

WEARABLES, COMPUTER VISION, AI – What actually works in Workplace Safety?



PRESENTERS



Steve Simon
Sr. Risk Control Manager
Safety National



Erica Baird
Risk Control Manager
Safety National



OBJECTIVES



- AI Overview
- AI Technology Examples
- Cost and Investment
- Pros and Cons
- Conclusions and Research
- Q & A

WHY AI MATTERS



AI tools are reshaping how employers **identify, prevent, and respond** to risks.



AI tools support safer learning environments by enhancing **threat detection, safety training, and decision-making**.



AI tools help risk management **reduce incidents, claims, and operational disruptions**.

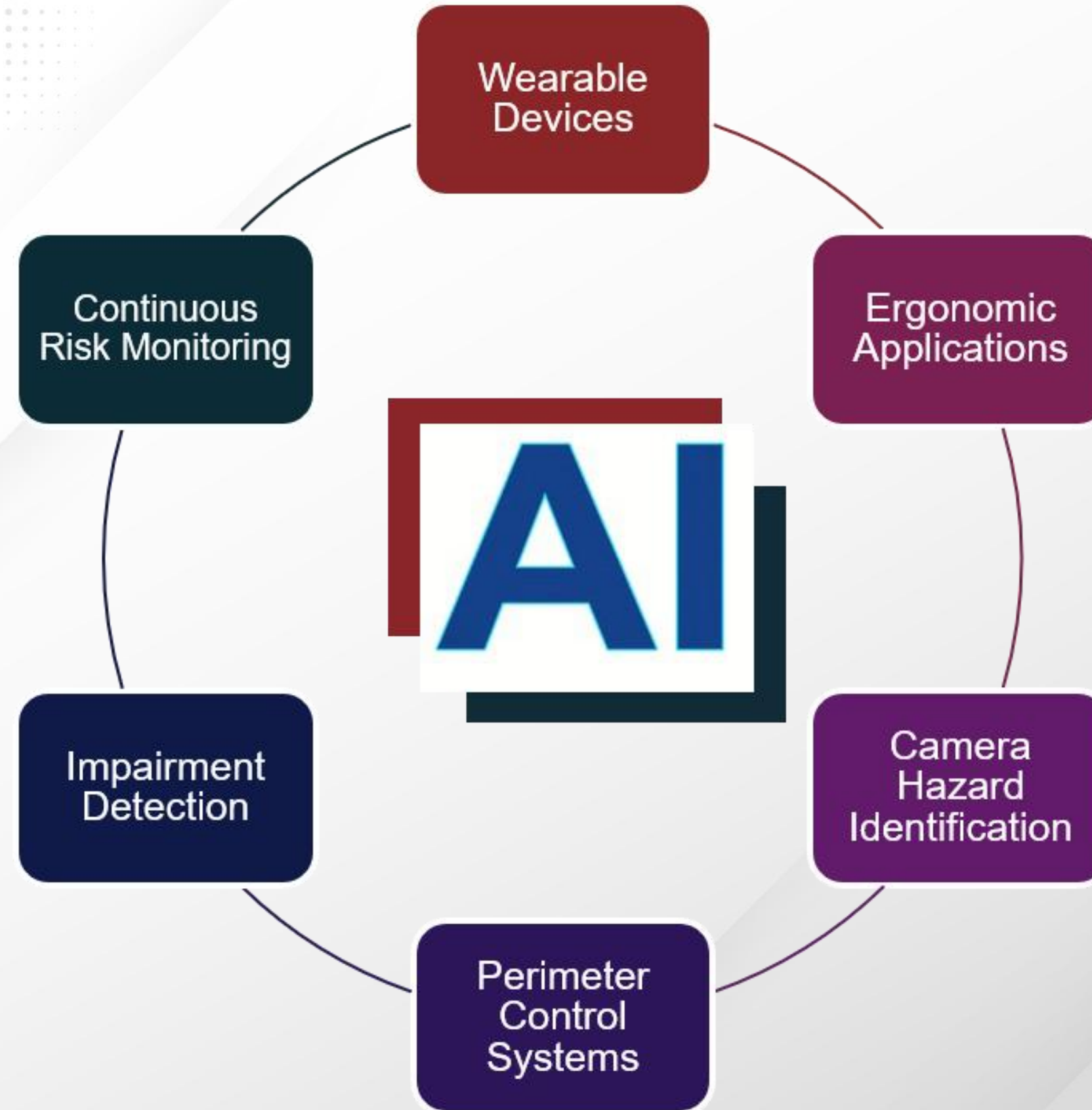
TRADITIONAL SAFETY MEASURES



- 1 Human Error Risks:**
Manual safety processes rely on human vigilance, increasing the risk of missed hazards
- 2 Delayed Hazard Detection:**
Traditional safety approaches often result in delays in identifying hazards, reducing timely responses to risks.
- 3 Lack of Continuous Monitoring:**
Signage and manual inspections do not provide continuous monitoring, creating potential safety gaps.

