/1/1900 12:00:00 AM	a large floating structure was noticed in the water 1-2 miles away from the platform. on inspection of the floating structure was an abandoned pontoon boat.	SIF	0.62	Struck By
1/1/1900 12:00:00 AM	a maintenance operator at sasol mining central workshop , wa lifting a shuttle car boom with an overhead crane so that he can insert and support the boom with the sprag . in the process his left hand index finger got caught in between the chain sling and shuttle car boom resulting in a fracture .	SIF	0.58	Caught Between/ Caught By
1/1/1900 12:00:00 AM	A maintenance operator at Sasol Mining Central Workshop, was lifting a shuttle car boom with an overhead crane so that he can insert and support the boom with the sprag. In the process his left hand index finger got caught in between the chain sling and shuttle car boom resulting in a fracture.	SIF	0.87	Caught Between/ Caught By
1/1/1900 12:00:00 AM	A maintenance operator at Sasol Mining Central Workshop, was lifting a shuttle car boom with an overhead crane so that he can insert and support the boom with the sprag. In the process his left hand index finger got caught in between the chain sling and shuttle car boom resulting in a fracture.	SIF	0.92	Caught Between/ Caught By
1/1/1900 12:00:00 AM	A maintenance operator at Surface Services was on his way from Twistdraai East to Thubelisha. Due to a veld fire that caused heavy smoke, he could not proceed. He then made a U-turn to return to East shaft when another vehicle came through the smoke and collided into him. He sustained a contusion caused by the safety belt.	SIF	0.87	Motor Vehicle/Mobile Equipment
1/1/1900 12:00:00 AM	A miner and surveyor whilst measuring up after production in section 95, were struck by a portion of the pillar corner which dislodged. This failure was outside the effective range of the corner support. This resulted in a first aid case to the miner and a lost workday case to the surveyor.	SIF	0.76	Struck By
1/1/1900 12:00:00 AM	A miner and surveyor whilst measuring up after production in section 95, were struck by a portion of the pillar corner which dislodged. This failure was outside the effective range of the corner support. This resulted in a first aid case to the miner and a lost workday case to the surveyor.	SIF	0.76	Struck By
1/1/1900 12:00:00 AM	A phase operator, from Bosjesspruit Services, Water handling department, was standing on a valve to fit another water valve on a pipe, at a cement dam. He slipped and fell off injuring his legs.	SIF	0.90	Falls
1/1/1900 12:00:00 AM	A phase operator, from Bosjesspruit Services, Water handling department, was standing on a valve to fit another water valve on a pipe, at a cement dam. He slipped and fell off injuring his legs.	SIF	0.90	Falls
1/1/1900 12:00:00 AM	A piece of coal dislodged from the roof onto the storage area of the fetcher roof bolter machine which then ricocheted and struck the injured on his right hand upper lea	SIF	0.84	Struck By

Overview Rating Detail SIFp Validation/Override ExpCat Validation/Override



AI for SIF Prevention

• AI for SIF Sensitivity Training

Upload

Review

Results

SIF Reasoning

73
Total Validated

57
Total Overwritten

Total Validated or Overwritten by User

User(s)

