Hard Hats Meet Smart Tech

A Practical Application of AI in Construction

57th Annual ECC Conference

Team Members:
Steve Cutrufello, ExxonMobil | Heitor Gartner, Kewazo

Meet the Panel

Ifeanyi Okpala
ExxonMobil
Owner

Kevin Brown
Performance Contractors
Contractor

Jason Chadee
Avathon
Vendor

Carmel Glumac
Kiewit
CII representative

Brandon Mabile
Performance Contractors
Moderator

Co-leads: Steve Cutrufello, ExxonMobil | Heitor Gartner, Kewazo

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Autonomy for Operations

Transforming manufacturing, supply chains, and asset management into adaptive, efficient, and value-driven systems

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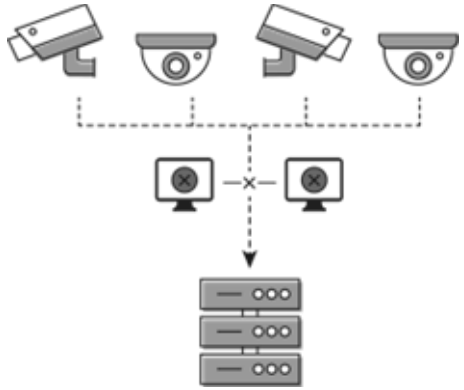
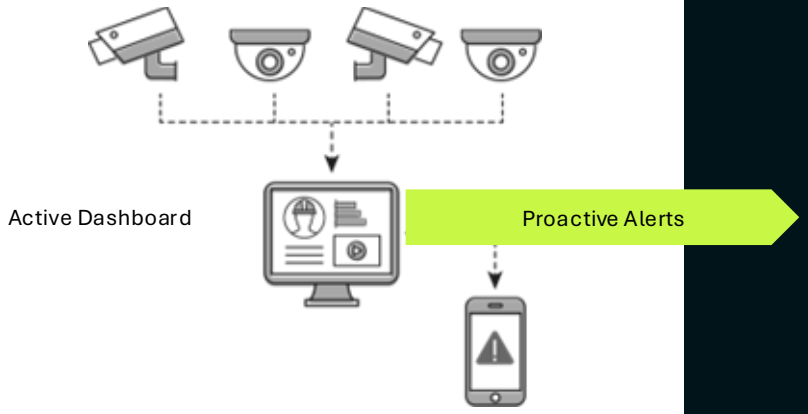
Avathon Visual AI - How it Works

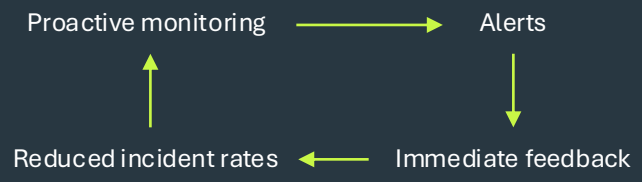
Traditional approach



- No automation
- No insights or actions
- Playback is retrospective
- No real time risk dashboard

AI-enabled approach





- Hooter/Buzzer at specified locations
- Display monitor at admin, shop floor, fire department etc.
- PA system at specified locations
- Alert to first responder at the earliest
- Ability to control/automate boom barrier etc.

