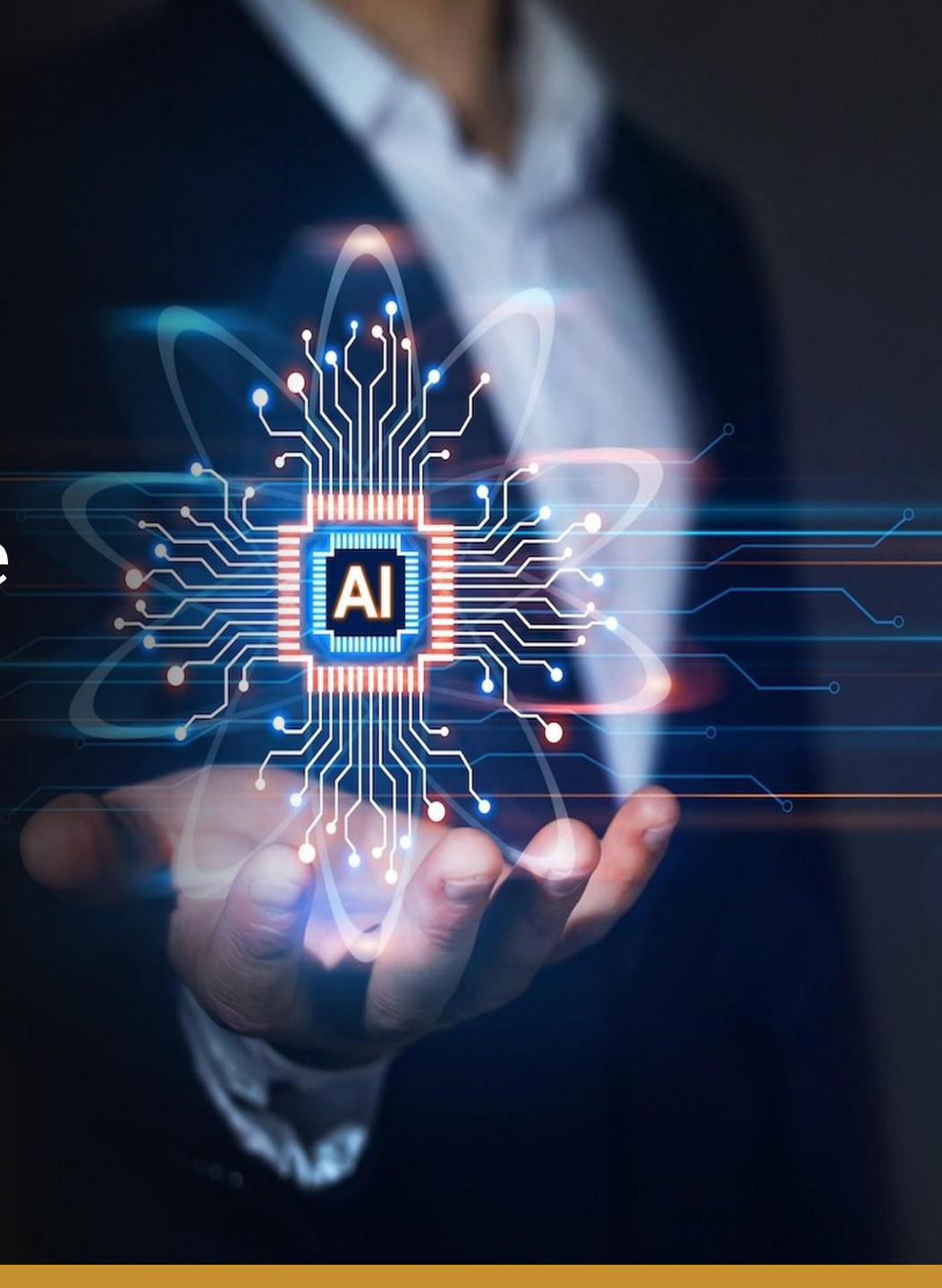
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JOINT TECHNICAL SYMPOSIUM 2026 | BREAKOUT SESSION

Human-Centered Intelligence
Safety and AI Integration

What one university custodial team taught us about using generative AI in safety training



Joy Boese, CAE
Founder and President, E3 Consulting

E3 CONSULTING | ERGONOMICCONSULTANTS.COM

October 22, 2026 | Carson Event Center | Orange Room

MEET YOUR PRESENTER

Designing Systems Around People



Joy Boese, CAE

Founder and President, E3 Consulting

30+ years of experience

More than 30 years at the point where AI technology, ergonomics, safety and human factors meet.

Joy founded E3 Consulting, a human-centered technology and strategy firm that designs systems around people. She helps organizations fit advanced technology to real human needs, capabilities and behaviors.

AREAS OF EXPERTISE

01 AI Technology

02 Ergonomics and Safety

03 Human Factors

04 Human-Centered Design

CLIENT PARTNERS INCLUDE

UC Irvine | CSU Office of the Chancellor | CSUDH | Toyota | Sony | AMD | JW Marriott | The Ritz-Carlton

WHO WE ARE

Human Factors, Safety and Technology in One Team

A women-owned firm that puts people at the center.

Based in Long Beach, California, E3 works across ergonomics, industrial engineering, safety and human factors. We use AI, safety data and technology to find risk earlier and shape work around the people who do it.