Multiple selections v

SIFp Validated / Overwritten

Submission_Id	Description	SIFp	Anil Bulusu	Mayank modi	Mei-Li Lin
123786	injured worker state - burn to right wrist . hydraulic hose sprayed oil on iw wrist .	0	-1	-1	1
123785	ee wa walking from the truck to the shop and slipped on ice/snow - did not go all the way to the ground .	1	1	1	1
123784	rudy came to the atm office around 20:00 to inform that at 18:00 , while searching for a truck on hostler row , he slipped while getting out of a truck . he explained that he fell forward , landing with his arm extended and knee bent . rudy mentioned that he initially felt fine and continued working , but later experienced discomfort in his right knee and felt it wa necessary to report the incident . we offered him medical attention , which he declined , stating that he wa okay and returned to work . "	0	0	-1	1
123783	tim wa closing a radial end door , it wa stuck so he gripped the door from the bottom , the door broke free and he did n't have time to release , the index finger of his left hand wa caught between the door and barrel ring	0	1	1	-1
123782	employee wa rolling tire to his mobile truck from the tire storage area . after he took the last tire that he needed the remaining tire in the pile fell down striking his left foot taking him to the ground . the employee reported this to his manager but refuse medical attention at the time . after working 3 day the mechanic requested to have an x-ray due to still having pain in his foot .	0	1	1	1
123781	the mechanic went to upright a jackstand that wa laying on it side . he grabbed the side of it placing his hand between the top riser and the base . a he wa in the process of raising it , the pin fell out , and when the jackstand wa placed upright on the ground the riser came down into place . a a result , the mechanic left index finger wa pinched between the riser and base .	1	1	1	-1
123780	i wa contacted by an employee that a pr employee hit our service truck with a hostler . there wa 2 employee in the rear of the truck and wa knocked down . truck wa lightly messed up and 2 employee in the back hurt their back .	1	1	1	1
123779	injured worker state tank over-filled releasing nh3 and employee got a good whiff of gas .	1	1		1
123778	employee wa grounding locking up the double stacked container , a he wa shuffling his foot , he slipped and fell off . he had a ground bar in one hand and tried to hold on with his loose hand but his glove were wet .	1	0	1	1
123777	iw wa helping an employee remove bucket on the skid loader . employee could not see the claw , so the iw walked around the machine and the other employee dropped the bucket . iw 's left foot wa under it .	1	1	0	1
123776	rmt0 wa washing chute after completing a job at the jobsite . while standing on the back platform of the truck , the rmt0 placed their left hand on the standard chute and pulled the flip chute up to wash , the flip chute then closed the rest of the way , catching their left hand between the two chute .	1	1	1	1
123775	on january 22 , 2024 an employee wa driving a bradley fighting vehicle on the trail at camp robert , when mud got on their goggles . while in the process of briefly removing their goggles to wipe the mud off of them , mud entered the employee eye . the employee then wiped their eye to clear the mud and continued work . after work , the employee self-administered eye drop due to irritation . the following day , the employee noticed their eye wa swollen and reported the incident to the test engineer lead who then contacted she . the employee wa taken to a local clinic where they were diagnosed with a corneal abrasion and fungal infection of the right eye and conjunctivitis in the left eye resulting in the need for prescription eye drops_x000d_	0	1	1	0
123774	injury - precision drilling æ " routine drilling operation - it wa reported at 11:15am that an incident occurred on precision 569 , while rigging down the crt . when attempted to removing the tether cable it became hung up on equipment , a the ic began pulling , it came free and impacted his lower lip , causing a small laceration . the ic wa taken to a local facility for evaluation and received stich . he wa given a full release with no restriction . this will be a recordable incident . the ic ha ladc rig pa and chk orientation . the investigation is ongoing .	0	0	1	-1
123773	on 10/29/24 , two contract employee were working on some clip on the southwest side of the compressor deck and decided to make a quick cut with a grinder without installing an adequate spark containment or getting a hot work permit . supervision wa notified and the employee were escorted out of the unit .	1	1	1	1
123772	weighing out a raw material (tm123) < 0.5g in the lab 1 downflow booth , wearing mandatory ppe - nitrile glove / white cotton lab coat / safety glass / visor and safety shoe . the front of the tech t-shirt ha been contaminated with a very small amount of the tm123 material (unknow at this point how this occurred) , residue removed from t-shirt but tiny amount remains . no contamination to skin area .	1	1		-1
123771	third party wa turning right on to blast furnace road in the early morning . at the time of the incident the area wa very dark . while making the turn the driver didnt realize that the turn they were making wa too sharp and resulted in the vehicle becoming stuck on track and mud due to environmental/weather issue	1		1	-1

Overview

Rating Detail

SIFp Validation/Override

ExpCat Validation/Override



AI for SIF Prevention

• AI for Exposure Identification

Upload

Review

Results

SIF Reasoning

80
Total Validated

62
Total Overwritten

Total Validated or Overwritten by User

User(s)

