



Application for 2020 University of California Larry L. Sautter Award for Innovation in Information Technology

Project Title	Response to UC's COVID-19 Needs
Project Submitter	Safa Hussain, Director, Risk and Safety Solutions smhussain@ucdavis.edu Office: 530.633.7232
Project Leaders and Team Members	Karen Andersen – Product Owner Moira Heilmann – Product Owner Russell Vernon – Product Owner Joan Burg – Customer Success Lead Natalie Bold – Customer Success Team Kristen Farrand – Customer Success Team Russell Ilejay – Customer Success Team Tom Patterson – Customer Success Team Dung Phung – Front End Architect Pradeep Haldiya – Lead Developer Ian Holser – Lead Developer Nishanth Vincent – Lead Developer

Summary

The Risk and Safety Solutions Platform was used to quickly develop solutions for a variety of UC medical center and campus users to prepare for, mitigate, and track COVID-19 related risks and exposures.

The Problem

At the outset of the US COVID-19 outbreak, UC medical centers and labs faced the challenge of rapidly updating their policies and procedures and changing the way they performed tasks and services. Hospitals needed ways to inspect and track handwashing and PPE protocols under new COVID-19 guidelines. Environmental services needed to track and validate new COVID-19 disinfection and deep cleaning SOPs. COVID-19 infections among staff had to be tracked and reported to Workers' comp, and infected employees needed accommodation when they returned to work.

Researchers beginning new COVID-19 research needed their applications rapidly approved, and those affected by work-from-home policies needed to confidently leave their labs and work areas in a safe

state. Researchers now returning to work must have new procedures in place to assure that they are following safe-and-physical distancing guidelines.

Because the Risk and Safety Solutions platform is used by so many affected UC medical and research facilities, our goal was to reach out to all of our UC clients and provide to them rapid response service to help them improve their ability to adapt and respond to the COVID-19 crisis.

The Solution

The solutions within our platform emphasize flexibility and micro-services, and they were developed around ongoing, collaborative relationships with campus and medical center officials. The combination of flexible software and Risk and Safety Solutions' open communication channels allowed the UC medical and laboratory systems to react swiftly and efficiently to the large-scale COVID-19 crisis. Our response to the requests of UC hospitals and campuses has been ongoing throughout the crisis, but the turnaround for individual requests is often within a day or less.

The Risk and Safety Solutions Inspect app, built with mobility in mind, has been especially impactful in allowing medical centers to rapidly adapt to the threat of COVID-19 by allowing teams or individual users to use 7 new COVID-19 related inspection checklists on phones and tablets the moment the lists are made available. Supervisors are able to view the results of those inspection findings in the Inspect Analytics dashboard and make data driven adjustments to further reduce the spread of the virus.

Inspection Impact

During collaboration on the first of the inspection checklists, we asked the hospital that created the list if we could make it available to all hospitals; their agreement led to us rapidly spreading the checklist to the other UC medical centers via Inspect. 180+ COVID-19 related inspections have been carried out since the beginning of the outbreak.

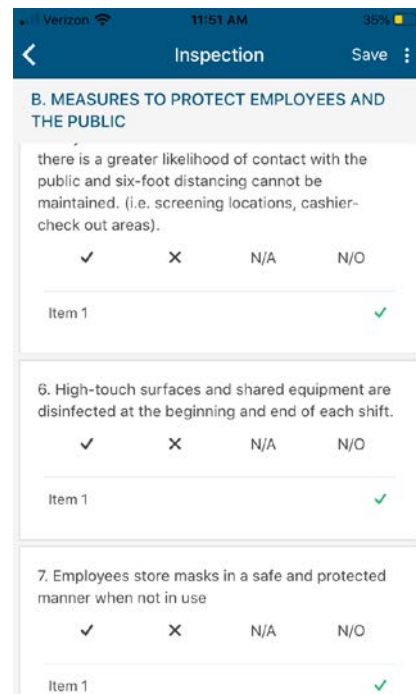


Figure 1 - COVID-19-related Inspection Checklist

We added new biological agents to our Biosafety solution for researchers studying COVID-19 so that their research applications could begin the approval process right away. For labs that continued to work throughout the crisis, and for those whose members are planning to come back to the lab after sheltering-in-place, Inspect has been put to use to ensure that COVID-19 safe-and-physical distancing protocols are being followed at workstations so that research continues safely. We've also updated our work Accommodation and injury reporting (EFR) software to include COVID-19 responses for any who contract the virus while on the job.