E3 has run Toyota Motor North America's ergonomics program since **2006.**

E3 has run Sony Pictures' national ergonomics program since **2004.**

Clients typically see a return on investment within **6 to 12 months.**

SELECTED CLIENTS

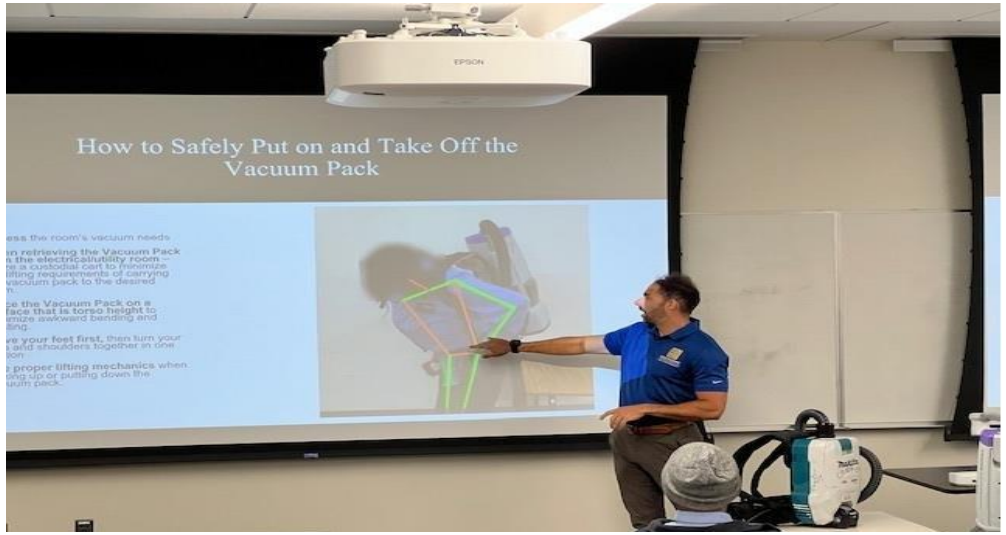
TOYOTA
SONY PICTURES
AMD
UC Irvine
CSUDH
CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS
CSU The California State University
OFFICE OF THE CHANCELLOR
JW MARRIOTT
THE RITZ-CARLTON
SIEMENS
Bank of America
KAISER PERMANENTE
Cigna
Paramount PICTURES
aramark
CLAREMONT McKENNA COLLEGE
AIG

TODAY'S SESSION

Safety Is a People Profession. AI Can Help.

AI can help safety professionals see the work more clearly. People still make the decisions.

This hour covers how E3 brought generative AI into a custodial safety program, what the injury data showed, and what changed for the people doing the work.



01

Where AI Fits

What AI does well in a safety program, and where human judgment stays in charge.

02

The CSUDH Case Study

How custodial recordable claims dropped 82% in under six months.

03

Taking It to Hospitality

The same approach applied to hotel housekeeping at JW Marriott and The Ritz-Carlton.

04

Lessons for Your Site

Practical steps you can take back to your own program.

WHERE AI FITS

AI Does the Watching. People Make the Call.



WHAT AI HELPS US DO

01 Spot ergonomic risk faster and more precisely

02 Analyze movement with video-based risk modeling

03 Produce detailed reports and recommendations in less time

04 Deliver task-specific, multilingual training to every shift

05 Track trends, compliance and engagement over time

WHAT PEOPLE STILL OWN

Going to see the work

Earning the crew's trust

Deciding what is practical to fix

Setting priorities and owning the results

Used this way, AI helps catch injury risk earlier and supports OSHA and Cal/OSHA compliance at scale.

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CSUDH
CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

