

Heuristic Evaluation

TEAM VOLCANO - EVALUATION ASSIGNMENT 2
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1 DESIGN DESCRIPTION

The design features a flat orange, white, and charcoal color scheme that is both clean and thematically appropriate for a volcano app. Each type of observation to be recorded has its own form with simple inputs for photos and other data. These forms can be accessed without a log in via a button on the home screen or an option in the menu. The admin pages, which are also accessible through the menu but require a log in, allow the user to view a list of entries in chronological order, modify individual entries, and delete entries.

The mockups can be found at

http://www.csl.mtu.edu/classes/cs4760/www/projects/s16/group1/www/docs/UI/2_8Mockups.pdf.

2 UI DOMAIN

There are a number of ways to define the UI domain of the Team Volcano app, but what seems most relevant is the domain of questionnaire, form, or survey apps. While not a platform for surveys and questionnaires like Google Forms or Survey Monkey, it shares characteristics and concerns of individual surveys on these services. Another comparison would be satisfaction surveys at the end of a website visit or service request. User engagement and motivation are challenges as there is little intrinsic or extrinsic reward for completing surveys that benefit someone else. Ease of use and affordance are critical concerns to allow new and returning users to complete their tasks with a minimum of frustration. Error prevention, recovery, and data clean-up are also critical concerns that could undermine the usefulness of the system.

3 HEURISTIC USABILITY PRINCIPLES

The following heuristics were used in the evaluation. They are heavily indebted to Nielsen's Ten Usability Heuristics as listed in Carol Barnum's *Usability Testing and Research* (2002, p. 38).

1. **Efficiency:**
The app should make it quick and easy to complete tasks, while giving enough support that the task is completed correctly on the first attempt.
2. **Feedback and navigation:**
Users should have visible cues for what they can do next, what they have done, and how to undo what they are doing. Extraneous navigation should be avoided when possible.
3. **Error prevention and recovery:**
It should be hard to make mistakes and, at the same time, it should be easy to notice and fix them.

4. **Accommodation for varying user expertise:**
The app needs to meet the needs of users who have never seen it before, users who submit something every day, and some in between.
5. **Consistency and convention:**
The app should use layouts, labels, etc. consistently across different sections. It should also adhere to common app design conventions. Both will help minimize user confusion and time spent searching.
6. **Mapping between the system and the real world:**
The app, in particular the terms and icons, need to match users' expectations and understanding of reality.

4 USABILITY PROBLEMS IDENTIFIED IN THE HEURISTIC EVALUATION

It may be difficult to read white text over the home screen background picture, particularly in bright sunlight which should be a commonly encountered condition. This violates the efficiency principle.

Users need to repeat entire workflow to submit multiple observations. This violates the efficiency principle.

Accessing the "Submit Observation" feature requires opening a menu or scrolling to the button at the bottom of the home screen. This violates the efficiency principle and the accommodation for varying user expertise principle.

There is no feedback to the user about the results of their actions, such as a confirmation of submission. This violates the feedback and navigation principle.

There is no back button to allow users to back out of a form selected in error. This violates both the feedback and navigation principle and the error prevention and recovery principle.

There is no confirmation dialogue when deleting an observation in the admin view. This violates the error prevention and recovery principle.

Expected units should be labeled (or better yet, options for metric and US customary units should be selectable) on the input screens. Not having the units labeled violates the error prevention and recovery principle.

As mentioned in class, the height of plume difficult to estimate without some type of aide. This violates the error prevention and recovery principle.

Also as mentioned in class, in the admin view, the preview and delete buttons are too close together. This violates error prevention and recovery principle.

As Dr. Hristova pointed, the hamburger menu icon is unusually on the right. It is more typical in my experience to have a hamburger menu on the left or a three dot icon on the right. This violates the consistency and convention principle.

Including an option for the admin view in the menu is not common practice and might confuse users who are not familiar with the term. This violates the consistency and convention principle.

The word "form" in "Choose form" is not clear to novice users who may be unfamiliar with the concept of digital forms as understood by developers. This violates the mapping between the system and the real world principle.

The meaning of "height" and "width" in relation to a lava flow is unclear. This violates the mapping between the system and the real world principle.

The camera icon on the input screens is misleading. It should be a photo icon because users are expected to upload a previously saved photo, not access their device's camera feature and take a new image. This violates the mapping between the system and the real world principle.

"Plumes" is inaccurate and might cause confusion between the volcano's plume and fumaroles. It should probably be "Plume" as users are only expected to see one at a time. The use of "Plumes" violates the mapping between the system and the real world principle.

5 CRITICAL USABILITY CONCERNS

The lack of a back button is a critical usability concern as it could lead users to fill out forms with erroneous data to continue using the app and is therefore a critical usability concern.

Lisbet's finger slips when she trips over a rock and she accidentally selects the "Lava Flow" form. There is no actual lava flow and she can't leave the page without submitting. She either closes the app, submits without inputting data, or puts in fake data. Then she has to go back to the home screen and start over.

There is no confirmation dialogue when deleting an observation in the admin view. This is a critical design concern as it could increase accidental deletions and is of particular concern since the preview and delete buttons are close together.

A scientist is reviewing the data and accidentally presses the delete button instead of the preview button. The potentially useful entry is immediately deleted and unrecoverable.

Expected units are not specified on the input pages. This is a critical design concern because it will lead to misleading and unusable submissions.

Tim, an American tourist, estimates that a lava flow is 3' high and 12' wide, so he puts 4 in the height box and 12 in the width box. However, the system is expecting data in meters, so Tim is actually saying that the lava

flow is roughly 10' high and 39' wide. Both sets of values are plausible, so the scientist has no way to know that the data is corrupt.