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International and Accessible Scenarios

Below, we have identified concerns related to accessibility and international audiences for our water consumption tracking application as a whole, as well as for particular features.

General – App-wide

There are several potential issues that we identified for the application as a whole. In other words, these concerns are not unique to individual features, but will instead need to be kept in mind for the design of the entire application and any accompanying accessories.

Problem 1: Supporting Multiple Languages

Concern

We want this product to be usable by people who don't speak English, including people in foreign countries and people in the United States whose first language is something other than English.

Possible Solution

In designing our application, we will need to make sure we that support multiple common languages (e.g. German, French, Spanish, Italian, etc.) and keep in mind the requirements that each imposes. Some languages tend to have longer words (for example, words in German are described to need 1.3x as much horizontal space as English words [<http://msdn.microsoft.com/en-us/goglobal/bb688120.aspx>]), so as we design our user interfaces, we will need to ensure that text-based elements have enough horizontal space to accommodate localization.

In addition, we should keep in mind any impacts of swapping in right-to-left languages, so our UI should not rely entirely on left-to-right paradigms.

This international requirement also means that we will need to include some kind of UI early in the app experience that allows the user to select or change their language, if the app cannot determine the language based on the device's settings.

Problem 2: Iconography

Concern

We recognize that people in different cultures may have different and unexpected interpretations of

iconography and symbols that may otherwise seem non-controversial or universal. Icons that have obvious meaning in the United States may be unclear or even offensive to users in other countries or cultures.

Possible Solution

To prevent any unclear or offensive icons, we would want to have a localization team validate any iconography that we plan to use so that we can understand other cultures' interpretations. This might lead to replacing icons with a more universal representation, or potentially serving different icons based on geography or language.

In addition, since icons might be unclear on their own even with expert localization efforts, we will likely want to associate every icon with a label so that the information is redundant.

Problem 3: Needs of People with Disabilities

Concern

Since we want to reach a wide user base spanning multiple ages and technological abilities, we may have potential users who are visually impaired or who have limited dexterity. We want to make sure that we are not excluding anyone based upon these kinds of disabilities.

Possible Solution

In designing our application, we will want to make sure that we are keeping accessibility standards in mind. This may mean: using fonts that are large enough to be read easily (while still being aesthetically pleasing), making sure interactive UI components (e.g. buttons) are well-sized and spaced apart adequately enough to make them easier touch-targets, and making sure that color contrast ratios are high enough to support low-visibility users.

Feature 1: Personal Recommendations via Initial and Ongoing Data Input

This feature, which is essential to the experience of the application, is a personal data input interface that is used to provide recommendations for the user based on their specific needs. It aggregates data from basic information of the user to patterns of drinking of the user.

Problem 1: Different Units

Concern

When the user inputs the data about their health (e.g. weight, height, etc.) or amounts of water, international users will expect to be able to use units of measurement that are more familiar to them. While the United States uses imperial units, the majority of the world uses metric units.

Possible Solution

We will want to provide easy abilities for the user to switch to the units they are most comfortable with. If the user wishes to provide their location, we may be able to leverage their country to determine which units to default to, saving the user a step.

Problem 2: Asking Personal Information

Concern

While this isn't necessarily a concern unique to international users, some people (especially those in certain cultures) may be less willing to provide some personal information. While the app is largely driven by the details they provide, we want to be mindful of their choices so that the app is comfortable for all users.

Possible Solution

We should try to make as few fields required as possible. However, we should note that omitting some fields may lead to less accurate results.

Problem 3: Different Environments Require Different Amounts of Water

Concern

People may live in environments that are dramatically different than domestic (i.e. US) environments, and may therefore have different hydration needs based on their climate.

Possible Solution

This functionality will be built into the recommendation engine feature itself, so this problem should already be generally solved for. However, we will want to make sure that we are taking care to identify the factors from different locations that affect hydration needs, checking if there are any factors beyond weather that have a significant impact.