CASE STUDY 01

Cal State Dominguez Hills

Custodial services, 2024 to 2025

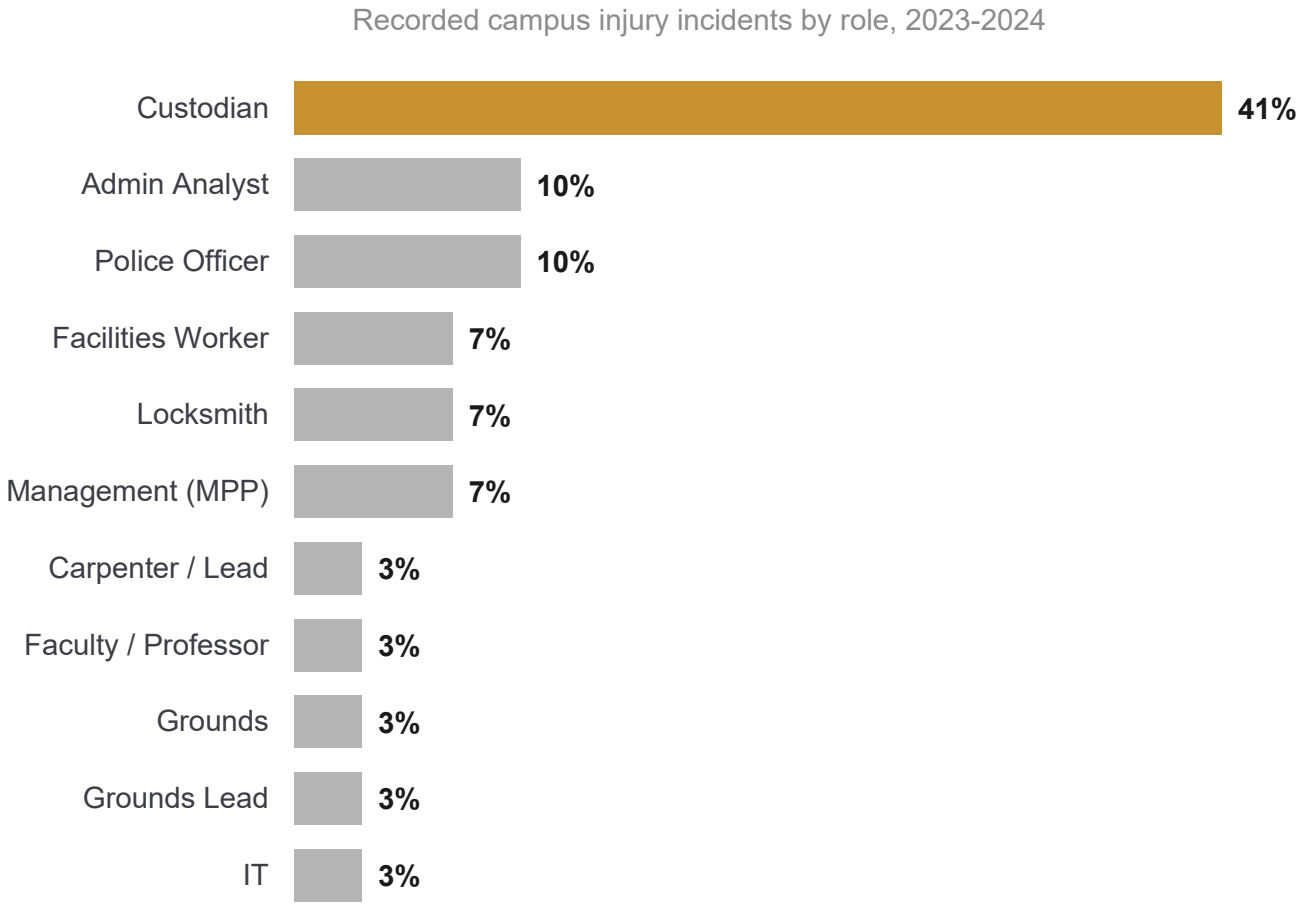


E3 CONSULTING | ERGONOMICCONSULTANTS.COM

Joint Technical Symposium | October 22, 2026

WHERE WE BEGAN

Custodians Reported 41% of Campus Injuries



41%

of recorded campus injuries in 2023-2024 came from custodians, about four times the next highest role.

A LEAN SAFETY TEAM

The campus EHS team had one occupational safety specialist and no ergonomist. E3 was already doing office ergonomic evaluations on campus, so the team asked us to take this on.

Source: CSUDH recorded campus injury incidents by role, 2023-2024. Percentages rounded.

Onsite Assessment Began in July 2024

E3 consultants spent time on campus with the custodial crews.

01 Onsite ergonomic audits and evaluations

02 Interviews with custodians, managers and supervisors

03 Observation of crews in their real work environments, doing their typical tasks

TASKS OBSERVED

Vacuuming	**Restroom cleaning**
General surface cleaning	**Night shift cleaning**



CSUDH custodial crews during the onsite assessment

AI Turns Observation into Risk Analysis

Every movement gets recorded and scored.

We filmed custodians doing their normal tasks. Video-based risk modeling tracks the body through each task and flags the postures and motions that carry the most risk.

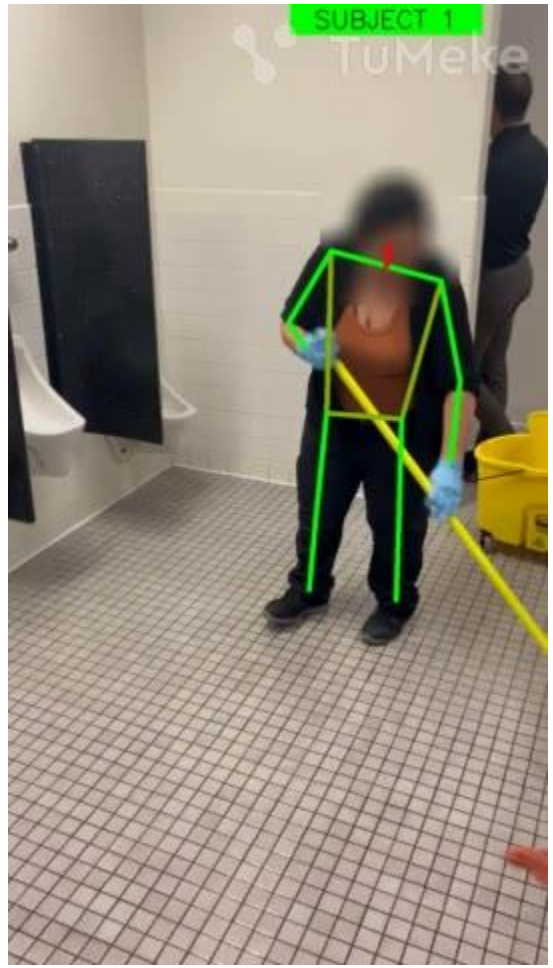
A consultant with a clipboard sees part of a shift. The video keeps all of it, so nothing gets missed.