AI OVERVIEW & TECHNOLOGY EXAMPLES

KEY TYPES OF AI-POWERED TECHNOLOGY



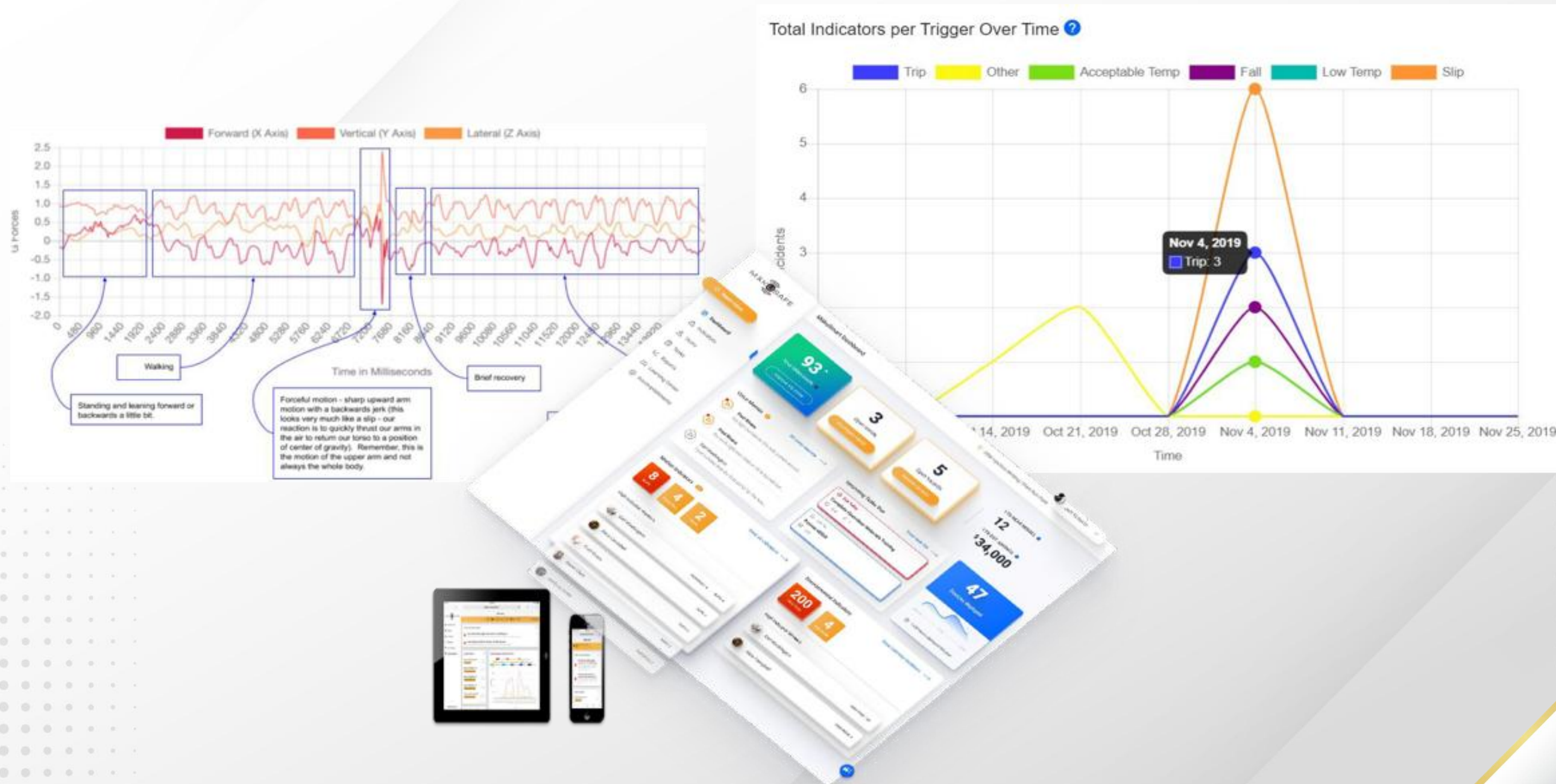
THE ROLE OF WEARABLE TECHNOLOGY

Critical Features & Benefits:

- 1 Wearables provide real-time monitoring, alerts, and data collection to help improve overall safety management
- 2 Various devices equipped with sensors that monitor vital signs, detect falls, and track environmental hazards



WEARABLE TECHNOLOGY DASHBOARDS



AI ERGONOMIC RISK ASSESSMENT

Artificial Intelligence for Ergo Apps:

- Easy-to-use ergonomic applications
- Manual material handling exposures
- Ergonomic methods/tools
- Alternative and a cost-effective approach
- Beneficial for safety and ergonomic committees
- Highly-validated and researched-based methods and tools



AI-CAMERA HAZARD DETECTION



- Leverages computer vision technology for automated hazard recognition
- Interprets images and videos in real-time, detecting obstructions, non-compliance, and unsafe behaviors
- Integrates with security camera systems for continuous monitoring and observations across the workforce
- Early detection allows for quick interventions to prevent accidents and ensure further workplace safety