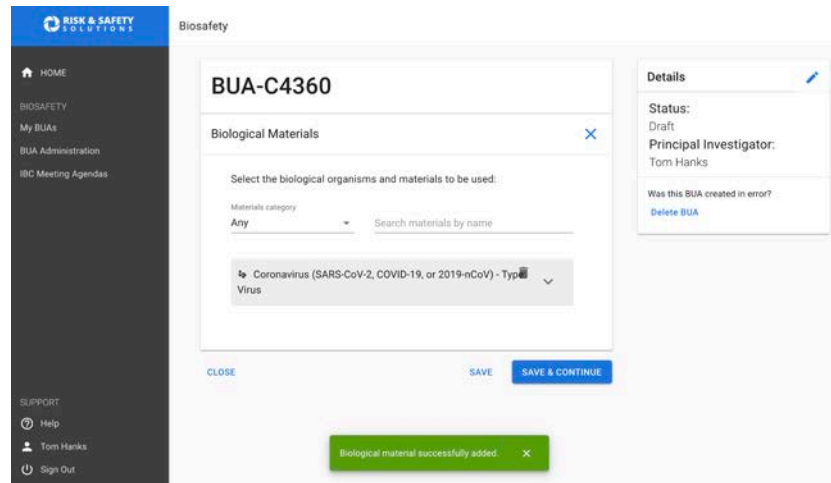


Figure 2 - Biosafety Research Application

Chemical Hygiene Officers throughout the UC system can monitor chemical inventories in shuttered labs remotely (allowing for social distancing) via our Chemicals application to ensure that chemicals reactive to each other have not been stored together. And using the MAQ report in the Chemicals Analytics dashboard, UC fire marshals can remotely monitor that labs are storing chemicals in quantities that meet state and federal guidelines for safe storage.

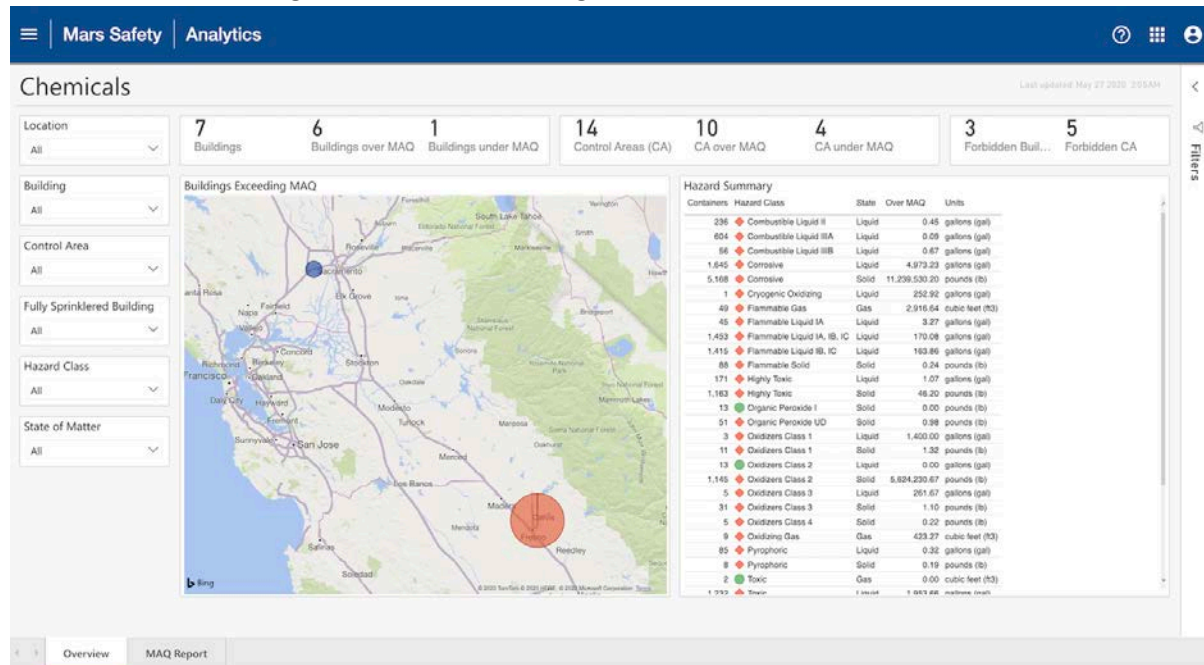
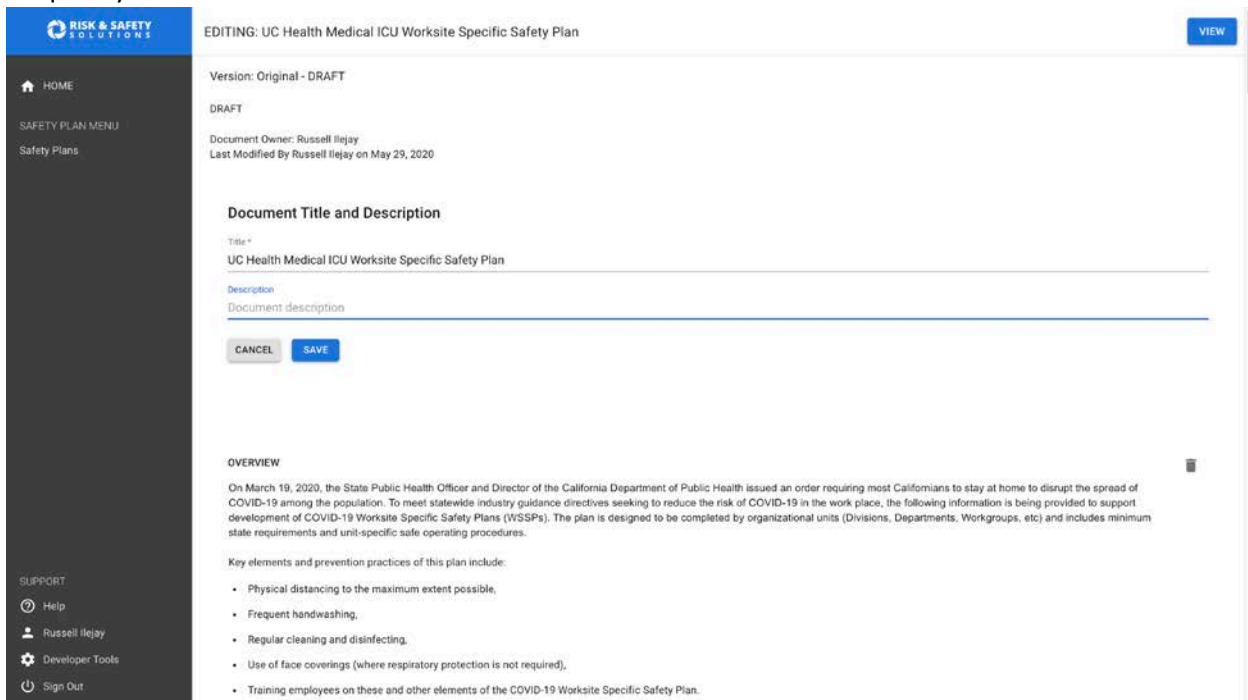


