

## The Reality of Al for Construction Safety

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SALUS



## The Reality of AI for Construction Safety

**Rob McKinney** 

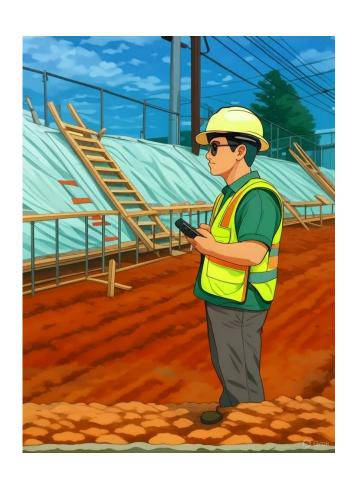
@conappguru

SALUS

2025 AGC Technology Conference







### Why me?

15 Years Safety Director

15+ Years Construction Technologist

10+ Years Technology Consultant

10+ Years Professional Speaker

Construction Safety Advocate



## This is a Wild Time for Construction Safety!

2025 AGC Technology Conference #AGCTECHCON2025



# There are a lot of promises about what AI can do for Safety Professionals!



## There are two camps for Al In the safety community.



## Camp #1 When your Safety Team hears Al...





## Camp #2 When your Safety Team hears Al...



## Two Camps in Construction Safety





Camp #1: The Skeptics

Al will replace safety professionals and eliminate jobs in the industry

#### Camp #2: The Believers

Al will revolutionize safety programs and prevent all workplace accidents

Reality lies somewhere between these extremes—Al is a powerful tool that augments human expertise.

#### **DIGITAL ASSISTANTS**

en tools like Siri, Alexa, soogle Assistant help ge daily tasks, provide s to queries, and control home devices, making ay life more convenient.



#### **SOCIAL MEDIA**

Al curates personalized content feeds, moderates user-generated content, and suggests friends or interest groups based on behavior, enhancing social connectivity.



#### **DRIVING**



ered self-driving cars and time traffic predictions roves road safety and s efficient transportation.

#### **FACIAL RECOGNITION**



Al secures devices, verifies identities, and enables seamless user access through face-based authentication.

#### FRAUD DETECTION



Al detects suspicious transactions and patterns i time, protecting users f financial fraud and cyber tl

#### PAM DETECTION



rs out unwanted emails or ages, ensuring a cleaner x and protecting against phishing scams.

#### **RECOMMEDATION SYSTEMS**



Al suggests products, shows, or music tailored to individual preferences, enhancing user engagement.

#### **CONTENT STREAM**



Al optimizes streaming q recommends content, personalizes viewing expe on platforms like Netf

#### **SMART KEYBOARDS**

dicts and autocorrects users type, improving speed, accuracy, and rall communication ency on smartphones and computers.



#### **SEARCH ENGINES**

Al enhances search engines by ranking and delivering the most relevant search results quickly, making it easier to find accurate information online.



### The Hidden Truth

## Most safety professionals don't realize Al realize Al is already using them

From predictive algorithms in safety software to automated reporting systems, Al has been quietly integrated into construction safety workflows for years.



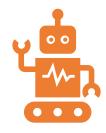
## Agenda



The state of AI for Safety in 2025



How can AI prompts improve safety performance?



Examples of AI that can help with construction safety now.

Part One

The Status Quo of Al for Safety

How can AI improve Safety Performance?





Is 2025 the year to use the new AI Technology in your Safety Program?





POLL #1

Who is using AI in your safety workflows now?

- What workflow(s), such as generating safety meeting topics?
- How long have you been using it?
- Which team members are using it?



What would you like to use AI for your safety workflows?

- What workflow(s)?
- How long have you been using it?
- Which team members are using it?



POLL #2

Who has a digital-based safety program now?

- Paper-based safety program?
- Paper-based safety forms?
- Excel-based safety forms?
- Safety Data Sheets on paper?