Still frame from the restroom cleaning analysis



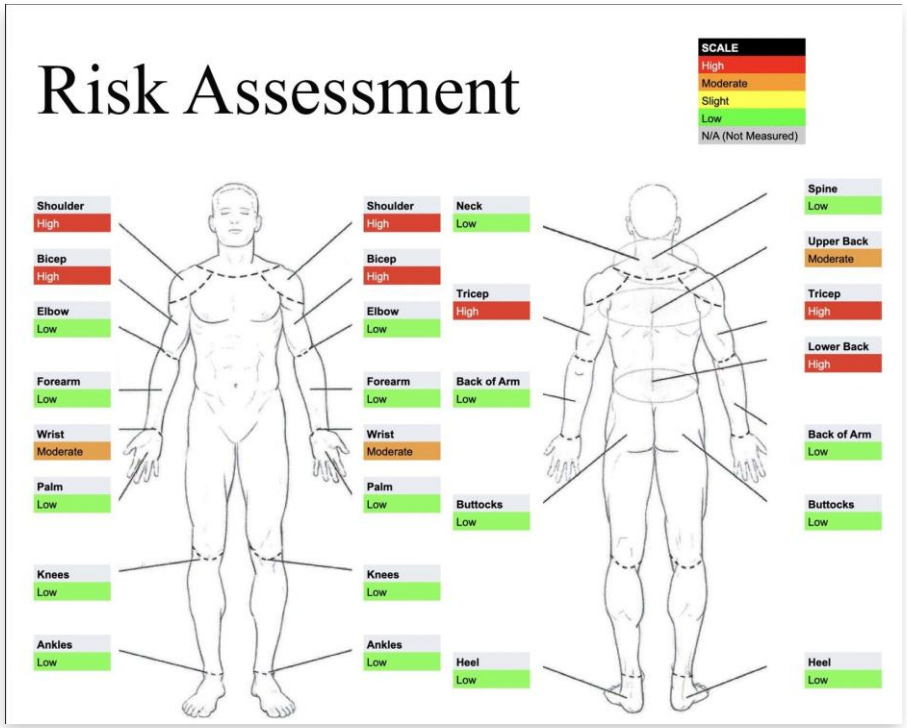
Restroom cleaning (video)



Mopping (video)

An AI-Generated Risk and Discomfort Assessment





Body-region risk ratings from the AI assessment

These findings, together with campus loss run reports, shaped a five-week training course.

01 **REPETITIVE MOTION**

Doing the same movement over and over.

02 **AWKWARD POSTURES**

Working in positions that put extra demand on the body.

03 **EXCESSIVE FORCE**

Too much pressure on muscles and joints.

04 **PRESSURE POINTS**

The body pressing against hard or sharp surfaces.

Where We See the Most Honest Feedback

01

One-on-one interviews with trained consultants

Employees speak candidly in a neutral setting, without pressure or fear that it will be escalated.