Figure 3 - Chemicals MAQ Report

Chemicals Impact

The MAQ report was also used in an innovative way when a UC Berkeley lab wanted to make hundreds of gallons of hand sanitizer for at-risk populations; a Berkeley fire marshal used the MAQ report to identify all of the locations on campus that contained the hundreds of gallons of chemicals the lab would need so that the project could rapidly move forward.

The Supervisor's Toolkit is a new feature that allows rounding supervisors in UC medical centers to create CAL/Osha required SOPs for workplace safety in our Procedures application. Supervisors can upload and share templates with other supervisors and they can remotely monitor that the employees are reviewing and acknowledging the SOP in regards to PPE applications, handwashing, and disinfecting frequency.



The screenshot displays the 'EDITING: UC Health Medical ICU Worksite Specific Safety Plan' interface. The left sidebar contains navigation options: HOME, SAFETY PLAN MENU (Safety Plans), and SUPPORT (Help, Russell Ilejay, Developer Tools, Sign Out). The main content area shows document metadata: Version: Original - DRAFT, DRAFT status, Document Owner: Russell Ilejay, and Last Modified By: Russell Ilejay on May 29, 2020. Below this is the 'Document Title and Description' section with fields for Title (UC Health Medical ICU Worksite Specific Safety Plan) and Description (Document description), along with CANCEL and SAVE buttons. The 'OVERVIEW' section provides context: 'On March 19, 2020, the State Public Health Officer and Director of the California Department of Public Health issued an order requiring most Californians to stay at home to disrupt the spread of COVID-19 among the population. To meet statewide industry guidance directives seeking to reduce the risk of COVID-19 in the work place, the following information is being provided to support development of COVID-19 Worksite Specific Safety Plans (WSSPs). The plan is designed to be completed by organizational units (Divisions, Departments, Workgroups, etc) and includes minimum state requirements and unit-specific safe operating procedures.' Key elements and prevention practices listed include: Physical distancing to the maximum extent possible, Frequent handwashing, Regular cleaning and disinfecting, Use of face coverings (where respiratory protection is not required), and Training employees on these and other elements of the COVID-19 Worksite Specific Safety Plan.

Figure 4 - Worksite COVID-19 SOP

Technology

The technology used for the Risk and Safety Solutions platform is a multi-language environment running Mongo, MySQL, MsSQL, Neptune (Graph DB) & ElasticSearch for database. The back-end services primarily use Node.js and Java, and the front-end is primarily React. Platform services are hosted on the AWS Cloud.