### What Safety Professionals Tell Me

1 Drowning in Documentation

2 N

No Approved AI Tools

3

Zero Al Training

Hours spent reviewing safety manuals, site plans, JHAs, and PTPs instead of being on-site Using "off-book" solutions or avoiding Al entirely due to lack of corporate approval Even when tools are available, teams lack proper training on effective implementation

## #1 Safety Pros are bogged down with:

Document review

Endless hours reviewing safety manuals, plans, and procedures

Meetings about meetings

Administrative tasks that pull them away from actual safety work



### #1 Safety Pros spend hours on:

**Reviewing Safety Manuals** 

Line-by-line document analysis

Site Safety Plans

Comprehensive plan evaluation

JHA's & PTP's

Job hazard and pre-task planning

**Email Management** 

Responding to endless communications

Open Item Tracking

Managing safety action items



### #1 How do Safety Pros want to use AI?



Generate Safety Content



**Compare Safety Documents Documents** 



Rapid analysis of document differences and compliance gaps



Analyze Trends

Pattern recognition in incident data and safety metrics

Automated creation of safety protocols and procedures



## #2 Do not have access to an approved AI tool.

## So they are using "off-book" tools...

### AKA "Piloting Software"

Safety professionals are turning to unauthorized AI solutions to fill the gap, creating potential security and compliance risks.





## #3 Have not been trained on how to use an approved AI tool.

## So they are not using any Al tools...

### very much

Without proper training and approved tools, safety professionals are missing out on Al's transformative potential.



## IT Pros have the POWER to improve this this situation

#1 Provide an AI TOOL!

Deploy approved, secure AI solutions for safety teams

#2 Provide training on Al!

Enable safety professionals with proper Al education

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### The IT Professional's Opportunity

#### **Provide Access**

- Deploy approved Al tools
- Ensure data security compliance
- Create governance frameworks

#### **Enable Training**

- Develop Al literacy programs
- Create safety-specific use cases
- Support pilot implementations

You have the power to transform how safety professionals work—and ultimately save lives.

## Al can help make sense of a messy world of safety data data

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Al can surface

patterns that
burned-out human
minds do not see!



Al can connect the dots dots that busy human human minds are missing!

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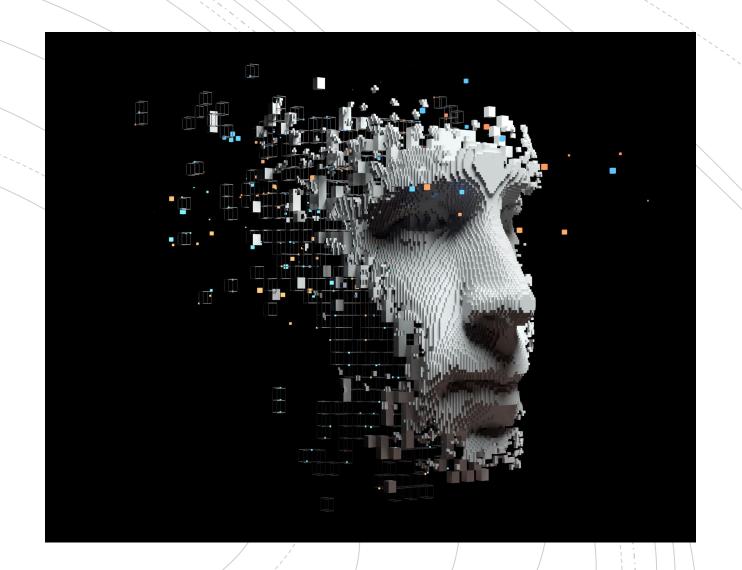


Al can provide the realreal-time intelligence intelligence safety pros pros need to mitigate mitigate risk

### Part Two

## Performance

How can AI improve Safety Performance?



### Artificial Intelligence vs. Augmented Intelligence

Resources: Dodge Network - Steve Jones

### **Artificial** Intelligence

Designed to replicate human intelligence

Takes over decision-making processes entirely

### Augmented Intelligence

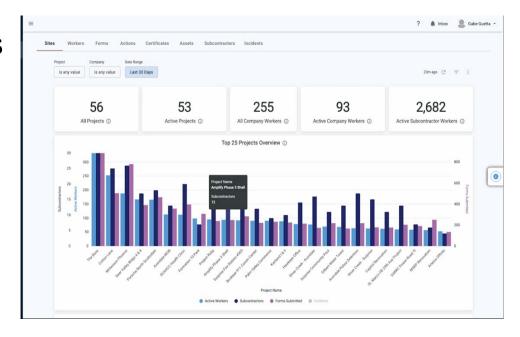
Designed to **support** human intelligence

Enhances human expertise and judgment



### 1. Historical Data Utilization and Predictive Analysis

By analyzing historical safety data from previous accidents, near misses, and safety observations, Al identifies patterns and trends that help predict potential safety risks in future projects.