02

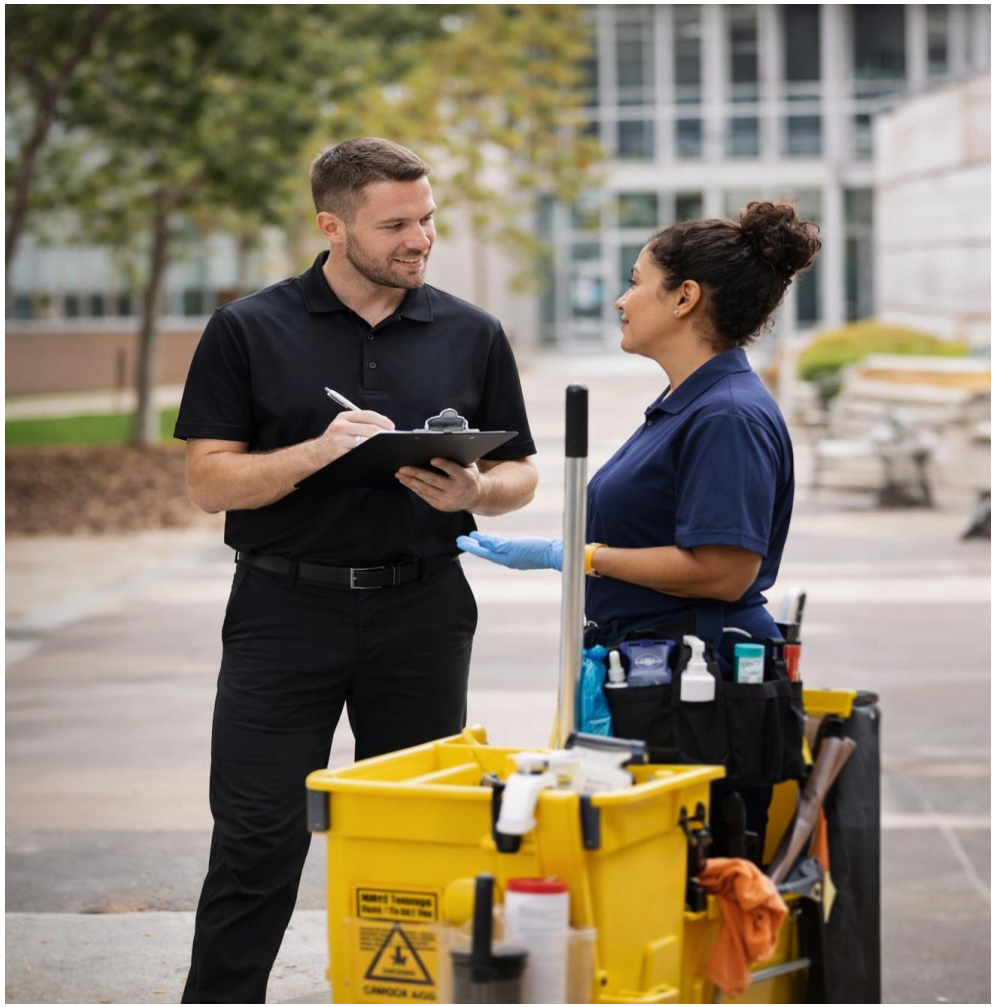
Anonymous surveys run by E3

Structured surveys show patterns across roles, shifts and teams, and people answer honestly.

03

AI software and training platform

Employees log discomfort and flag risks, which notifies E3's consultants and the client's internal team.



A Hybrid Training Model Built Around the Crew







Five weeks of training, built from what we saw on site.

IN THE ROOM

- AI videos that show poor and good posture side by side
- Live demonstrations of new ergonomic tools, with peer coaching
- Stretching together as a group before and after work

BETWEEN SESSIONS

- Ergo tips and videos on the TVs in staff areas
- Quarterly refresher training
- QR codes to rewatch earlier sessions

THE GOAL A culture where safe, efficient movement is understood and reinforced over time.

Tip Cards and QR Codes on the Equipment Itself

01 Manufacturer demos first

The equipment makers showed crews how to use their tools.

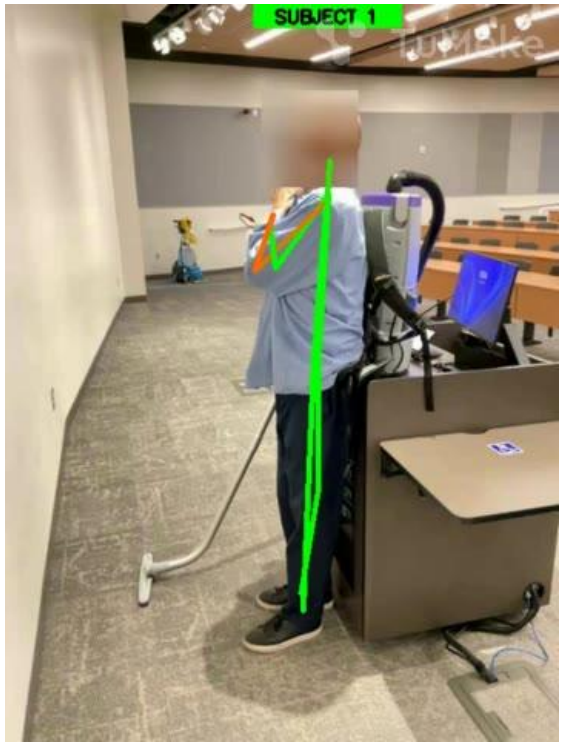
02 Tip cards on the equipment

Cards with written instructions and QR codes linking to short videos were attached right to the equipment.





Backpack vacuum tip card, front and back



Backpack vacuum, AI pose analysis (video)

THE RESULTS

What Changed in Less Than Six Months

CUSTODIAL RECORDABLE CLAIMS

82%

reduction in less than six months

TOTAL CAMPUS RECORDABLES

48%

decrease across the whole campus

EMPLOYEE ENGAGEMENT

85%

increase through custom training

HOW WE GOT THERE

2023-2024

Custodians report 41% of campus injuries

JULY 2024

Onsite assessment and AI risk analysis

FIVE WEEKS

Custom training and change management

2024-2025

Results measured against the prior year

Source: CSUDH injury data, 2023/2024 compared with 2024/2025.

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CASE STUDY 02

JW Marriott and The Ritz-Carlton

The same approach, applied to housekeeping at L.A. LIVE



WHERE WE BEGAN

Housekeepers Carried Most of the Injury Load

Recordable injury data across JW Marriott and The Ritz-Carlton at L.A. LIVE, 2023 to 2025.

81%

of recordable injuries involved housekeepers

43 of 53

total injuries were tied to the housekeeper role

77%

were sprains, strains or cumulative trauma

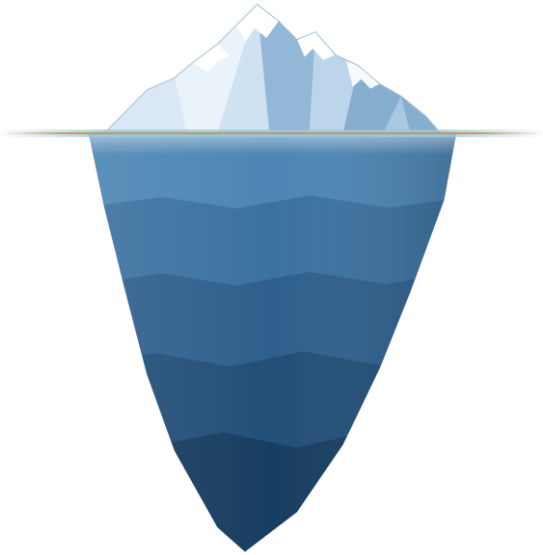
WHAT WE SAW FIRST

The housekeeping cart looked like the source of the risk.

