Application for 2017 University of California Larry L. Sautter Award for Innovation in Information Technology

Project Title   **Procedures**

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The Problem

Cal/OSHA regulations require that hazardous energy be controlled when cleaning, repairing, servicing, setting up or adjusting machinery and equipment. This procedure (known as lock out/tag out or LOTO) applies to a great variety of settings and equipment, including machinery shops, steam shops, construction sites, laboratories – anywhere where hazardous energy is used.

UC had a third-party LOTO software application, but it was not well received by campus users and had not been widely implemented. Risk and Safety Solutions set out to develop an application that would bring value to the users' everyday work and therefore be readily adopted.

Effectively communicating the proper LOTO procedures for a wide range of work settings, equipment and employees called for a flexible, customizable solution that would take full advantage of mobile technology.

The Solution: Procedures – Lock Out/Tag Out

Procedures enables users to create, edit and read

procedures across a variety of work settings. Still in the

early stages of development, it is currently being used

primarily for LOTO, but the development team is in the

process of expanding its use to include standard

operating procedures for chemicals.

Features include:

- Ability to create new procedures: using a variety
  of available templates, users can create new
  procedures to fit their needs.

- Procedure cloning: easily create a new procedure
  based off of an existing one.

- Ability to attach photos: users can take photos
  using their mobile device and draw or add text
  on the photo to emphasize specific areas or
  information.

Figure 1: Search function

- Geolocation: by using the device's GPS, users can record where a piece of equipment is
  located.

- Permissions: Users can control who has access to the procedures they create. Favorites and
  recent: users can add a procedure to their favorites so that it can be read if the user goes
  offline. Any procedures that a user has read recently will also be available when offline.
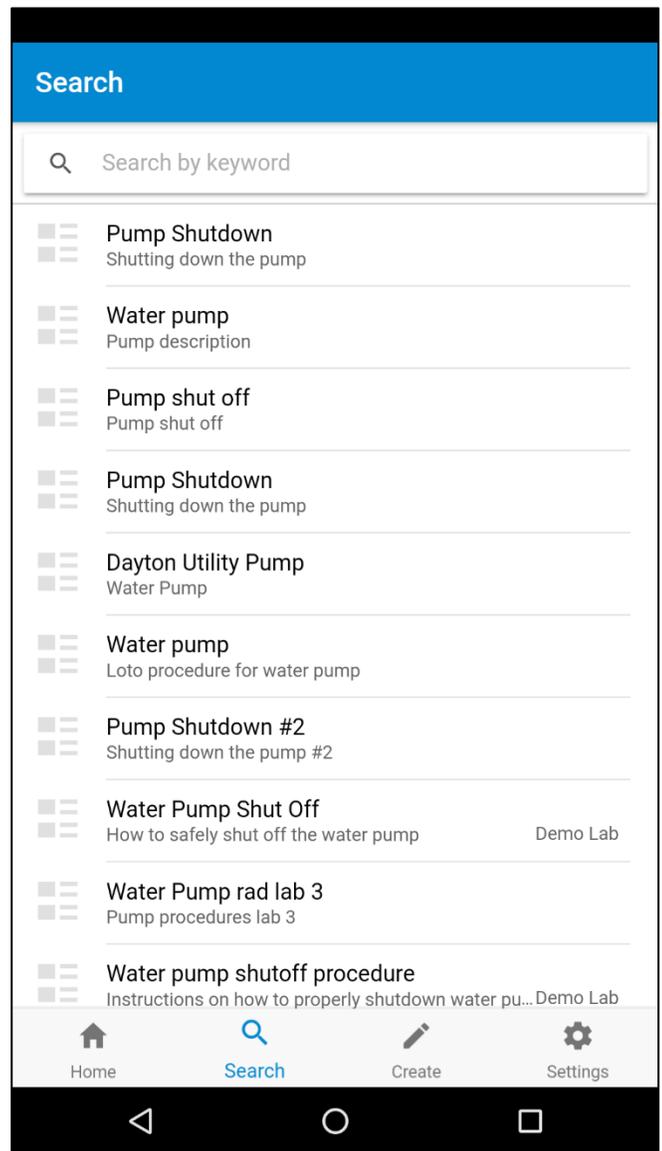
- Offline use: when a user goes offline, any procedures they created or edited automatically sync once the application goes back online.

While Procedures is currently being used primarily for LOTO, it can be applied to any area where developing and sharing standard operating procedures is necessary, for example, in control banding for areas using chemicals.

Each of our products comes with a variety of implementation tools that institutions can choose to simplify the adoption process. This includes templated electronic and/or print-ready announcements outlining the product, PowerPoint presentations about the product, print-ready or electronic tutorials and "how-to" videos that demonstrate how to complete certain tasks.

Figure 2: Procedure detail

Procedures has already been adopted by UCLA, and UC Riverside will begin using the application in the coming months. Over the summer, UC's third-party LOTO system will be phased out and replaced at all 10 campuses and 5 medical centers with the Procedures app.