### 2. Image Recognition Technology

Advanced image recognition technology is broadly being adopted to enhance <u>construction safety</u> on job sites.





### 3. Immediate Intervention Measures

Real-time data from AI gives site supervisors the power to quickly intervene, significantly reducing accident risks.



### 4. How does AI contribute to enhancing safety on construction sites?

Al enhances safety with real-time safety monitoring.

Cameras and sensors powered by AI technology installed around construction sites can detect unsafe behaviors, such as the absence of personal protective equipment (PPE) or unauthorized access to restricted areas.

Part Three

Search vs Prompt

How can Al improve Safety Performance?

## Search vs. Prompt: The Game Changer

#### **Traditional Search**

- Returns static information
- Requires manual analysis
- One-size-fits-all results

#### **Al Prompting**

- Analyzes and interprets data
- Provides contextual insights
- Enables proactive management

(i) Master prompting techniques to unlock Al's full potential for construction safety applications.

## Types of Al Prompts for Safety Professionals

#### **Core Prompt Types**

- 1. Classification Prompts
- 2. Reasoning Prompts
- 3. Completion Prompts
- 4. Creative Prompts
- 5. Comparison Prompts
- 6. Dialogue Prompts

#### **Advanced Applications**

- 1. Informational Prompts
- 2. Instructional Prompts
- 3. Interactive Prompts
- 4. Summarization Prompts
- 5. Translation Prompts

## How to Prompt Al like a Safety PRO!

- Define the Task

  Write a Safety Meeting Topic
- 2 Specify Audience & Attributes
  For a specialty Trade Contractor
- Use Clear & Precise Language

  Commercial Roofer working in Florida during August
- 4 Provide Output Examples

  Three paragraphs and bullet points
- 5 Iterate Through Conversation
  Talk to your Al Assistant continuously



## **#1** Creative Prompts

In this prompt type, the user asks the generative AI model to help brainstorm or imagine new artistic or creative ideas.

These include literary works like stories, songs, and sci-fi scripts, along with professional ones like ads, website copy, and brand marketing ideas.

Examples of this prompt:

Compose a new safety meeting topic for a mechanical contractor working on a roof in the month of July in San Diego.



## How to Prompt Al like a Safety PRO!

- 1. Task: Write a Safety Meeting Topic
- 2. Audience & Attributes: for a specialty Trade Contractor
- 3. Clear & Precise Language:
- 4. Detail: Commercial Roofer working in Florida during the month of August
- 5. Provide examples of desired outputs: Three Paragraphs and bullet points
- 6. Talk to your AI Assistant (iterate in a conversation)

## Real-World AI Prompt Example

"Write a Safety Meeting Topic about Heat Illness prevention strategies for a specialty Trade Contractor who is a Commercial Roofer working in Tampa Florida, during the months of June, July, and August. Format this document into three paragraphs with 3 key points in bullet points at the end. Use resources such as the websites of OSHA, Roofing Trade Associations, and Roofing Manufacturers. Cite any references."

This prompt includes: specific task, target audience, format requirements, and authoritative sources.



How to Prompt Al like a Safety PRO!

POLL

What is a safety meeting topics that would benefit your company?



## #2 Translation Prompts

In this prompt type, the user asks the generative AI model to translate parts of written language. Just tell the AI the language to which you would like it to translate a word, phrase, or block of text.

Examples of this prompt:

Translate the word "hammer" from English into Spanish.

Provide an English translation of the Ecuadorian president's speech from April 11, 2017.