JW MARRIOTT. THE RITZ-CARLTON

THE ICEBERG EFFECT

Hired for the Cart. The Problem Ran Deeper.



VISIBLE

Housekeeping cart injuries

What we were brought in to address

HIDDEN ROOT CAUSES

Chemical process

Over-concentrated chemical dilution, 9.9 oz/gal brought down to 4-6 oz/gal

Linen management

Supply chain gaps that left carts overweight

Improper tools

No microfiber, dusters or bed wedges

E3 fixed the upstream causes →

RESULTS FROM FIXING THE UPSTREAM CAUSES

66%↓

Repetitive strain injuries, 9 cases (Feb-Apr 2025) to 3 (Feb-Apr 2026)

0

Chemical-process recordables, Feb-Apr 2026

10-15%↓

Chemical cost reduction

98%

Staff trained (128 of 131)

Training Housekeepers Can Pull Up on Their Phones

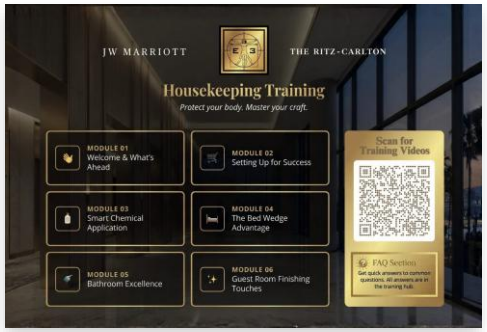


Six short modules, from Welcome and What's Ahead to Guest Room Finishing Touches

Training that goes back to work with them.

E3 paired the in-person sessions with custom AI training videos and printed tip cards linked to the E3 Training Hub, so housekeepers can revisit the guidance on the job.

Every team member received instructions in English and in Spanish.



English



Spanish

Module 5: Bathroom Excellence



Click to play

ABOUT THIS MODULE

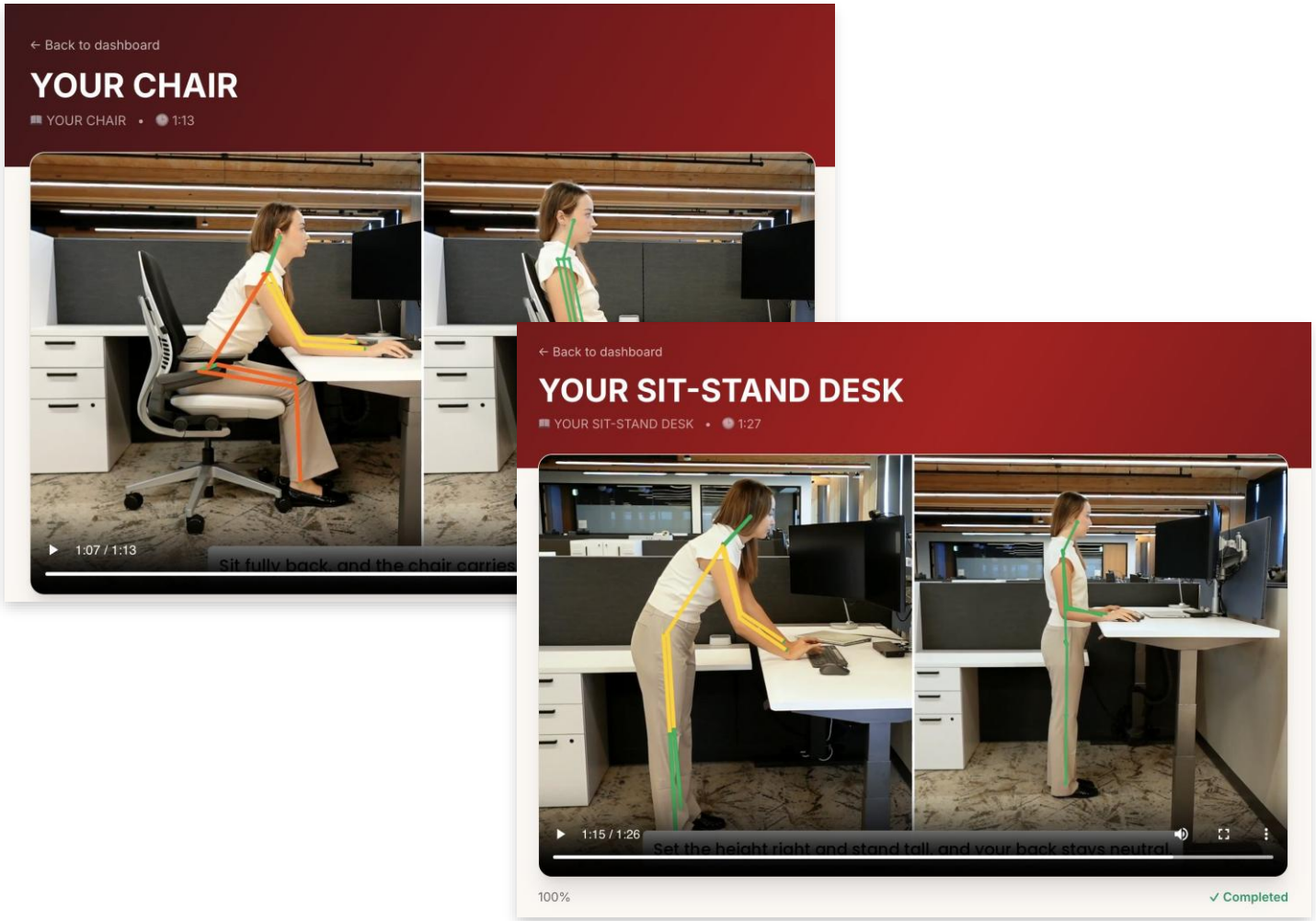
01 Custom AI training video built for this housekeeping team