Technology Used

Procedures was developed using Scrum Agile methodology on 1 week development cycles using MEAN (MongoDB, Express, Angular, NodeJS) as the technology stack and npm for dependency management. The application is load-balanced with a stateless authentication strategy.
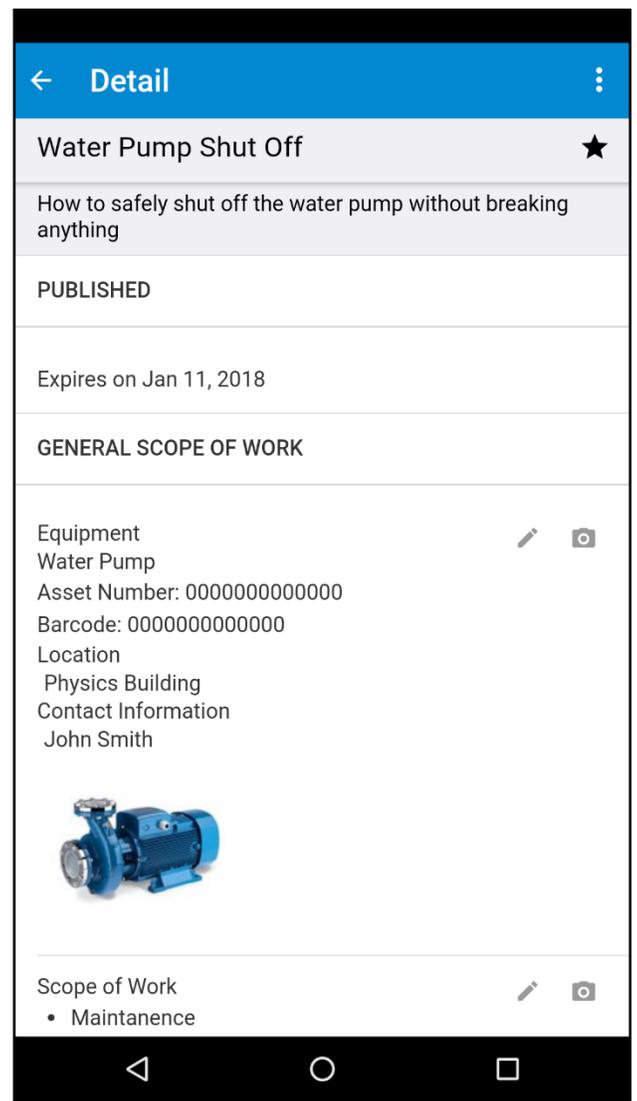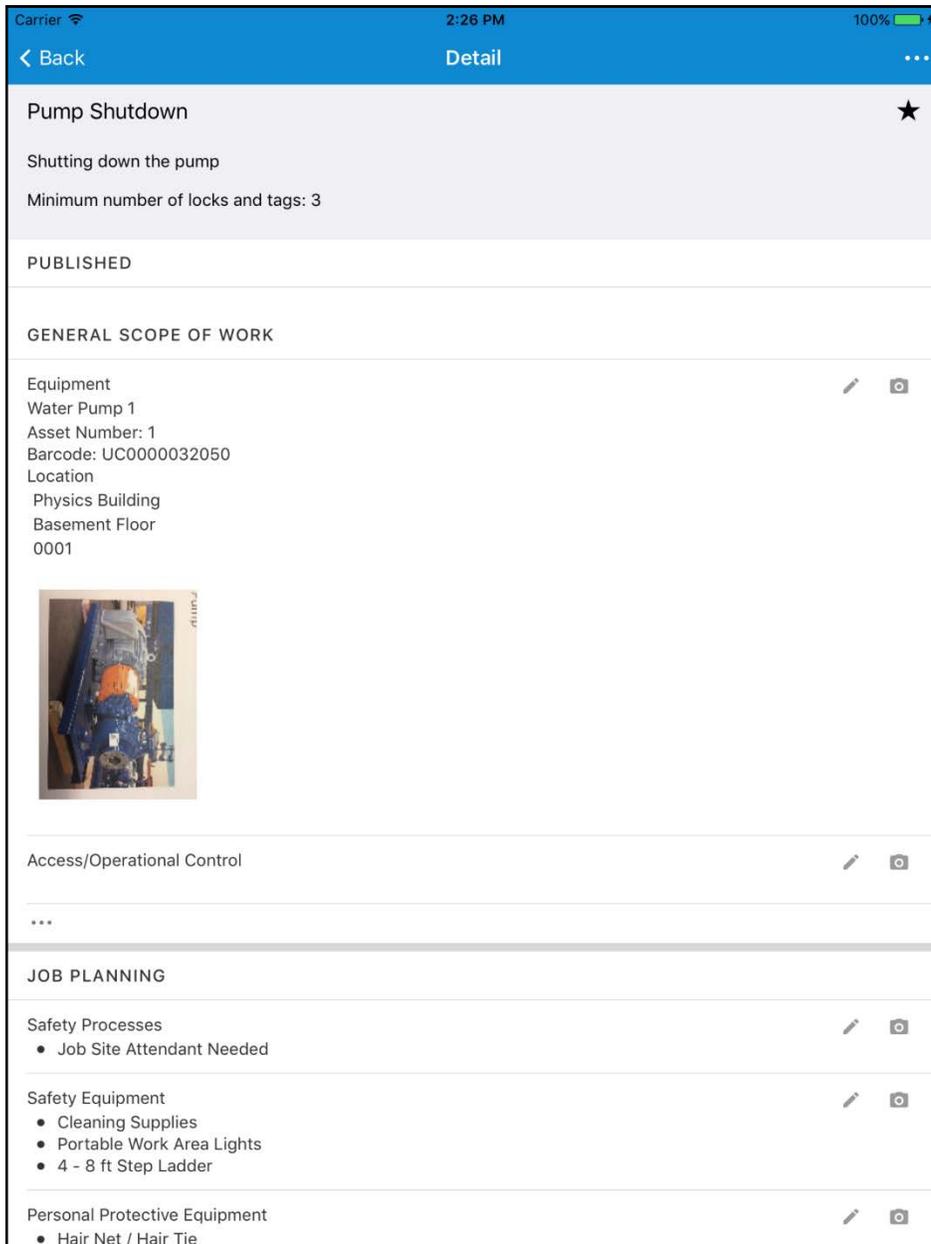
Figure 3: Procedure detail with photo

Relevant URLs:

- https://ehs.ucop.edu/procedures-lab/