AI-CAMERA HAZARD DETECTION

Property Damage



Slip/Fall Prevention



Falls & Fraud



Trespassing/Break-Ins



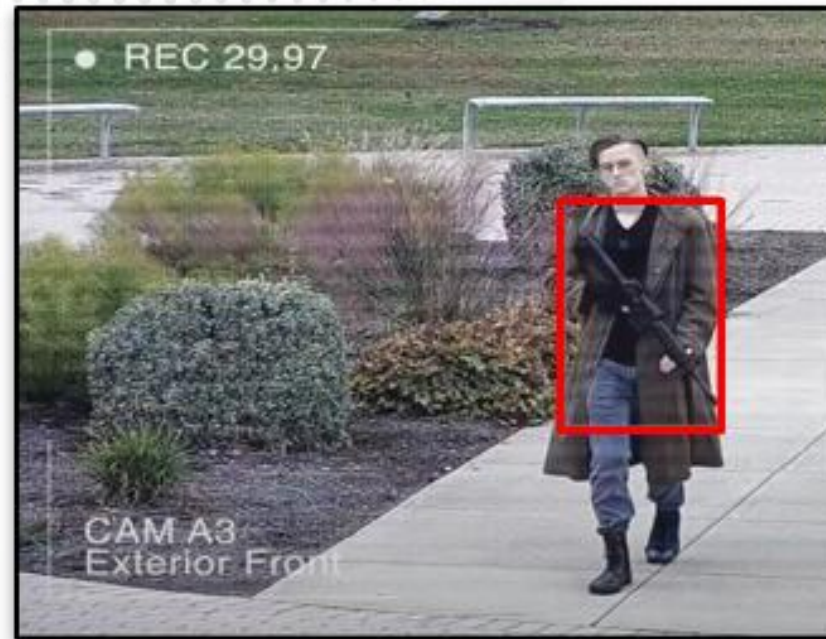
Vehicle Control



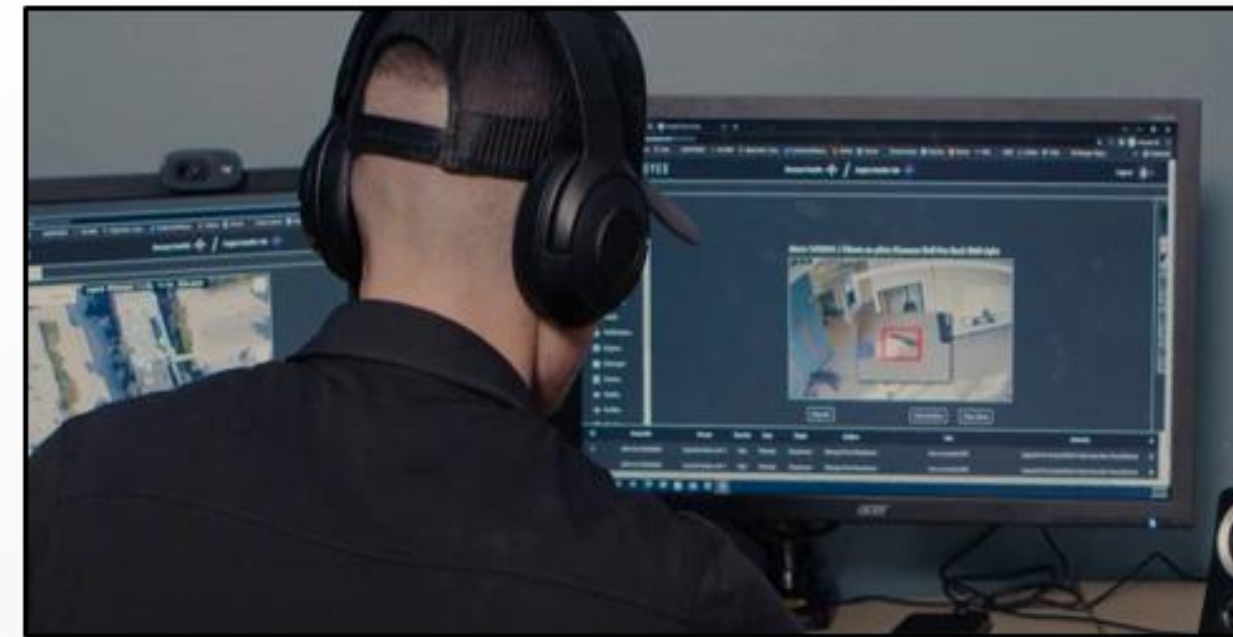
Productivity and more...

