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**UC Tech Awards 2023 Applicant**

**Category:** DESIGN  
**Name:** The RSS MAQ Project  
**Number of people:** 11

**Location:** UC Office of the President

1. **Person submitting the application/nomination**
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   3. **The name of your organization:** UCOP
2. **Award category** Design
3. **Name of person, name of the team, or name of the project to receive the award** The RSS MAQ Project
4. **All project team members - if applicable**
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16. **Which location was affected by the work?** All UC campuses and Health Centers
17. **Summary**   
    The MAQ (Maximum Allowable Quantity) feature, developed by Risk and Safety Solutions, underwent a significant design upgrade between September 2021 to December 2022, focusing on user experience and accessibility. The feature tracks and monitors the maximum allowable quantities of chemicals stored within a room, a floor, or an entire building and is connected to the RSS Chemical Inventory Management solution.
18. **Narrative**

I am nominating the Risk and Safety Solutions Maximum Allowable Quantity (MAQ) V2 feature for the 2023 UC Tech Design Award. Between September 2021 and December 2022, the RSS MAQ feature underwent a significant design upgrade focused on user experience and accessibility. The team identified a need for increased flexibility, accessibility, and functionality in the revised feature, which were addressed in several ways.

In 2018, RSS released the original MAQ feature to University of California (UC) campuses as a way for them to track and monitor the maximum allowable quantities of chemicals stored within a room, a floor, or an entire building. The challenge was to design a feature that could track chemicals across multiple locations and floors and how the feature integrates with the RSS Chemical Inventory Management solution to provide a comprehensive solution for lab and fire safety. The request for this feature arose because of state regulations to report on quantities of chemicals by hazard class in each control area at any given time, and the manual process could have been more efficient and accurate. Inaccurate inventories could lead to non-compliant buildings, increased risk of mismanaged chemicals, and improper storage of potentially hazardous materials.

The first version of MAQ met the most common California Fire Code occupancies requirements for the 2001 and 2016 code years, but it could have been more user-friendly. If rooms or buildings changed, clients had to request a change through the developers at RSS. It was an arduous process and limited what could be managed by the end user. There were also issues with bugs, and the overall accessibility and useability were problematic. The first step in updating to MAQ V2 was to get the RSS teams involved in learning test-driven development, which involves testing the software at different (covering different aspects/elements) to identify potential pitfalls, pain points, and bugs in the code before it goes live. The decision to move to test-driven development for MAQ was to create a more robust feature and to follow the Accessible Rich Internet Applications (ARIA) practice to make the feature more accessible to anyone using it. Test-driven development meant the RSS team could quickly and confidently deploy quality features and fixes to the end user.

The MAQ V2 feature allows a Fire Safety Professional to create new codes and occupancies. The feature allows the application of MAQ limits to each hazardous material class and state of matter and to apply reductions and increases based on features in the code. This can be done rapidly without requiring a developer to write new software. This customization accounts for code differences between states and locales and changes over time to be quickly addressed, thus delivering the most accurate, comprehensive code compliance picture.

The project produced several positive outcomes. First, setting up control areas now has a better interface and requires establishing occupancy per control area rather than for each room, reducing manual control area setup. Users can now add more details to the control area, like whether the control area is indoors or outdoors, what rooms fall within the control area, and the occupancy. If the containers within the control area are in approved storage - all of these are essential for building safety and compliance. The new version also has technological and geographical consideration capabilities, including storage of nanotechnology and building location, i.e., building into a hill versus flat land.

Second, customization was a priority with MAQ V2. There are over fifty fire codes in the US, and the current generation of fire codes is based on the “International Fire Code” as a model. All fire codes are revised every three years and are adopted and amended by each state and sometimes by localities. The new version of MAQ allows each client to create MAQ limits as fire codes are updated, allowing other states to use our solution, not just clients in California.

Finally, the team integrated more visual elements to assist users by implementing and using the MAQ feature. The interface is more intuitive, and the UI/UX team was involved in the development to ensure the product integrated best practices for user experience. The team held formal and informal client feedback sessions and integrated the end-user feedback into the design. There was careful consideration of accessible language use within the feature, and navigation is more user-friendly. Individuals using the MAQ V2 feature can now upload attachments, including floor plans and supporting documents, so that all necessary information is easily accessible to any person who may need it.

The updates to the MAQ feature have a significant impact on all UC campuses that handle hazardous materials. Beyond UC, over 45 campuses use the MAQ feature, and the improvements directly impact the safety of all individuals on each campus across the country. The RSS team prioritized inclusion and continuous improvement while developing the revised MAQ feature, and the project was a success.