Worker Insights - Weak Signals and Conditions - 4Ds

Microsoft 365 Co-Pilot and OpenAI ChatGPT Agents

Oil & Gas Industry - Addressing Emerging Risks in Offshore Operations

Scenario: An offshore drilling company has been experiencing an increase in near-misses, particularly during maintenance activities. While no major accidents have occurred, frontline workers have spoken of recurring issues that have been overlooked. The organization leverages the 4Ds framework (Dumb, Dangerous, Difficult, Different) to understand worker challenges and improve operational learning.

How the AI Agent Helps

Step 1: Capturing Worker Insights using the 4Ds app

A structured 4D analysis is conducted through worker 4D storytelling of normal everyday work, e.g.

Dumb: "It doesn't make sense" – Workers report that certain maintenance checklists do not align with the actual workflow, leading to unnecessary delays and confusion.

Dangerous: "It feels unsafe" – Maintenance teams highlight that they often work in high-exposure areas without adequate fall protection.

Difficult: "It's harder than it should be" – Lifting operations require excessive manual effort due to outdated rigging equipment, increasing fatigue-related errors.

Different: "This has changed unexpectedly" – Workers note that a recent change in shift patterns has led to increased exhaustion and miscommunication.

Step 2: Data Analysis and Pattern Recognition using the AI Agent

Applying weak signal extraction and sentiment analysis, the Agents identify patterns and themes of:

Negative Sentiment Trends:

- "*Fatigue*" appears frequently in worker reports, indicating possible psychosocial risks.
- "*Fall protection*" is repeatedly mentioned under "dangerous," suggesting inadequate safety measures.
- "*Confusing checklist*" is highlighted under "dumb," showing a process inefficiency.

Positive Sentiment Trends:

- "*Team support*" appears frequently, indicating strong collaboration despite challenges.
- "*Adaptability*" is noted under different, suggesting workers are finding ways to adjust.

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How the AI Agent Helps (continued from previous page)

Step 3: Mapping Systemic Weaknesses

Using the organization's Fishbone approach (6M Framework of Machine, Material, Method, People, Environment, Measurement) the AI Agent shares the following problem statements for further understanding:

Machine (Equipment Issues): Outdated rigging equipment requires excessive manual handling.
Method (Procedures & Workflows): Checklists do not reflect actual work processes.
People (Human Factors): Fatigue due to shift changes is a growing concern.
Environment (Physical Conditions): Fall protection measures are inadequate in certain areas.
Measurement (Monitoring & Compliance): Safety audits don't capture worker inputs on near-misses.

Step 4: Identifying Learning Opportunities for a Learning Team (Deeper Dive on Systemic Issues)

Applying HOP principles, the organization shifts from a blame-based approach to a learning culture by:

Understanding Normal Work: Workers routinely create informal workarounds to navigate inefficient procedures.
Recognizing Systemic Risks: The company identifies that increased fatigue and miscommunication contribute to the risk of serious incidents.
Supporting Worker-Driven Improvements: Workers suggest modifying shift schedules and updating checklists to reflect real-world operations.

Key improvements implemented from the Learning Team:

✓ Updated maintenance checklists to match real workflows.
✓ Revised fall protection protocols based on actual worker feedback.
✓ Shift scheduling adjustments to reduce fatigue and enhance team communication.
✓ Regular Learning Teams established to maintain continuous safety engagement.

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Principles Based AI Approach to HOP

What does a principles based approach to using AI for HOP and Operational Learning look like.


AI, Like Humans, Makes Mistakes – Learning is Key

Just as people make mistakes in complex and adaptive systems, AI is not infallible— it will generate incorrect, misleading, or incomplete responses. Instead of expecting perfection, focus on continuous learning and improvement. AI errors are opportunities to refine queries, verify information, and engage in critical thinking. Just as we improve human performance by learning from mistakes, we can enhance AI interactions by iterating knowledge.

Blame Fixes Nothing – Learning Improves AI Responses

If AI provides an inaccurate or unhelpful response, the focus should be on improving the prompt or refining the inquiry rather than blaming the tool, ask, "How can I rephrase this to get a more useful answer?"
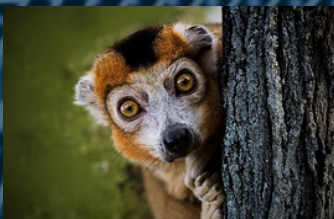
Context and Knowledge Drives AI Behavior

The effectiveness of AI responses depends on the context of the instruction and body of knowledge provided, including ethical use, privacy, copyright, misinformation and hallunication. The richer the context, the more tailored and useful the response. Be curious and ask Better Questions, just as you would with a human colleague to drive better behavior.

How You Respond to AI Mistakes Matters

If AI misinterprets a query, recognize it as an opportunity to refine and improve the interaction. Small experimentation "AI Trojan Mouse" and iteration with prompts can enhance learning and improve response accuracy and reduce hallunication and misinformation.

Learning is Essential for AI Improvement

Users who continuously refine how they interact with AI will derive greater value from it. Engage in an AI continous improvement cycle of Ask, Reflect, Refine, and Apply—to optimize AIs use in operational learning.

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