AI-WEAPON DETECTION

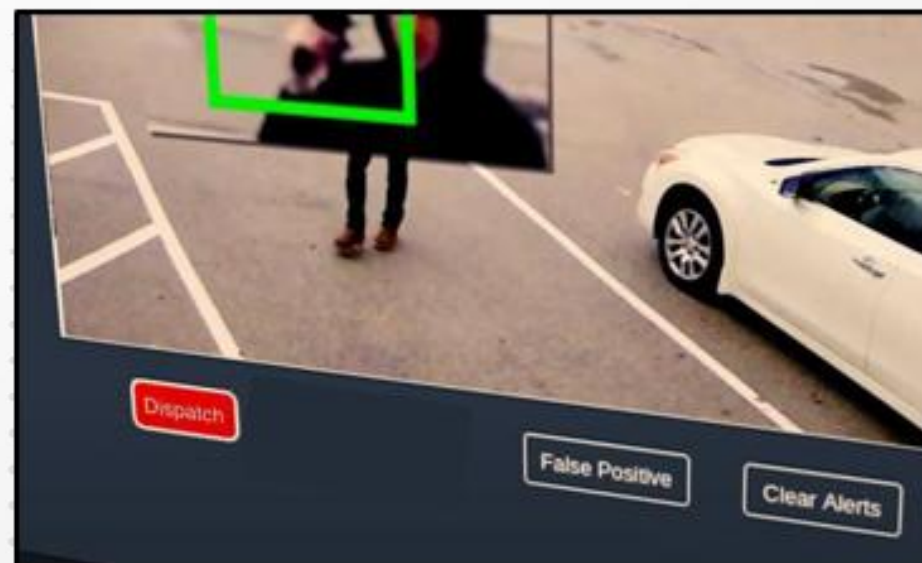
1. Computer Vision Makes Detection



2. Reviews Image - Verifies firearm



1. Alert is Dispatched (3-5 Seconds)



4. Client & LEOs Receive Alert



REAL-TIME DETECTION



Black on Black Rifle



Dual Detections



Rifle-Exterior



Night/Dark



Crowds



Pistol-Exterior

AI-IMPAIRMENT TECHNOLOGY



How It Works

- 1 Fit the headset to the test subject.
- 2 Pair the mobile app.
- 3 Start the test.
- 4 Test calibrates and runs automatically.
- 5 Receive the test results.

Drug Detection

(Standard 5-Panel Test)

AI can detect impairment
from all of these.

- DELTA-9 THC
- DELTA-8 THC
- SYNTHETIC CANNABINOIDS (K2 / SPICE)
- HEROIN
- SPEED (AMPHETAMINE)
- LSD
- PSILOCYBIN (MAGIC MUSHROOMS)
- PCP (PHENCYCLIDINE)
- KETAMINE
- PCP ANALOGUES
- FENTANYL
- NITAZINES
- COCAINE
- KRATOM
- CATHINONES
- XANAX (BENZODIAZEPINES)

AI-TECHNOLOGY COSTS/INVESTMENTS & PROS/CONS

AI TECHNOLOGY COSTS



Artificial Intelligence (*Ergo Apps*)

- Pilot Monthly Cost (~\$200-\$500)
- Full Rollout Annual Costs (~\$5K-\$15K)



IMU/Wearable Sensors

- Pilot Monthly Cost (~\$500-\$1,500)
- Full Rollout Annual Costs (~\$20K-\$40K)



AI Hazard Detection

- Pilot Stage (~\$10K-\$15K)
- Full Rollout (~\$25K-\$100K)

BENEFITS OF AI TECHNOLOGY

AI technology has the potential to:

- Drive rapid data results and early detection
- Generate detailed, specific data to help build a business case
- Create a promising job risk analysis, evaluation, or assessment (less time)
- Help prioritize safety resources



CHALLENGES OF AI TECHNOLOGY

AI technology could lead to:

- Employee distractions (wearables)