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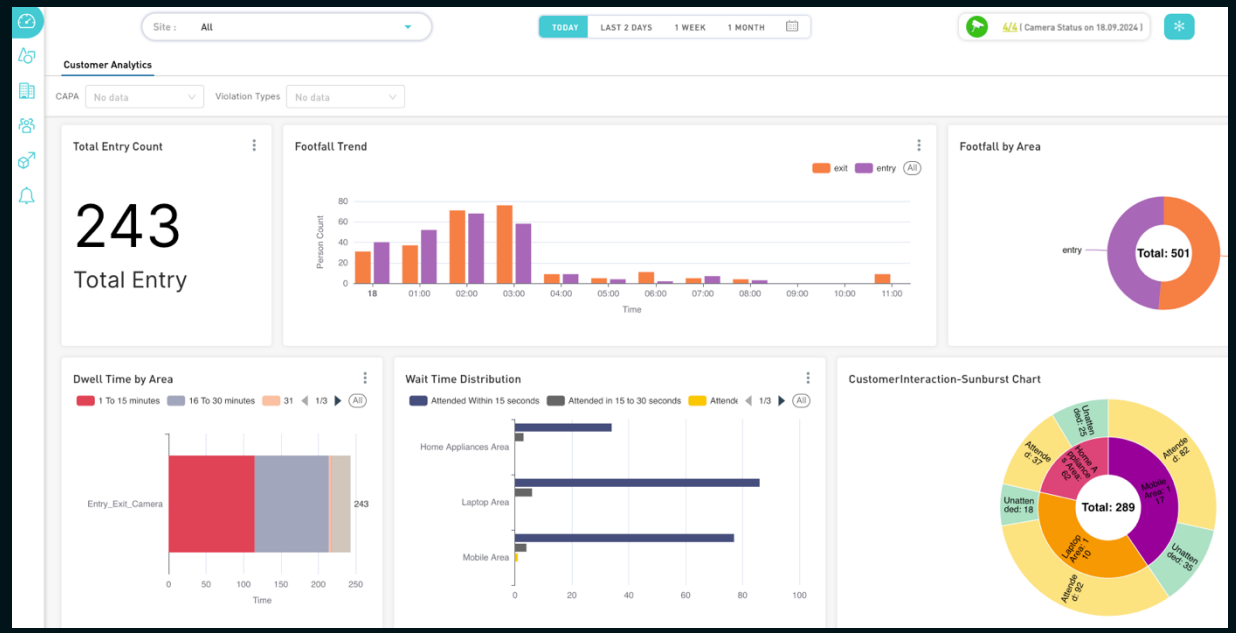
Visual analytics from video data feed

Continuous data stream

Single source of truth



- Real-time alerts with 24/7 operational support
- Historical KPI tracking for iterative program improvement
- Highly configurable and extendible

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Working Around Moving Equipment (WAME)

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Valid alert onsite HSE team took action to correct

Incorrect person detection example which was corrected through retraining and adjusting the model configuration

Valid alert onsite HSE team took action to correct

Lifting and Rigging

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Valid L&R observation example showing rigger in close proximity to suspended load

Incorrect suspended load detection example which was fixed by retraining the model

Valid L&R observation example showing rigger in close proximity to suspended load

Working at Heights (WAH)

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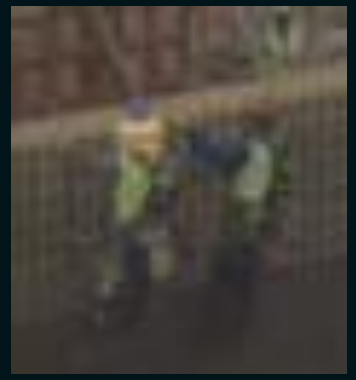

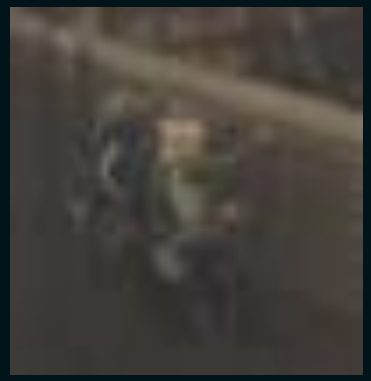

With an improved camera setup, the onsite team could monitor compliance to WAH protocols to **improve the overall health and safety**