Problem 4: Multiple Types of Location Input

Concern

We intend to use location to determine climate-based needs. In the US, a zip code is one of the easiest and most familiar ways to get the user's location. However, this will not work internationally since countries have different coding schemes for representing locations.

Possible Solution

We may be able to rely on automatically-captured location data, such as via the device's GPS system. If users do not wish to share their location automatically, we could design a location selector system that is country-agnostic so that the user isn't restricted to a particular form of input.

Feature 2: Simple health indicator / value

A second primary feature is the ability for users to quickly see how they are doing at a glance. While this was initially envisioned as a colored icon, we recognize that there may be some international and accessibility concerns.

Problem 1: Cannot Rely on Color Alone

Concern

A significant portion of the population has some kind of color blindness [Birch 2012 http://www.opticsinfobase.org.offcampus.lib.washington.edu/DirectPDFAccess/FA40CFE8-E7A1-5D19-C55C407AC949DE42_227817/josaa-29-3-313.pdf?da=1&id=227817&seq=0&mobile=no], so we cannot rely on color alone to indicate status.

Possible Solution

We need to make sure we are reinforcing the status by being redundant through something besides color, such as an icon or progress bar. Some apps have an 'enable color blind mode' option that we could consider using in our design. Another solution is to just be more mindful of color choices, making sure that they are compatible with the primary forms of color blindness.

Problem 2: Different Meanings of Color

Concern

We recognize that some cultures have different connotations about certain colors. While green, yellow, and red may have clear meanings in western cultures, there are many cultures who interpret these colors differently [http://sixrevisions.com/web_design/how-web-designers-can-adopt-a-global-mindset/].

Possible Solution

We would want to make sure that we are not using colors that are misunderstood by any cultures that we plan to deploy to, which would require a team of localization experts to review. However, we may find that it is impossible to define a universally-accepted color scheme. If this is the case, we may need to rely on a monochrome scheme, or potentially serve different color schemes depending on the user's location.

Problem 3: Modality of Indicator May Be Prohibitive to Disabled Individuals

Concern

Users that have limited or no use of a single modality (e.g. vision) will not be able to use this feature as it was originally envisioned. For example, if the indicators are simply colored icons or lights, a vision-impaired individual would not be able to experience it as designed.

Possible Solution

To solve this, we could design to make our indicator use two or more modalities. For example, an indicator could flash a certain color light as originally envisioned, but could also be audible. Additionally, tactile feedback could be provided depending on the context of the indicator.

Feature 3: Explore Multiple Hardware Types for Input

A third important feature in our project is to explore potential hardware designs for devices that would sync with the application to report amount of water drank by the user. While these designs will not be fully realized, we will work to address international and accessibility concerns regardless.

Problem 1: People have different needs for their water container

Concern

The different lives of our potential users mean that they each have different needs for how their water is stored and how their drinking is tracked depending on their daily activities and mobility. While this is not necessarily a problem unique to international users, we recognize that some countries' users may have different lifestyles that would require different needs.

Possible Solution

As we come up with different hardware concepts, we will want to make sure that we take an inventory of all the different needs that users may face. If we had a large budget, we would like to run user tests in different geographies in order to better understand these needs.

Once we have determined the needs of different user types, we would want to make sure that we come up with hardware that address those problems. For example, this may mean that one piece of hardware is designed to stay in one location (e.g. at an office), one is designed with a digital interface, and one is designed for athletes on the go.

Problem 2: Water Bottle Not Appropriate for Low-Quality Tap Water

Concern

Since some countries (or even regions of the United States) do not have high-quality tap water, we want to make sure that our app doesn't rely on using a synchronized water bottle. Users may want to buy bottled water instead, but may still desire a way to use physical hardware to sync their hydration with the application.

Possible Solution

We will want to make sure that we don't restrict our hardware to bottles. One early idea is a basic single-button piece of hardware that could fit in a pocket that would record one pre-defined volume of water. A user could press this once for each purchased bottle of water they consume throughout the day and the application would automatically add these up. This could be invaluable for users who don't have access to their own water with which to fill a personal bottle.