- Data security and privacy breach
- Ethical & labor concerns
- Over-trust or under-trust
- False alerts & alert fatigue
- Financial and time management commitments



KEY TAKEAWAYS: CONCLUSIONS AND FINAL THOUGHTS

RESEARCH CONCLUSIONS

AI Wearables and Ergo Apps:

- Much of the peer-reviewed research is still in early stages.
- Success stories rely on case studies or vendor-supported analyses, not independent peer-reviewed trials.
- Major occupational safety bodies (e.g., OSHA) do not yet have specific regulatory standards governing wearable tech.
- Success is dependent on safety culture and training programs.

AI Camera Hazard and Impairment Detection:

- There is evidence (e.g., Department of Homeland Security) that such systems can detect firearms in real time, providing alerts that cut response times.
- Industry reports (e.g., National Safety Council) suggest that AI camera analytics reliably monitor risk zones and potential violent threats, though these are not always published as peer-reviewed research.



FINAL THOUGHTS

- ❖ Organizations must **understand the pros and cons** before making final decisions.
- ❖ Continuously **engage staff/employees** in the process and pilot (culture).
- ❖ AI safety technologies are most effective when they **augment human judgement**, not when they try to replace it.
- ❖ AI technology is best at seeing (observing) and **humans are best at understanding** (depth and reasoning is important).
- ❖ Success is aligned with having **AI technology assist** with smarter decisions (not override human expertise).

QUESTIONS?

THANK YOU!

Enjoy the rest of the conference!

