Application for 2016 University of California Larry L. Sautter Award for Innovation in Information Technology

Project Title UC Radiation

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Project Leader

- Safa Hussain, Director, UC Risk & Safety Solutions

Project Team Members

The team members listed below made up the UC Radiation development team.

- Jay Ballinger, UC Systems and Integration Architect
- Michael R. Benning, Agile Project Manager
- Yashesh Damani, Developer
- Fei Li, Developer
- Nandini Parimi, Developer
- Yoganand Parthasarathy, Developer
- Aditya Hiran Pilla, Developer
- Andreas Schuerkmann, Product Manager
- Manvinder Singh Sodhi, Developer
- Jason Smith, Subject Matter Expert
- Nicole Vang, Product Owner
- Nishanth Vincent, Developer
- Alex Zanganeh-Azam, Designer

Project Description

At the University of California, Radiation Safety Officers are responsible for ensuring their campus research, medical research and medical practices involving radioactive materials fall under controls imposed by the California Department of Public Health as outlined in the campus Radioactive Materials License.

Currently, each campus is utilizing a separate home-grown or third-party software solution for managing their Radiation Safety Program. This has resulted in silos of data and inconsistent business practices across UC.

UC Radiation provides a common software platform which all campuses can use to manage Radiation Safety Programs.

“The system creates a long-needed consistency across the UC campuses, and also serves as system-wide and local institutional memory for future faculty and staff,” said Morris Maduro, a UC Riverside Professor of Biology, and Chair of the Radiation Safety Committee for UC Riverside.

UC Radiation offers the following benefits:

- Streamlines the Radiation Use Authorization application process
- Provides real-time tracking of:
  - Campus license limits
  - Laboratory radiation limits
  - Inventory and use of radioactive materials
  - Radioactive Decay
- Delivers visibility to Radiation Safety Committee members
- Integrated with the UC Safety Suite
  - Leverages Profile for lab personnel, locations and training data
  - Pulls hazard data from the Lab Hazard Assessment Tool (LHAT)
  - Generates a waste disposal tag, allows pickup requests and tracks disposal using Waste Accumulation and Tracking electronically (WASTe)

How It Works

Part of the UC Safety suite of applications, UC Radiation is a cloud-based, configurable tool for managing radiation safety programs, from the initial use authorization to the final waste pickup.

UC Radiation accomplishes this goal by providing six distinct modules:

1. **Radiation Use Authorizations (RUA)**
    - Users can apply for an RUA
    - Radiation Safety Officers can approve/decline RUA applications
    - Limit tracking to ensure campuses do not authorize use of more radiation than their license allows
    - Custom hazard ratings can be applied to each RUA

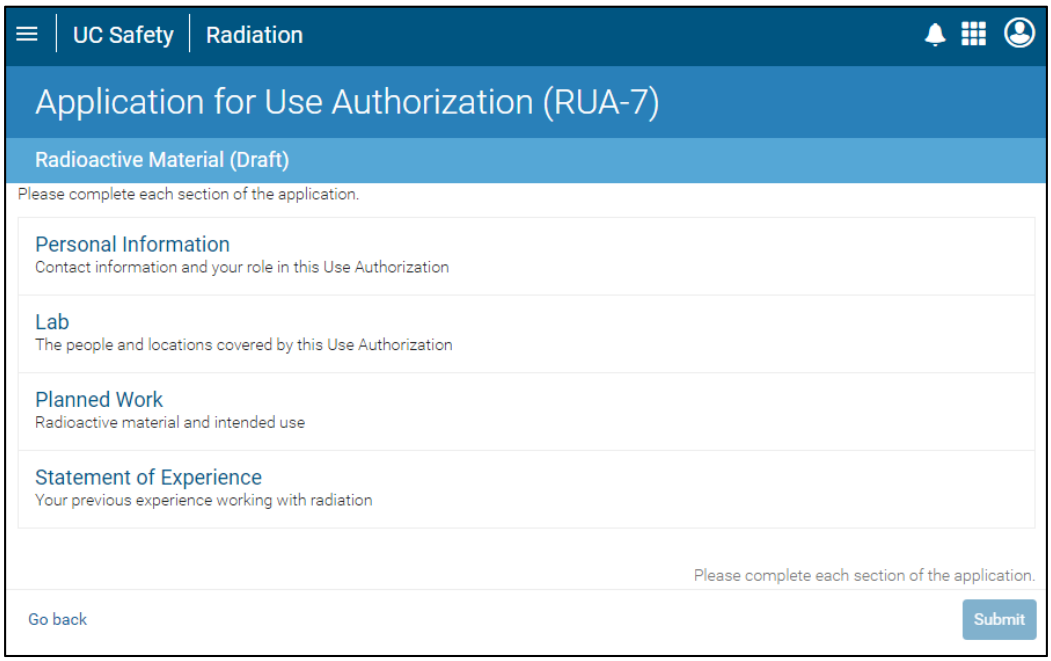

Figure 1: Wizard for Radiation Use Authorization Application

2. **Inventory Tracking**
    - Tracking of radioactive materials within labs
    - Tracking of radioactive materials requests and receipt

