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CSE 403, Spring 2012

## WeatherOracle

### What is your product, on a high level?

Our team proposal is to design and build a lightweight mobile weather app that will afford the user a fully customizable alert system wherein they can choose to be alerted only of weather conditions which are of interest or concern to them. Apart from being able to select from conditions such as wind or rain, the user will be able to determine under what exact conditions these weather phenomena should prompt an alert. For instance, the user can set up an alert that will be sent only when winds exceeding 20 mph are expected, or only when rainfall exceeding half an inch is expected.

### Whom is it for?

This app is targeted at anyone that wants to tailor the weather information they receive to suit their unique needs, concerns, and interests (read: targeted at everyone). More specifically the app is targeted at anyone that is tired of doing the constant work of manually checking forecasts for information that is relevant to them, and would rather have that process be done for them, such that they are presented with all of the information that they need (and none of the information they neither want nor care about), when they need it.

### What problem does its solve?

This app solves two main problems: (1) currently, if someone is interested in only certain aspects of the weather (such as if a decent rainfall will occur in their area) they need to go manually check for these things and staying up to date on the weather in this fashion can be time-consuming and tedious; (2) current alert systems based on the National Weather Service's (NWS) Warning System are made at a relatively low resolution, often grouping together areas which may actually end up experiencing a wide array of disparate weather conditions due largely to topographical variations such as elevation and distance from large bodies of water. (note: see below in the "Why the project is compelling" section for how these issues are addressed by this app).

### What alternatives are available?

Although there are currently many weather apps for Android such as WeatherBug and the Weather Channel App, most of the weather apps focus on the client having to manually check the weather for information that is relevant to them. As a result, there is no "perfect substitute" for this product.

### Why is this project compelling and worth developing?

While there exist many weather apps, this project is compelling because it solves the two problems mentioned above. Problem #1 is solved by giving users a fully customizable alert system, wherein they can specify conditions they would like to be alerted about and under what exact circumstances (for instance, winds over 20 mph). Problem #2 is solved by not simply relying on relaying the official alerts put out by the NWS to the user. Instead, the app will make use of frequent accesses to the NWS's Digital Forecast Database (DFDB) in order to provide the necessary data to trigger these alerts. In the files transmitted from the DFDB, areas are separated at a much finer resolution than that seen in the official forecasting 'zones' for which the NWS's official warnings apply. For instance, as an example, on a given night in

the Seattle Metro area the snow level may be about 400 ft. This means that officially, the zone called the 'Seattle-Bremerton' area would be very unlikely to be under a snow warning because most areas in that zone would not see snow. However, an area like Capitol Hill or Queen Anne could easily see a couple inches of snow. The data retrieved from the DFDB will be at a fine enough resolution to take into account these topographical differences (and subsequent likely weather condition differences) in these areas and app users in these areas will receive a warning that snow is expected despite the fact that no official warning has been put out by the NWS.

Ultimately this app is compelling because: (1) it can help people avoid potentially dangerous imminent weather conditions to a degree and with an ease which is not currently available; (2) it can generally help minimize the negative impact of adverse weather on people's lives; (3) it can make the process of staying up to date with the weather much more 'laissez-faire' by allowing users to specify weather conditions that interest them and letting the app to do all the work involved in actually tracking those conditions as they change.

#### What are the competitors and what is novel in your approach?

There are a number of popular apps put out by companies such as Weather.com, AccuWeather.com, WUnderground.com, and WeatherBug.com but none of them provide the functionality that we aim to afford our users. Our app is different in several main ways: (1) it allows for fully customizable weather alerts were the user can ask to be alerted about anything from severe thunderstorms to light wind to a specific range of expected precipitation amounts; (2) it allows the user to be warned about certain potentially dangerous events that are local to their specific neighborhood and thus escape the wide net of the NWS's Warning System; (3) it allows the user to take a completely 'laissez-faire' approach to weather preparedness instead of forcing them to check forecasts multiple times a day in order to stay apprised of constantly changing weather conditions/forecasts.

#### Describe at a very high level the system's architecture, identifying the components/modules that will interact.

We intend to use the MVC pattern where the model will manipulate the data, the view is comprised of the user notification system as well as all of the 'screens' of weather data that the user can view within the app, and the controller is the menu and options screen.

#### What is interesting about this project from a technical point of view?

This project is interesting because it includes data mining, data manipulation and analysis, as well as data representation. It is also intended to run on a mobile device and so must be conscientious about power and resource consumption on the device.

#### Optionally, what languages/toolkits do you propose to use for the development?

We intend to develop this app using the Android Development tools provided by Google with a mobile app focus. Furthermore we will make use of the National Weather Service's Digital Forecast Database in order to retrieve relevant data.

#### How will you minimize or mitigate the risk?

Currently, we plan to use to 'Spiral Model' of development to minimize risk. As mentioned below, the most serious challenge is to gather data and analyze the weather; as a result, we will focus on developing a way to do this efficiently first.

#### What is the single most serious challenge you see in developing the product on schedule?

We feel that the most serious challenge is being able to gather and analyze weather data to provide valuable information to the user as we do not have a clear understanding of how to collect and interpret the weather data online

programmatically.

Describe the top-level objectives, differentiators, target customers, and scope of your product.  
(These are all already mentioned above)