## Real-World AI Prompt Example

"Write a Safety Meeting Topic about Heat Illness prevention strategies for a specialty Trade Contractor who is a Commercial Roofer working in Tampa Florida, during the months of June, July, and August. Format this document into three paragraphs with 3 key points in bullet points at the end. Use resources such as the websites of OSHA, Roofing Trade Associations, and Roofing Manufacturers. Cite any references. Write this document in the Spanish language, specifically the dialect if Mexico and Central American countries."

This prompt includes: specific task, target audience, format requirements, and authoritative sources.



### #3 Comparison Prompts

In this prompt type, the user asks the generative AI model to compare the attributes of different objects, concepts, products, ideas, or other variables.

With these, a user instructs the AI model to pit two or more things against one another. The response might list relevant attributes or make a judgment about the utility of one variable versus another.

Examples of this prompt:

Compare the specs for a 2017 Ford F150 and a 2019 Toyota Tacoma

## Real-World AI Prompt Example

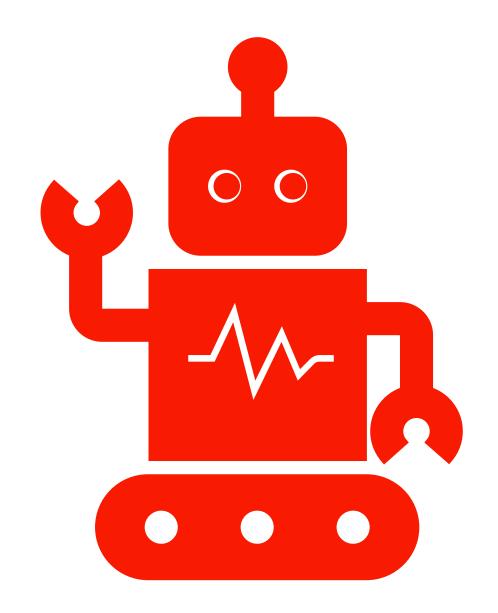
"Compare the Acme Electrical Site Specific Safety Plan to the project Andor Project specifications for a Subcontractor Site Specific Safety Plan. Look for any areas that do not meet the requirements. Point out the areas that meet the requirements."

This prompt includes: specific task, target audience, format requirements, and authoritative sources.

Part Four

**Current Options** 

How can AI improve Safety Performance?





## Four Ways AI can Improve Safety Workflows:

- Analyze photos and videos for safety hazards
- 2. Generate slides for Safety presentations
- 3. Generate videos for Safety training
- 4. Generate content for safety meetings and forms



## Al Tools for Safety Workflows:











## How can photos and Al improve safety?

Oracle Construction Intelligence

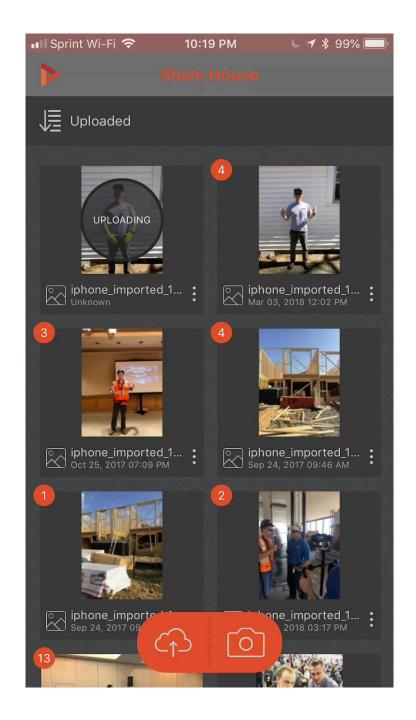
"Newmetrix"

AI is named "Vinny"

The Glove Report in 2018

**Uses Machine Learning** 

Photos & Videos of safety hazards





#### **Customer outcomes / ROI**

#### **Boldt**

- · 10% reduction in incident rate
- 75% reduction in Worker's comp rates

Source: Webinar, June 2025; Dodge Data & Analytics Safety Smart Market report, 2020

#### Suffolk

 57% reduction in TRIR (total recordable incident rate) since observation program inception

Source: Webinar, June 2025, Suffolk internal documentation

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Safety predictive analytics Al model capturing incidents of \$1.4M-\$3.6M/year