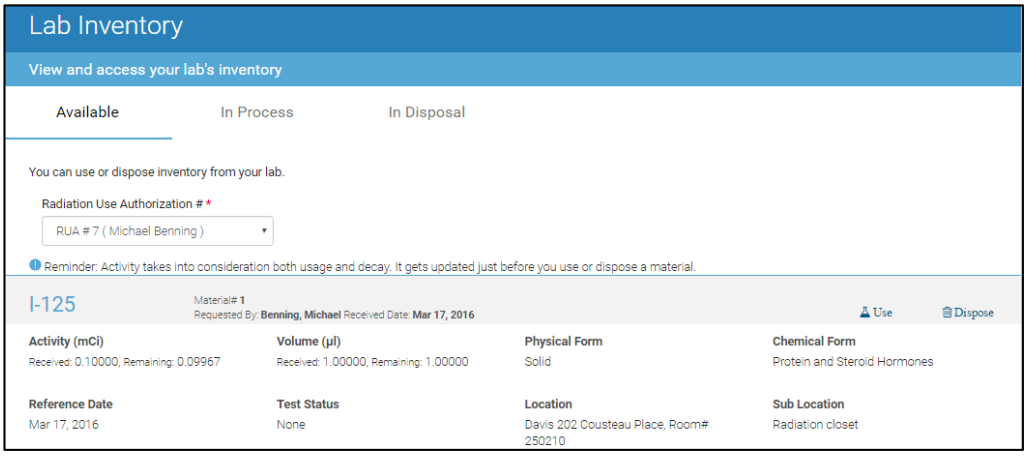

Figure 2: Laboratory Inventory Page

3. **Surveys**
    - Package surveys for radioactive materials receipts
    - Sealed Source Leak Testing