Multiple selections v

Exposure Category Validated / Overwritten

Submission_Id	Description	ExpCat_Prediction	Anil Bulusu	Mayank modi	Mei-Li Lin
123737	vehicle being loaded by proserve contractor with solvay 'returns' to transport back to their local storage facility . triple stacked load ; not secured . on 7/19/23 the crew wa in the process of replacing a tangent transformer pole with a riser . pole to be same hole set due to the riser . crew had set the pole and transferred the primary into the insulator . the apprentice (ap) had been tasked with installing pipe strap on the secondary riser . lineman 1 (lm 1) wa in the air also strapping the riser . lineman 2 (lm 2) wa removing the christmas tree attachment from the spare bucket so he could assist lm 1 in the air . the fm wa fixing the pole ground hammer . at approximately 13:45 the fm returned from the back of his truck from fixing the pole ground hammer . the ap wa still working on the strap and couldn't get the strap to fit . the fm told him he would take over and assigned the ap to finish pounding in the ground rod . the ap dropped what he wa doing , grabbed a water , and drank it . he then proceeded to the grounding rod . at approximately 13:50 the fm observed that the ap wa standing up holding the ground rod hammer . it wa attached to the ground rod but he wasn't moving . the fm asked if he wa ok , and the ap only mumbled . the fm got a little closer and told him to take a break and cool off in the truck . the ap did not respond . the fm shouted at lm 2 to come down and help with the ap . the ap slowly sat himself down with the fm's support but wa still mumbling . the ap wa awake and eye were open but his mumbling wa not making sense . lm 2 and the fm were giving him cool water to sip and pouring water on him . the fm got lm 1's attention and told him to come down out of the air and assist . the ap had gone from sitting up to slumped over onto a dirt tarp . the fm immediately called 911 . the operator told the crew to get him into air conditioning . they then proceeded to carry him to the foreman truck which wa approximately 60' foot away . the ap wa awake but not responsive . the crew got him onto the passenger seat , removed his shirt and started pouring cold water onto him a instructed by 911 . paramedic arrived at approximately 14:05 and transported to palmdale regional hospital . the fm provided the responding paramedic with the ap's information as well as his own information in case it wa needed for further question . the fm wa advised by the responding paramedic this wa one of multiple incident today , and did not see the need to have the fm accompany the ap a all pertinent information wa given . safety and hcl management wa notified and they were enroute to the hospital . wa it hydration or other personal sickness , seemed serious , had he been driving or something different the sudden unresponsive reaction trigger me to say it wa a sif .	Overexertion		1	1
123738		Struck By	Motor vehicle/Mobile equipment	1	1
123739	during the ard sd a piece a c channel approx 4' long wa found on the grating near b still on the second level of the ard plant . upon inspection it wa found to have fallen from the 3rd level grating support . approx . 20' fall , piece weighing around 25 pound , into an unrestricted area . the area above and below the grating where the c channel fell have been taped off until repair can be made . visual inspection of similar support wa completed .	Struck By	1	1	Struck by
123740	during the npu t/a at 09:05 on 2/4/25 worker were found inside of a confined space without the proper permitting . it wa given a confined space permit at 07:28 to demo the roof on the api seperator . at approx . 0900 , with an it attendant present , scaffold builder for ii were first to enter to demo scaffolding that it needed removed . at 09:05 safety saw the work going on and looked at the permit and found there wa no gas testing , no entry supervisor signature , no field check , and no safety department signature . the worker were pulled out of the hole and the area sniffed and proper signature obtained for ii to retrieve the remaining material . at that time , all t/a work wa stopped and a safety standdown wa done with all t/a contractor and operation . this wa a near miss and there were no injury involved .	Hazardous Energy Release	1	Musculoskeletal Disorder	1
123741	at 10:30 , a cdi employee wa coming out of a core trailer door carrying a box of food related to the impending winter storm enzo (freeze/blizzard) . while in the process of maneuvering on the access ramp for the door , he inadvertently stepped onto the edge of the ramp and injured his right ankle . he wa taken to prime medical for treatment/evaluation . after x-ray , it wa determined that he had experienced a tri-malleolar fracture of his right ankle .	Falls	Falls	1	1
123742	on wednesday . mav 30 . 2024 . at or about 10:30 . a dsests operator with the bvf team wa working with other employee to assemble their shop	Struck Bv	Other	Personal Contact	1

Overview | Rating Detail | SIF Validation/Override | ExpCat Validation/Override

• Automation in Exposure Category identification

Exposure category - what issues need attention for SIF prevention



Exposure categories fit for purpose and risk profile.