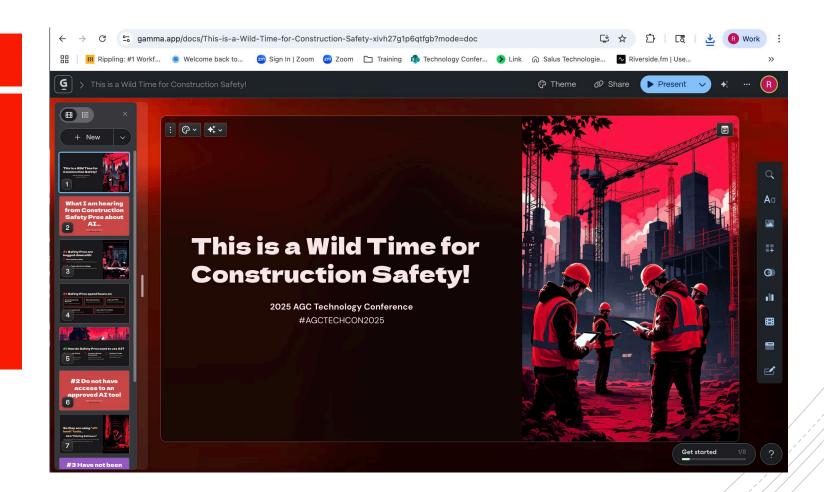
Source: June 2025 webinar; "Early warnings, how Suffolk & Newmetrix learned to predict and prevent construction incidents". 2021

How can photos and Al improve safety?



## • GAMMA:

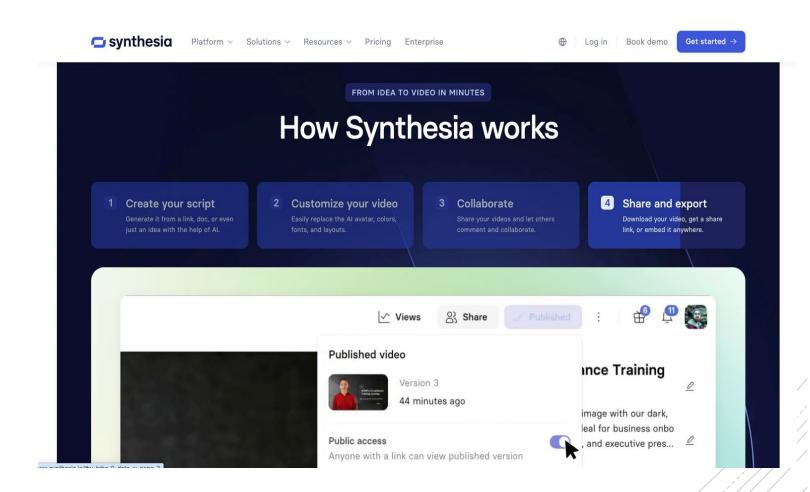
- Write Scripts for presentations.
- Import PowerPoint files.
- Create images





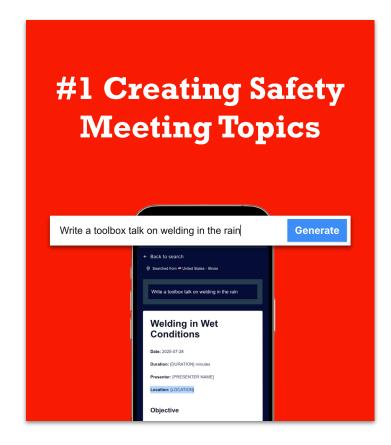
## Synthesia:

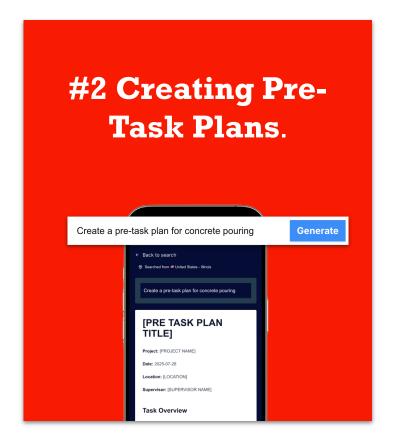
- Use Avatars for training.
- Write Scripts for courses.
- Adjust Language as needed.