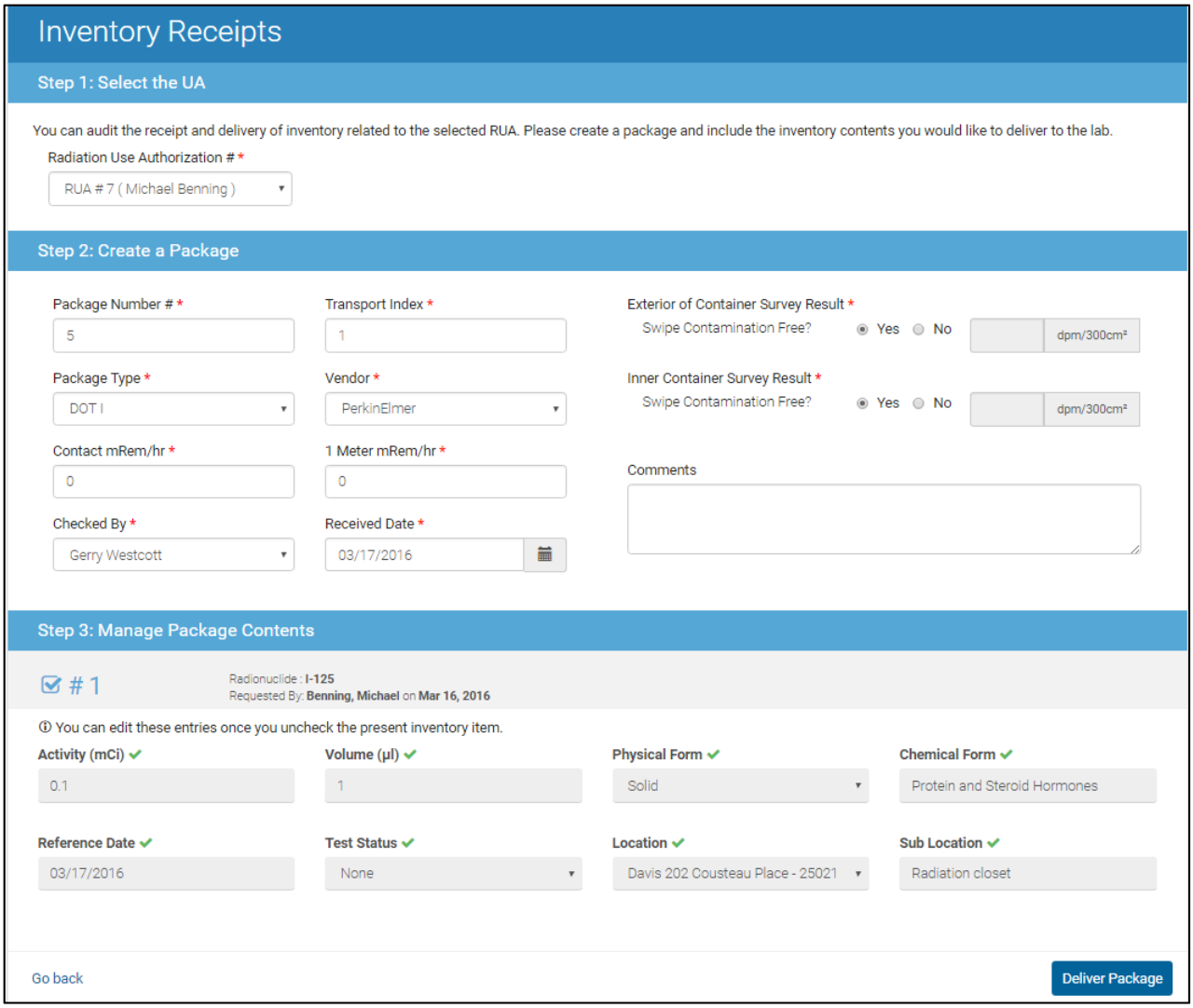

Figure 3: Package surveys for radioactive materials receipt

4. **Waste Pickups**
    - Creation of regulatory compliant radiation waste label
    - Waste pickup requests for radioactive materials