Increased confidence in exposure category assignment

New data added to your narratives includes an AI predicted Exposure Categories

Description	an employee was leaving the sleep berth of a truck when she fell, breaking her left knee.
Dekra Expos...	Motorized Equipment Operation
Top 1 Score	90%
Data Source	osha
Top 2 Category	(Pedestrian) Struck By - Motorized Equipment or Vehicle
Top 2 Score	85%
Top 3 Category	Ergonomic Risk Factor
Top 3 Score	78%

Description	the employee was removing panels from a roof during building demolition. he stepped on a weak section of the fiberglass roof and fell through breaking his femur.
Dekra Expos...	Ergonomic Risk Factor
Top 1 Score	88%
Data Source	osha
Top 2 Category	Struck Against/Struck By/Personal Contact
Top 2 Score	87%
Top 3 Category	Missteps and Fall - Same and Different Level
Top 3 Score	65%

Description	Laceration Thigh Right. The grinder kicked back while in use toward the team member.. Team member was grinding on a new metal plate.. Team Member was replacing a metal plate on a auger to prevent product from leaking out and getting water in the mill. The TM was in the last stages of replacing the plate and completing his task. Team member was grinding on the vertical plate of the auger , when the tool contacted the underside of the lid causing the grinder to kick back toward the team member.. The tool came back and struck the team member. Team member was grinding on the 1228 auger feeding pet 1 elevator and hit the underside of the lid
Dekra Expos...	Struck By/Contact With Power Equipment or Tool
Top 1 Score	98%
Data Source	nr
Top 2 Category	Struck Against/Struck By/Personal Contact
Top 2 Score	98%
Top 3 Category	Motorized Equipment Operation



AI for SIF Prevention

• LLM for Reasoning

- Upload
- Review
- Results
- SIF Reasoning

Describe your incident here (e.g., 'Worker touched a live wire while repairing the machine')

Ask

You

during the ar d sd a piece a c channel approx 4 ' long wa found on the grating near b still on the second level of the ard plant . upon inspection it wa found to have fallen from the 3rd level grating support . approx . 20 ' fall , piece weighing around 25 pound , into an unrestricted area . the area above and below the grating where the c channel fell have been taped off until repair can be made . visual inspection of similar support wa completed .

iSIF Reasoning

SIFp: SIFp=1 (SIF)

Reasoning:

The incident involved a falling object (C-channel) weighing approximately 25 pounds that fell from a height of 20 feet into an unrestricted area. The object exceeded 40 joules of energy (mass x height x gravitational acceleration), and its shape and weight could cause life-threatening injuries if it struck someone. This makes the incident a SIF.

Exposure Categories:

Struck By - Falling/Flailing or Rolling object, flying projectile or load moving horizontally: Category Score: 95

Questions:

- Did the falling object exceed 40 joules (mass in kilograms x height in meters x 9.8 (gravitational acceleration) = joules)?: "Yes"
- Was the shape of the falling object likely to cause a life-threatening injury?: "Yes"
- Was the object or projectile of a size, shape, and velocity likely to cause serious bodily harm?: "Yes"

Missteps and Fall - Same or Different level: Category Score: 40

Questions:

- Did the person fall, or could they have fallen a distance >1.2 meters (4 feet)?: "No"
- Did the person fall backwards?: "No"
- Did the person fall in an area that had SIF hazards in the immediate fall zone?: "Undetermined"

Struck Against/Struck By/Personal Contact: Category Score: 30

Questions:

- Did the object struck against or struck by have SIF potential?: "Yes"

You

Worker touch live wire

• Applying SIF Decision Logic

Fit for purposes and risk profiles

Insights into an event description (or other narrative).