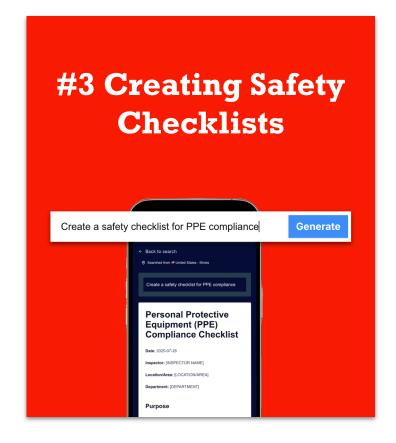


## How AI improve safety workflows?



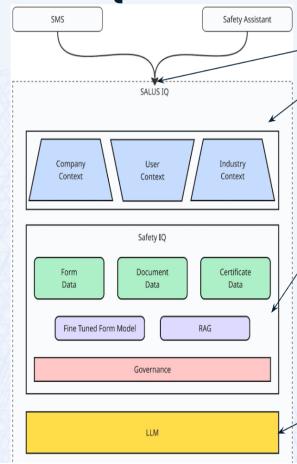






## How AI improve safety workflows?

## **SALUS IQ is the best Construction Safety AI**



#### **Deep Industry Context**

- We leverage over 400k pages (and counting) of industry docs to train SALUS IQ on a level of specific and validated construction safety context that other Al just doesn't have.

#### 7 Years and 450M Data Points

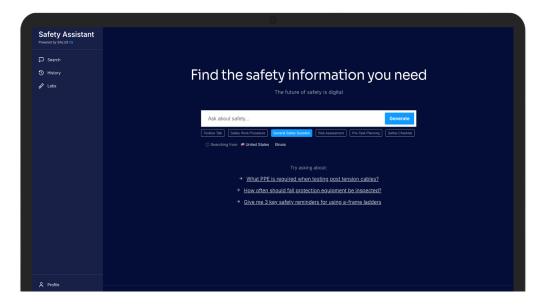
- We've been working in the industry for nearly a decade to understand what works and what doesn't. As a result we process over 700k new data points from the field every day and with it our Al keeps getting better.

#### **LLM Agnostic**

- We're leveraging 4+ LLMs and 10+ models to get the best possible result for each query.

CAFETY DOWEDED BY





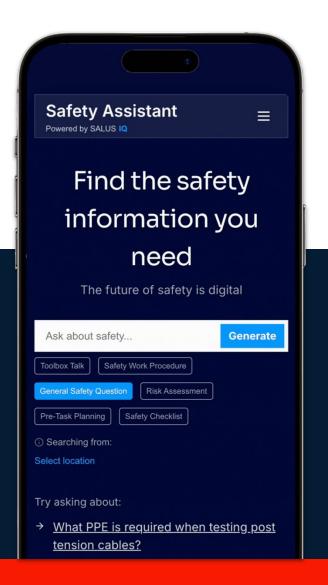
## **How Al improve safety Content?**

The SALUS Safety Assistant helps safety leaders move faster by <u>creating field-ready content in real</u> <u>time</u>.

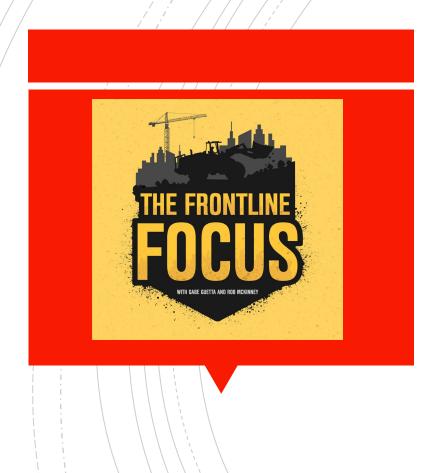
# Scan to Try the Safety Assistant

Instant toolbox talks, JHAs and more Built for the field Backed by 450M+ real data points









- Patrick Scarpati
  - Hugh Seaton
    - Jeff Elwell
- Brandon Millner











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Want to connect with me? >>>