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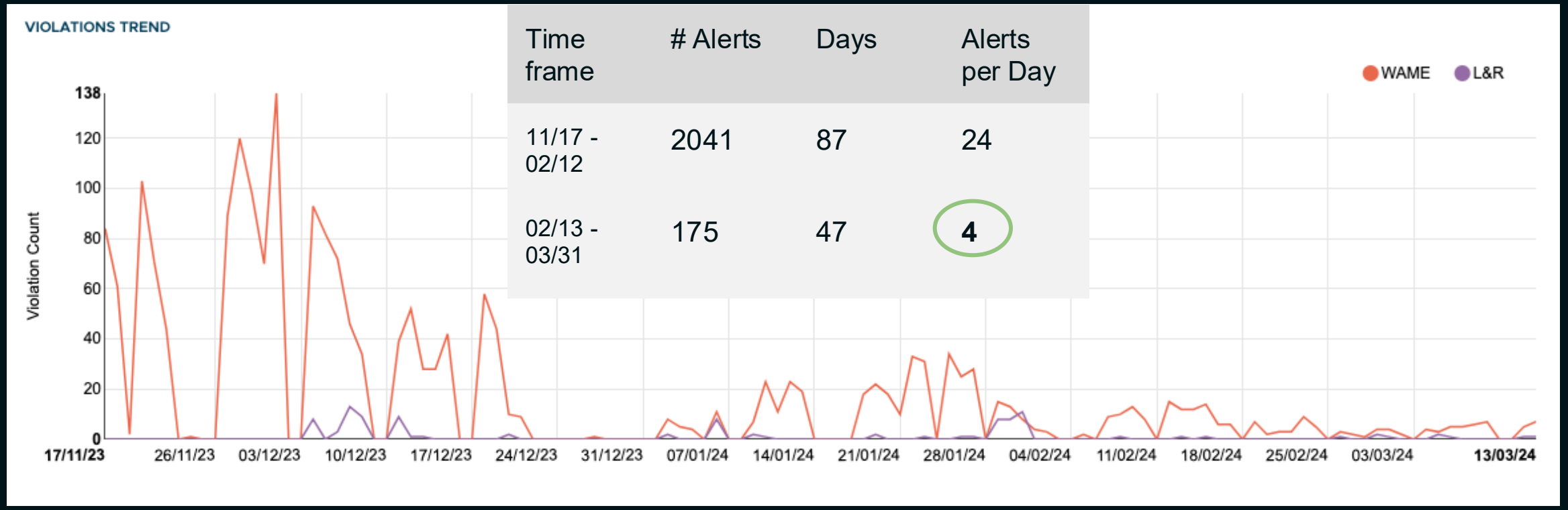
Progression of **Improvement over time**



Time frame	# Alerts	Days	Alerts per Day
11/17 - 02/12	2041	87	24
02/13 - 03/31	175	47	**4**

Production User Provisioning - 11/17/2023

Dec 7th - WAME and L&R improvement

Dec 21st - WAME and L&R improvement

Jan 22nd - WAME and L&R improvement

Jan 30th - WAME and L&R improvement

Feb 2nd - WAME and L&R improvement

Feb 12th - WAME and L&R improvement

March 12th - WAME and L&R improvement

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AI Selection Guide Tool

RT - 422

Introduction

This section provides a brief description of the tool and the contents of each available tab.

The AI Selection Guide Tool is designed to assist users in the following ways:

1) Identify appropriate use cases of safety-related issues for AI applications
2) Obtain the detailed challenges, benefits, and development workflows for AI applications
3) Provide the current status of maturity, feasibility, and considerstions of AI applications

This table below shows the different tabs and their accompanying content

Phase	Content
Introduction	Brief description of the tool
Phases	Select the safety processes and AI use cases
Workflow	Outlines the step-by-step process of adopting the tool
Analysis	Explains application impact, feasibility, and adoption effort
Factors	Lists critical decision-making consideration factors for AI

This tool was created by the Construction Industry Institute (CII) Research Team 422, "The State of AI for Construction Safety." https://www.construction-institute.org/rt-422