Experts support

- Classifications against decision workflows
- Classifying undecided (lower confidence items) and corrections
- Improving the questions asked for automation
- Further developing the model settings

The learning improves

Exposure classification questions identified with narrative answer

The referenced similar incidents are shown so that an expert user can see why the classification was selected

A correction can be made to the classification and/or the narrative

Interactive SIF Analyzer
Welcome back, Gennifer

Overview Incidents Exposure Model Metrics Playground

Write Incident Description

on a rail car, the employee made two attempts to get the brake lines to lock together, on the third attempt the employee was successful. however while in the process of brake lines locking together, the employees left hand little finger was pinched causing a small laceration; a bandage was applied to the injury.

Submit Incident

Smart score Average of SIF for the nearest neighbors
Exponential weighted score Inverse score
logistic regression 28% MLP model 4%

AI-Generated Response

Category: Caught between/by or in

- Was the force significant enough to cause an amputation of a digit or limb? No
- Was the force significant enough to crush the body or a body part? No
- Did the person reach into or get a body part caught in an operating piece of equipment? Yes

Based on the information provided, this incident is **not a SIF (SIF 0)** as the force was not significant enough to cause an amputation or crush the body or a body part. The employee did get their finger caught in an operating piece of equipment, but the injury was minor and not life-altering or life-threatening.

Similar Incidents

Description - Gary Snaith of Certas was loading SFGO on rack 3 when he activated the overspill alarm resulting in red pot showing on the scully box for pot 4. He was not clear in how that had happened however it looks like arm 31 had been connected to pot 4 and compartment no1 was requested to load, this looks like 5000lbs was attempted to be loaded on a 2500lb pot which would appear probe out occurred at 127lbs above pot 4 capacity of 2500lb - bol forced and vehicle locked out pending enquiry or proof that trailer was at fault and not driver error.
SIF Label - Non SIF
Data Source - nr
Dekra Exposure - Caught Between/By or In
Similarity Score - 0.797

Description - just before 8am joe sauter was moving a skid of road-wheels from building 20 to outside location y03a01. as he lifed the skid to the proper height and began to move forward to place the skid he heard a loud crack of wood breaking on the right side of the skid and the load began to shift forward on the pallet. joe was initially able to stop the load from falling by moving forward to partially support it on the top of the stack he had been building. i received a call from ed chandler and joe s at 8am to report the incident. i went to get erloy as safety rep and a camera then made our way to the scene. upon arrival i talked with joe for a bit to determine the circumstances and assessed how to best get the broken skid back down on the ground. consensus was to have joe lower the skid a ways first then back away slow knowing that some of the material would fall in the process. ed, erloy, and i cleared ourselves out to a safe distance while joe accomplished the move. as soon as joe started backing away the skid simply disintegrated and as predicted some material hit the ground. the incident appears to have been material related and following some discussion consensus was reached which determined that the operator and his actions were not at fault. further investigation revealed that certain skids have had their oem banding cut during previous inspection procedures and although shrinkwrap was used to resecure the material on the skid the banding of the material to the skid was never replaced. i believe the lack of adequate banding reduced the structural integrity of the skid to the point of failure. i believe this allowed the nailed skid to "rack" and crack under the load. which resulted in the load shifting as the shrinkwrap proved inadequate to keep the wheels in place. no injuries noted or reported.
SIF Label - SIF
Data Source - nr
Dekra Exposure - Missteps and Fall - Same and Different Level
Similarity Score - 0.835

Description - Derek was at the pump checking his load, the pump stopped so he raised his chute so the pump wouldn't overflow and as he was doing so he had his hand on top of the chute and pitched it against the bridge tire injuring his right wrist. Derek did seek medical attention and they released him back to work with a brace to wear at all times. He is still seeking medical attention, he may have damaged a nerve. 6/20. Update 7/7. Derek is doing well, brace will be off in 2 weeks. Tendons are fine, just bruised bones. Per Bobby okay to close 7/11. Could have lost a finger or two? I am going to say that I need additional information and I see Mike's point who put it at yes it is a SIF. Since the potential is there.
SIF Label - No value
Data Source - csv_upload