02 Bilingual title: Bathroom Excellence and Excelencia en el Baño

03 Reached from the QR tip cards and the E3 Training Hub

04 About three minutes long

AI Visual Coaching Makes Good Practice Easy to See

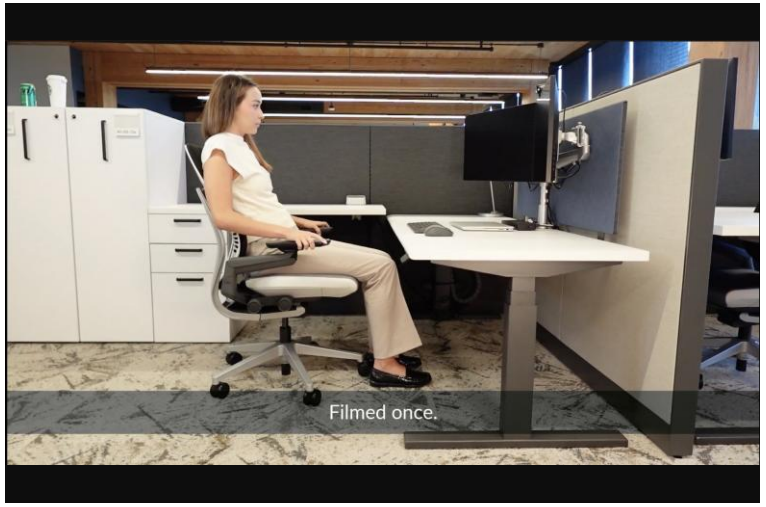


A custom training experience built around the employee's real environment.

- AI-assisted posture overlays show employees the correction right away
- Side-by-side views of correct and incorrect posture
- Closed captions in 32 languages
- Client-branded login with secure single sign-on
- Short, on-demand micro-training modules

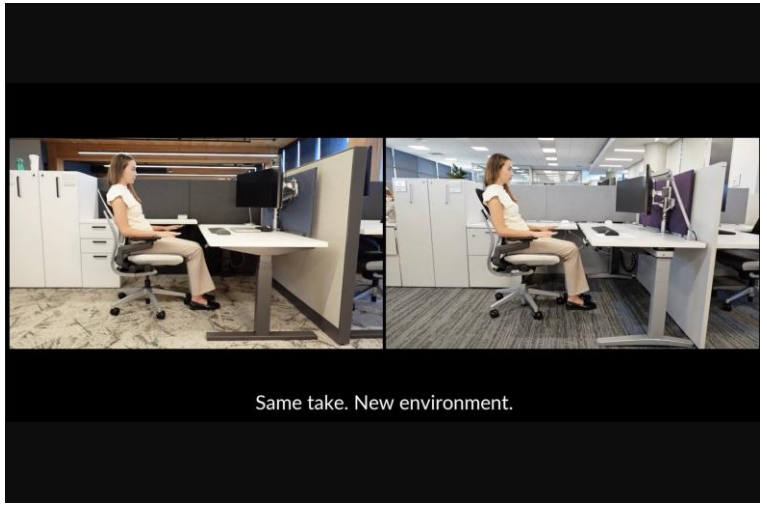
THE TRAINING PLATFORM

Film Once. Use It Across Every Workplace.



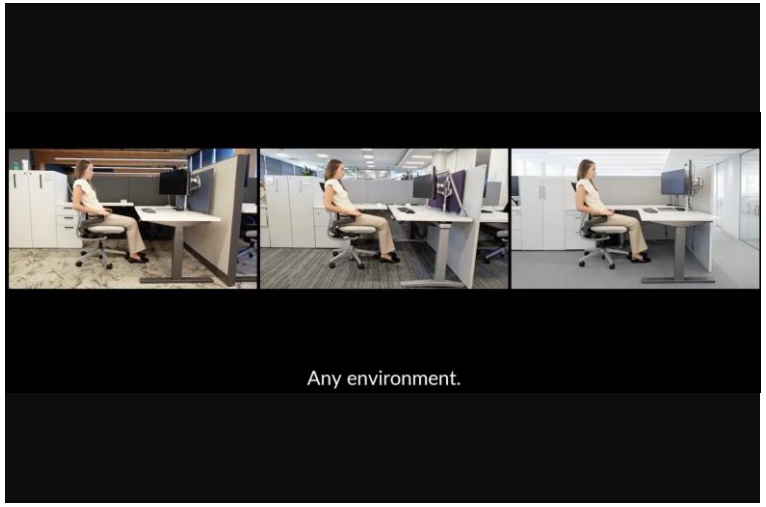
01 CAPTURE ONCE

Film one clear, expert-approved demonstration.



