Worker-in-the-loop Real-time Safety System for Short-duration Highway Work Zones
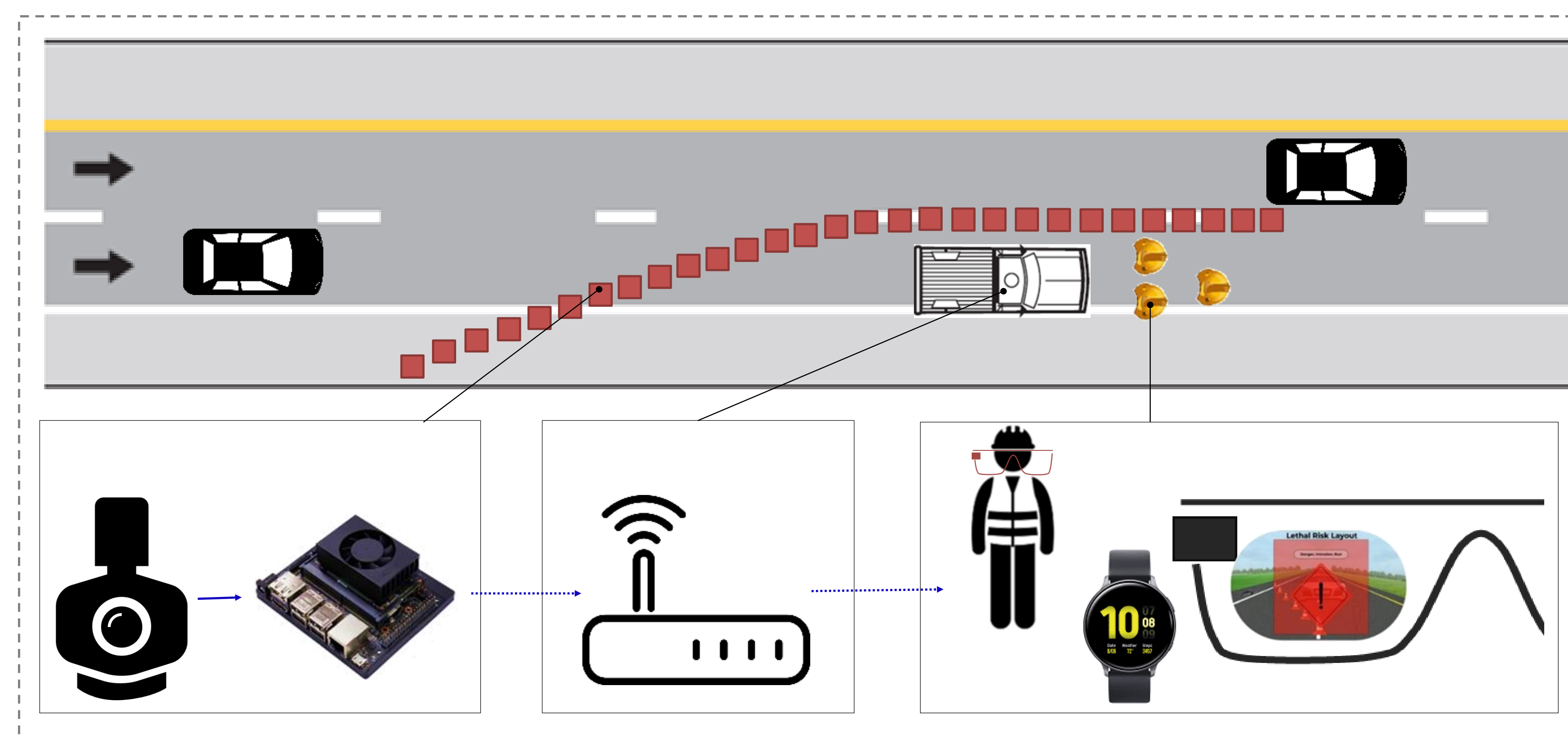
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Challenge:

- **Reactive** safety systems in the current practice
- **Untimely** and often **overdue** warnings to workers
- **Safety** risks from different origins with different natures

Solution:

- Leveraging **AI** for **predicting** intrusion and other traffic features such as speed
- Designing a tailored **multimodal** notification mechanism for workers
- Utilizing **wearable technology** for tracking workers' health and customizing user experience