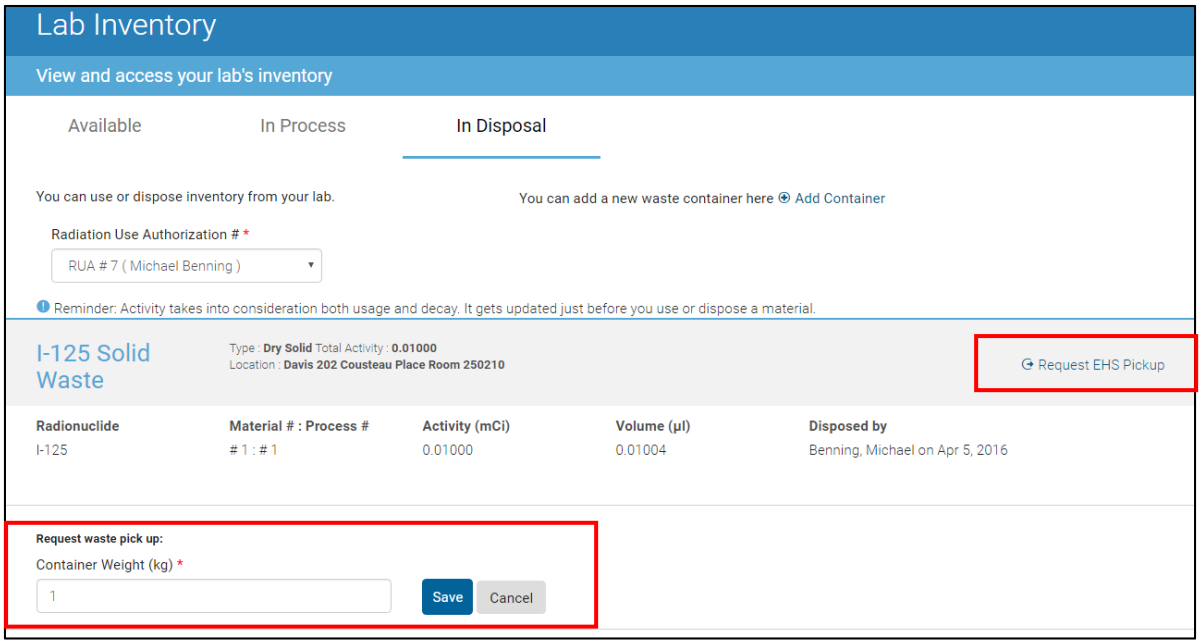

Figure 4: Researcher requesting waste pickup

5. Monitoring

- Dosimetry/Bioassay requirement tracking on RUA

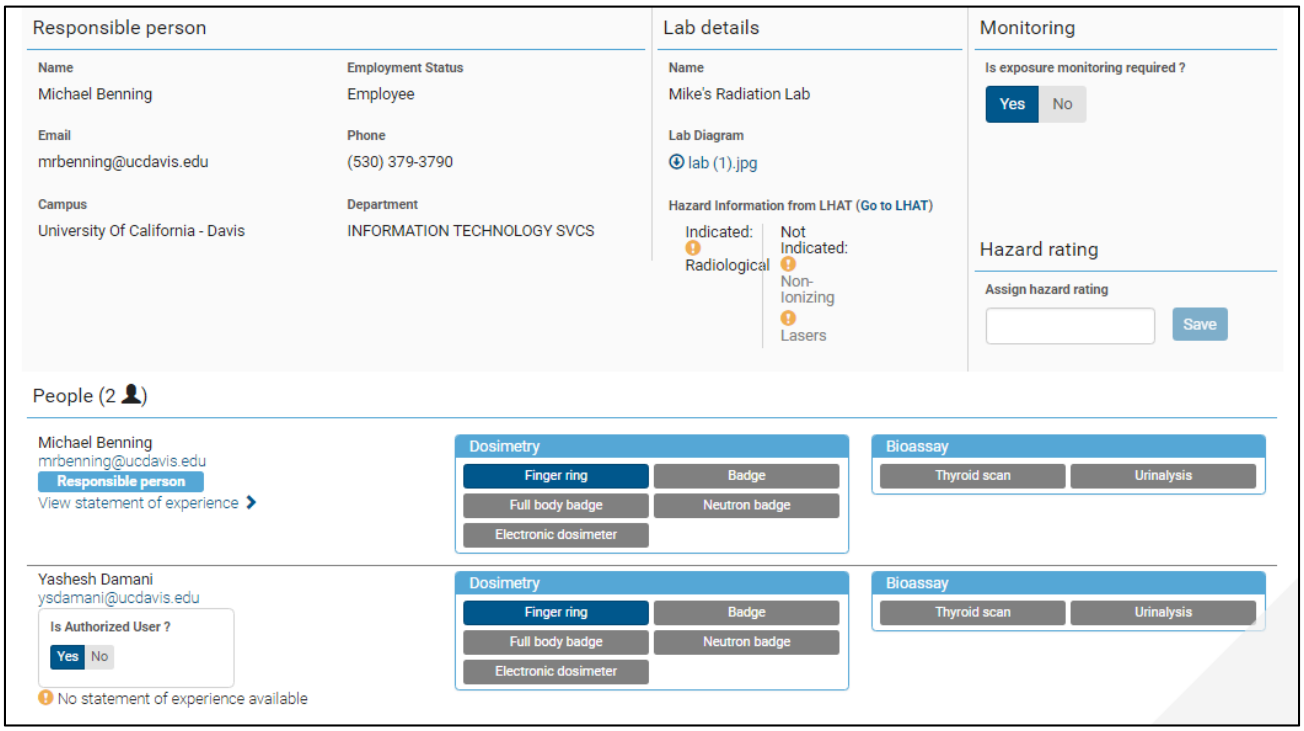

Figure 5: Dosimetry/Bioassay requirement tracking

6. Training Records

- Integration with Learning Management System (LMS)

Efficiencies

UC Radiation replaces numerous home-grown software solutions and third-party-vendor licenses while providing a much needed consistency in radiation safety practices across the University of California campuses. Of the existing software solutions in place at UC, UC Radiation is the only to offer an online RUA application feature – streamlining paper RUA processes and reducing the amount of time spent maintaining and routing manual paperwork.

UC Radiation leverages integration with other UC Systems (WASTe, LHAT, LMS, Profile) to provide needed data points without requiring duplicate data entry from Radiation Safety professionals or the researchers they support.

The RUA and Inventory features are supplemented with real-time decay tracking so that activity levels of radioactive materials are reflected accurately in the system at all times. This ensures data is available to track potential vs. actual radiation activity on the campus. This also minimizes the need for Radiation Safety professionals and researchers to perform time-consuming manual calculations.

Partnerships

UC Radiation was developed in collaboration with representatives from the 10 University of California campuses and 5 medical centers.

Technology Used

UC Radiation was developed using Agile methodologies including Scrum and Kanban. The team performed the work in short development cycles (two weeks) with routine software releases, demos and user testing.

The UC Radiation technology stack includes HTML5, SASS, Bootstrap, AngularJS, Spring MVC, REST based web services, MySQL. For dependency management, Bower, npm and Maven are used. The application is load-balanced with a stateless authentication strategy. The software methodologies used include SCRUM, Test driven development and continuous integration using Jenkins.

Relevant URLs

UC Radiation can be viewed at https://ehs.ucop.edu/radiation-stage/#/ using your campus Single Sign On credentials for authentication.