



HAWAIIAN DREDGING CONSTRUCTION COMPANY

Modern technology supports a century-old commitment to safety

COMPANY BACKGROUND

Hawaiian Dredging, the largest and most diverse general contractor in the state, was founded in 1902 with much of its early work focusing on the development of Honolulu's waterfront. The company takes its name from its first major project more than 100 years ago, the dredging of the entrance to Pearl Harbor. Rapidly expanding into multiple areas of construction, it was responsible for building many of the roads and other major infrastructure of the expanding state.

Today, its work falls into five major areas managed through the Building, Commercial,

Heavy, Waterfront, and Power & Industrial divisions. Currently, its diverse portfolio includes the construction of many of Hawaii's high-rise buildings, hotels & resorts, shopping centers, medical facilities, military housing & defense facilities, highways, bridges, industrial parks, power plants and much more

SAFETY: TARGETING ZERO INCIDENTS

At Hawaiian Dredging, a commitment to the health and safety of its workers has been a core business value throughout the company's long history. Hawaiian Dredging firmly believes that safety events are preventable and implements, evaluates and continually improves its safety programs with zero incidents as the ultimate goal as demonstrated by its safety logo (Figure 1). Many of its employees have worked together for as long as two decades. So safety issues are also personal.



Figure 1: The company maintains a strong commitment to safety with ambitious goals.

"Newmetrix's AI engine, named Vinnie, has been trained to recognize construction risks in photos and other project data creating an unbiased, automated risk assessment that enables teams to have better visibility into risk."

- Chris Baze, BIM Manager, Hawaiian Dredging

Spearheaded by management, the company promotes shared responsibility across all employees for compliance and follow through on mandated safety processes and procedures. Performance is continually measured to foster accountability and drive improvements.

LEVERAGING TODAY'S LEADING SAFETY TECHNOLOGY

Given this philosophy, Newmetrix's innovative approach to reducing project risk using Artificial Intelligence (AI) is directly aligned with the century-old company's goals. Newmetrix enables Predictive-Based Safety, helping companies identify projects at highest risk for an incident and act on them to prevent incidents from occurring. To support its efforts, Hawaiian Dredging implemented the Safety Suite in Q1 2019 at a major hotel construction site as its initial experience with the platform. The implementation is integrated with StructionSite, a widely used, dedicated construction-industry application that manages 360 degree images and transforms them into robust visual jobsite documentation.

Chris Baze, BIM Manager for Hawaiian Dredging, explains that Newmetrix's AI engine, named Vinnie, has been trained to recognize construction risks in photos and other project data creating an unbiased, automated risk assessment that enables teams to have better visibility into risk. Ushering in a Predictive-Based Safety paradigm, the system applies an algorithm to highlight where and when incidents are likely to happen, while aggregating all sources of photo and video content into one system. Vinnie also conducts other checks such as non-compliance with mandated personal protection equipment (PPE), including gloves and hard hats, and notes workers in need of correction (Figure 2).

"When AI picks up something of interest, Vinnie tags it and puts it in a box," he explains. "The box allows tagged items to be quantified. For example, we receive a count of the ladders in use or craft workers engaged in a particular area of the site. After this data is analyzed for relative risk, the results are displayed on a dashboard so that we can identify more hazardous work areas and step up safety efforts for them."

Baze emphasizes, "When a worker's non-compliance with PPE or a mandated safety

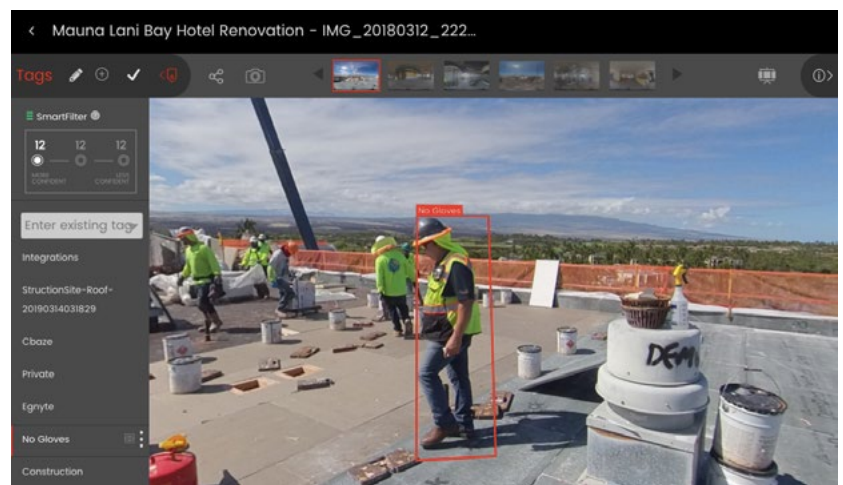


Figure 2: Vinnie identifies an example of a worker missing gloves.

procedure is noted, the goal is absolutely not about faulting that individual. This type of information is really about understanding the culture of a jobsite and how seriously workers take safety and compliance. In the past, we had to walk the site every day to obtain this kind of information."