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Low Risk Layout — No Audio

Medium Risk Layout — Low-pitched Beep

High Risk Layout — Low-pitched Audio and Vibration

Lethal Risk Layout — High-pitched Audio and Vibration

Risk Score: 0 — Low Risk — Check Point A — Medium Risk — Check Point B — High Risk — Lethal Risk — 10
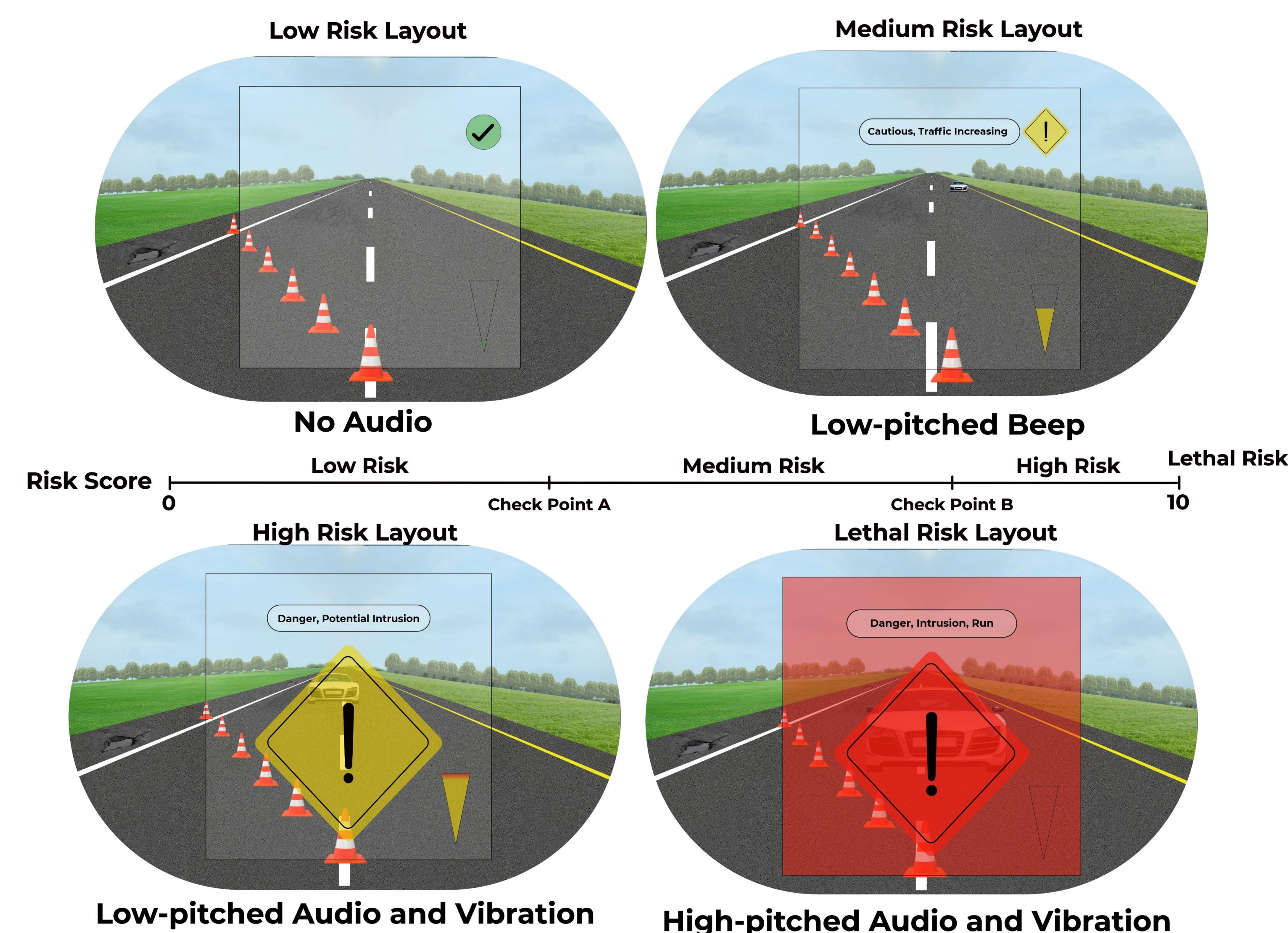
Scientific Impact:

- **Next generation** of Personal Protective Equipment (**PPEs**) in workforce
- **Smart** workplace
- **Worker-centered** user experience design

Broader Impact:

- Improve the overall safety of highway work zones
- Federal and states' agencies such as Department of Transportations (**DOTs**)
- Technology for securing the safety of future **Workforce**