02 ADAPT THE ENVIRONMENT

Change the workplace setting without reshooting the core content.



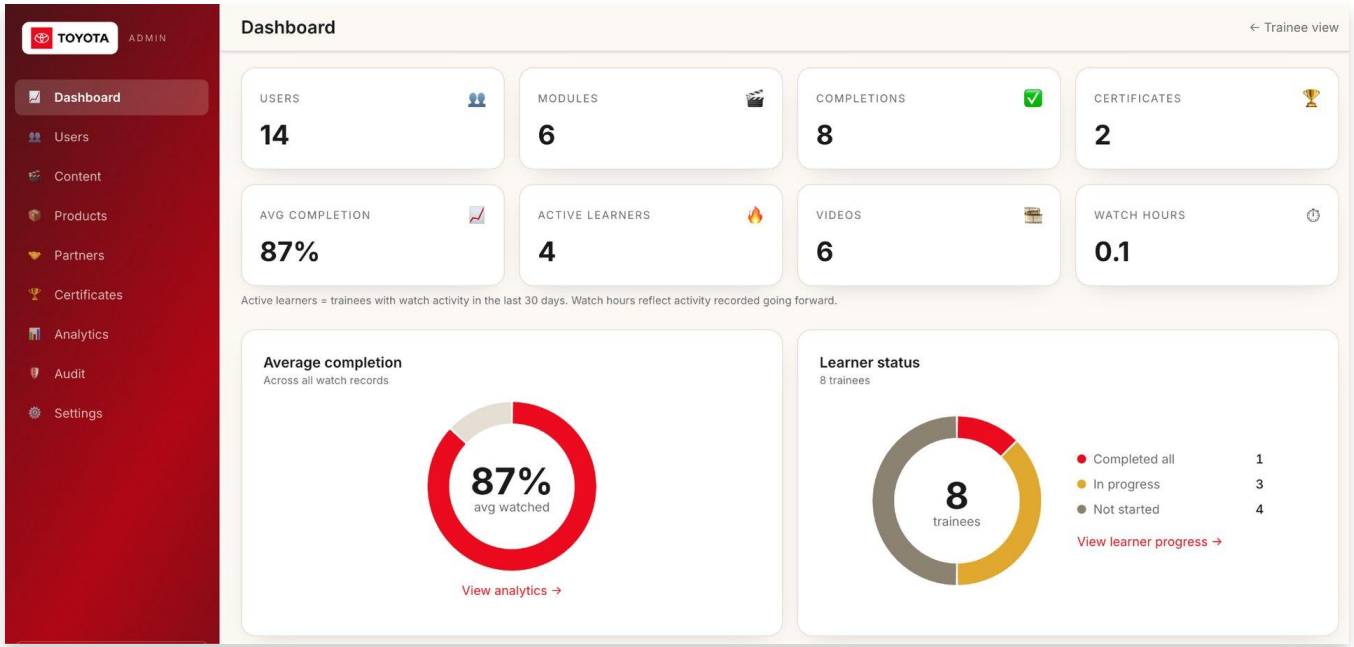
03 DELIVER CONSISTENTLY

Give every office, region and team the same quality of guidance.

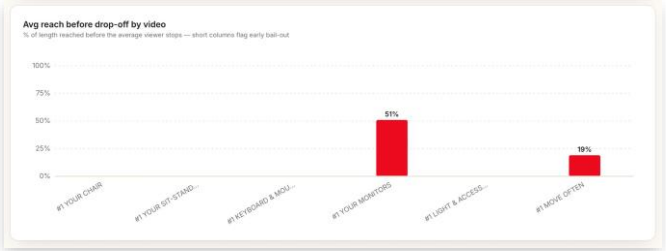
For multi-site programs, one approved demonstration can serve every location.

MEASURE WHAT MATTERS

See Where Training Is Working, and Where It Isn't







PROGRAM DASHBOARD

- Participation and active learners
- Module completion and certificates
- Overall progress and engagement

ENGAGEMENT ANALYTICS

- Find where learner engagement drops
- Compare progress across topics
- Improve content based on viewing and completion

Training becomes something you can measure and keep improving.

Six Lessons from the Field

01

Start with your own data

Break recordables and loss runs down by role. At CSUDH, one department stood out at 41%.

02

Go see the work

Watch real tasks in real conditions, night shift included, and talk with crews and supervisors.

03

Let AI watch, let people decide

Video risk modeling catches what a walkthrough misses. Your judgment still sets the priorities.

04

Look past the obvious cause

At the hotels, the fix sat upstream in chemical dilution, linen supply and missing tools.

05

Train for the real job

Short, task-specific, multilingual training, reinforced with QR codes on the equipment.

06

Measure engagement too

Completion rates are a start. Watch where learners drop off and keep improving the content.

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THANK YOU

Questions?

Elevate, Engineer and Excel. That is our promise to you.

Joy Boese, CAE
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310-791-5085