Application for 2014 University of California Larry L. Sautter Award for Innovation in Information Technology

Project Title: Safety Inspection Tool (SIT)
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Project Leaders
• Cheryl Lloyd, Executive Sponsor, Interim Chief Risk Officer, University of California Office of the President
• Erike Young, Director – Environment, Health & Safety

Project Team Members
Safety Inspection Tool’s development was dependent on support of UC Health & Safety and research communities. As part of the IT Services process, numerous staff and faculty offered guidance, feedback, expertise, and insight which impacted the project’s success.

Application Development Team
• Colin Aiken, Developer
• Rachel Aurand, Developer
• Joseph Bair, Quality Assurance Analyst
• Michael R. Benning, Project Coordinator
• Pradeep Haldiya, Developer
• Cameron Jamison, Developer
• Jennifer Knight, Agile Test Engineer
• Dung Phung, Developer
• Anthony Schrick, Product Owner
• Nicole Vang, Business Analyst

Summary
Safety Inspection Tool (SIT) is a web based audit application with a flexible feature set which offers any safety professional a modern tool for on-site inspections. SIT assists with scheduling, inspections, problem correction, and can reduce the amount of time an inspector spends preparing for and performing safety inspections.

The configurable nature of SIT makes the tool versatile and ultimately an integral part of every safety professional’s effort to promote a culture of safety and compliance at the University of California.

Project Description
How It Works
The Safety Inspection Tool’s robust feature set enables Safety Programs to manage inspector workloads, customize inspection checklists, collaboratively schedule inspections, conduct on-site inspections through the use of a tablet (iPad, Surface, or Android), and route reports to Responsible Parties so they can indicate findings have been corrected.
SIT’s workflow begins with the Program Manager (PM) role. PMs can identify Inspectors, maintain their program’s inspection checklist items, and assign areas of responsibility (buildings, departments, Responsible Parties) to Inspectors. PMs can also review current and historical Inspection reports submitted by their Inspectors.
Inspectors can begin their process by initiating the handshake scheduling feature – this allows them to notify a Responsible Party (RP) of available inspection timeslots. The RP can then log in and select a time that works for them.

![Figure 3: Inspection Checklist](image)

Inspection functionality was optimized for a tablet. Offline mode allows inspectors to conduct inspections regardless of an available internet signal. SIT interfaces with a tablet’s camera so Inspectors can visually document findings. Finalizing a report ensures an Inspector routes the report upon inspection completion (or returning to an active internet signal).

![Figure 4: Draft Inspection Report](image)
Once a report has been routed to an RP, they can view their report within SIT, and indicate correction of findings as they are fixed. Once all findings have been corrected, the report routes back to the Inspector for any necessary follow up.

Note: Routing steps involve automated notifications instructing parties when action is required.

Safety Inspection Tool URLs

Test drive the Safety Inspection Tool!  
https://ehs.ucop.edu/sit-stage/ (Note: Please notify mrbenning@ucdavis.edu before accessing the test-drive site).

Note that this is a demo site and any information entered should be considered temporary.

Use the Safety Inspection Tool!  
https://ehs.ucop.edu/sit (Note: Please notify  erm@ucop.edu before accessing the live site).

Project Benefits

- Safety Inspection Tool enables an inspector to use a tablet (iPad, Surface, or Android) to document their inspection findings, even in environments without an internet connection.
- SIT comes preloaded with a UC Lab Safety inspection checklist (designed by a 10 campus Lab Safety Committee) – introducing a common standard for Lab Safety Inspections.
- SIT’s workload management, inspection scheduling and report routing functionality ensure metrics are captured – providing fodder for future efficiency improvements
- Safety Inspection Tool is available for use by any UC group that has a need for conducting inspections.
- SIT is currently in use at 4 UC campuses for 5 inspection programs
- SIT was designed with a University setting in mind. Development involved partnerships between IT Services, UC Health & Safety professionals, and the research community, ensuring the application was designed for all participating audiences. Workgroup members are identified below:
Functional Workgroup Members

- Nicole Clark, UC Riverside
- Brent Cooley, UC Santa Cruz
- Debbie Decker, UC Davis
- James Gibson, UC Los Angeles
- Chris Haug, UC Irvine
- Kathy Knowles, UC San Francisco
- Rebecca Lally, UC Irvine
- Sue Littlefield, UC Davis
- Philip Maynard, UC Berkeley
- Jeannie Ramos, UC Santa Cruz
- Kyle Saito, UC Los Angeles
- Tony Schrick, UC Davis
- Lance Scott, UC San Diego
- Karen Smith, UC Merced
- Ken Smith, UC Office of the President
- Mario Suarez, UC San Francisco, Medical
- Alma Valencia, UC Berkeley
- Russell Vernon, UC Riverside
- Gerry Westcott, UC Davis
- Lisa Wisser, UC Santa Cruz

Technology Used

On the front end, Safety Inspection Tool leverages the Angular Javascript framework to provide native application behavior on the web. HTML 5 taps into a tablet’s camera functionality and provides SIT’s offline capabilities. Bootstrap rounds out the look and feel features. Java, Spring, and Hibernate are utilized in the back end stack.

Project Timeline

SIT was developed over an eleven month period in two week, iterative, Scrum cycles. The development focus began with the goal of delivering the organizational management and handshake scheduling functionality. This enabled early adopters to get familiar with the system while populating preliminary data for their inspection Programs.

The second phase of development was concentrated on the mobile-first inspection functionality. Because of the unique nature of building a web-based application with offline mobile capabilities, adequate time was invested in a technology spike to refine the offline concept and ensure it met organizational quality standards.

Customer Satisfaction Data

“The Safety Inspection Tool (SIT) allows inspectors to gather inspection data on mobile tablets and upload it to a central database. The SIT is highly versatile and able to be used for both lab and food inspections. Reports are automatically generated and efficiently communicated to the responsible people for corrective actions.”

Russell Vernon, Director, Environmental Health & Safety, UC Riverside

“I have been involved in a number of IT projects during the past several years which include the Laboratory Hazard Assessment Tool (LHAT) and Safety Inspection Tool (SIT) and highly recommend my colleagues for the Larry L. Sautter Award. Their approach to development, dedication and commitment, and attention to details to these projects have produced what I believe to be extremely user friendly, efficient, and effective tools for our research community which in turn has improved our safety culture and regulatory compliance while advancing the University’s mission.”

Gerry Westcott, Research Safety Manager, UC Davis