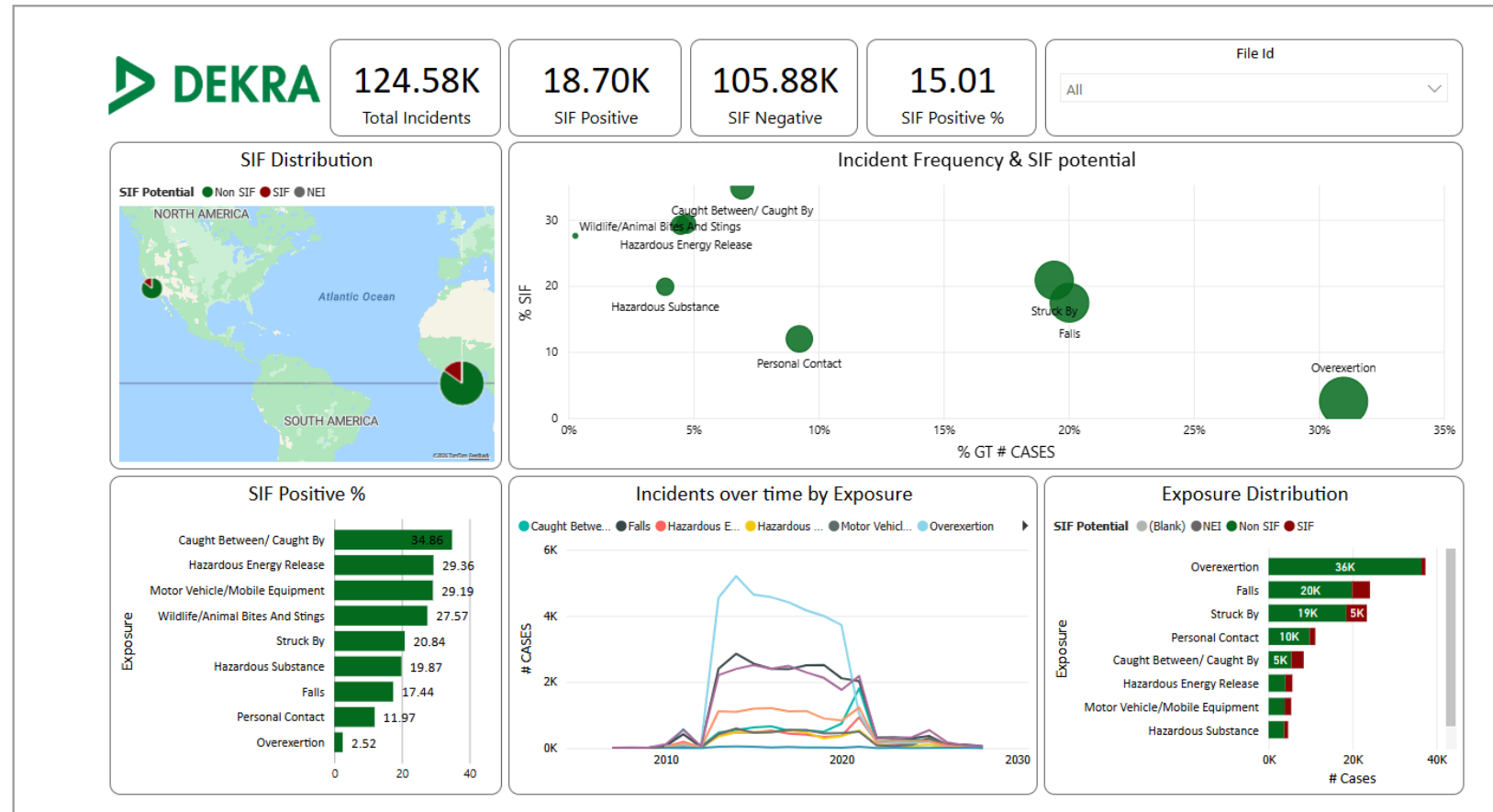
Modify Incident New Incidents DEKRA On the safe side.



AI for SIF Prevention

• Focused Executable Actions

- Upload
- Review
- Results
- SIF Reasoning



• Early Detection of Potential for Harm

Coupled with dashboards CN has developed, insights can point users to look deeper



The narrative commentary coupled with SIFp enables one to expand views about how the SIF potential is created and how to address it