"With Vinnie's analysis," he explains, "These pictures tell a story, as the dynamics of the jobsite come alive even for remote staff. How seriously are workers taking mandated safety precautions? Do we need to offer more training or encourage an atmosphere that better supports compliance?"

STREAMLINED INTEGRATION WORKFLOW

This aspect of Hawaiian Dredging's workflow is fully automatic (Figure 5). "We use Egnyte for image storage and file sharing," says Baze. "It takes the photos from StructionSite and other image stores, and then Newmetrix grabs them from Egnyte."

"Integration of these technologies took less than five minutes and it was a set it and forget it kind of thing. I haven't had to think about the integration since being implemented, and everything works flawlessly," said Baze, who notes that for a safety effort such as this, you only get out as much as you put in.

"You can't have photos sitting in folders where they are difficult to locate and are never used and achieve satisfactory results," he explains. "The value of a system like Newmetrix is maximized when you have

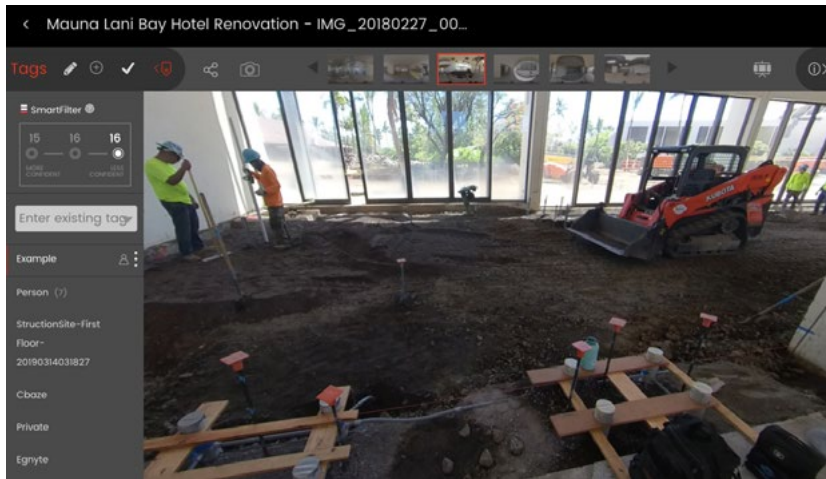


Figure 3: AI also identifies opportunities for positive team encouragement, such as this well-constructed cap rebar.

Significantly, Vinnie also identifies positive images (Figure 3). "Recently, Vinnie tagged a well-done vertical cap rebar," he said, noting that in this case, the workers involved should be congratulated for a job well done.

Baze notes that Vinnie does not require any additional safety images and simply extends the value of existing photography into the realm of safety. These photographs can include progress and milestone images, video walk-throughs, and 360s from StructionSite as well as from many other well-known industry applications.

At the Hawaiian Dredging hotel worksite, the vast majority of photos analyzed by the system are 360 degree StructionSite images taken to document project progress (Figure 4). These are taken once or twice weekly for about four hours with an average of 200 per session. Complementing these are a selection of 2D photos taken onsite with cell phones.

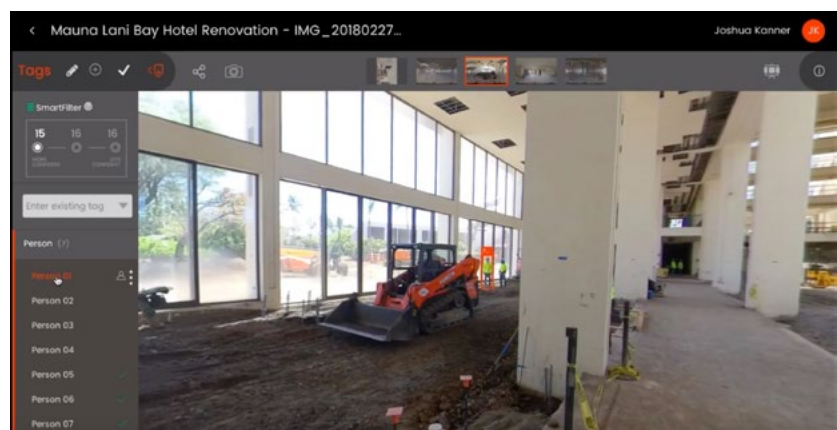


Figure 4: Vinnie scans a 360 degree StructionSite image and provides a headcount of all workers in a particular area of a jobsite.

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a structure set up that regularly capitalizes on the technology." With Newmetrix's streamlined integration, that's easy too.

THE FUTURE IS PREDICTIVE-BASED SAFETY

For companies looking to reduce risk on their construction projects, Newmetrix's Safety Suite

gives project teams and management the ability to predict and prevent incidents - saving lives and preserving timely project delivery. Unlike checklist-based observations and manual review processes, Newmetrix's Predictive-Based Safety approach uses risk-weighted field observations together with its AI engine, Vinnie, to better predict risk, focus attention, and reduce incident rates by 30% or more.



Figure 5: Automatic integration with popular construction applications and tools streamlines workflow.



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Hawaiian Dredging Construction Company is the largest and most diversified general contractor in Hawaii with a comprehensive service offering that includes, preconstruction, general construction, design-build, and design-assist.



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