Start

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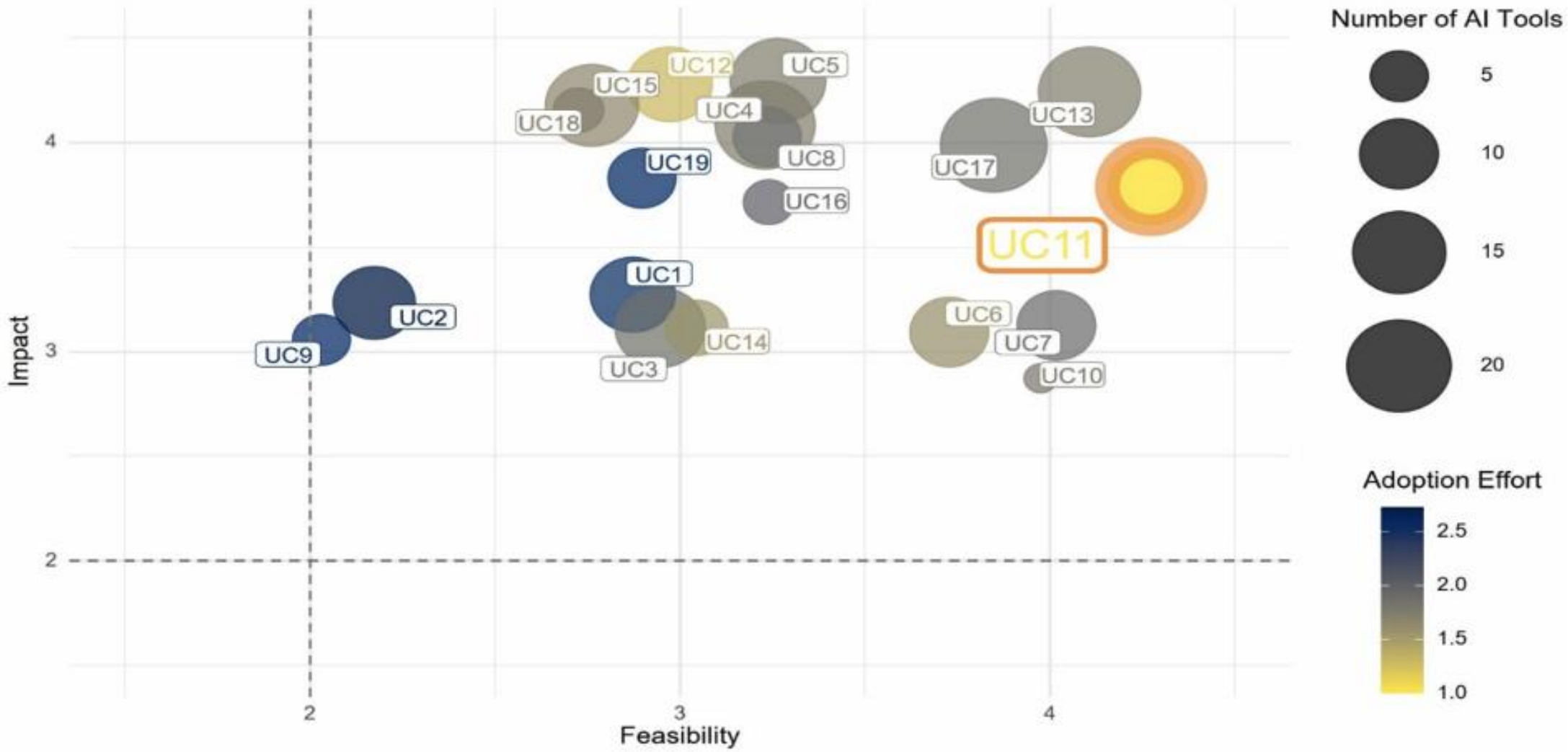
Impact
Feasibility
2
3
4
UC1
UC2
UC3
UC4
UC5
UC6
UC7
UC8
UC9
UC10
UC11
UC12
UC13
UC14
UC15
UC16
UC17
UC18
UC19
Number of AI Tools
5
10
15
20
Adoption Effort
2.5
2.0
1.5
1.0

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