Personalized Emergency Reporting and Notification System

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Abstract. Emergencies may or may not come with a warning, therefore immediate communication is crucial and there is a need of an emergency notification system [1]. Emergency situations include anything unexpected such as fire, medical emergency, accidents, robbery/theft or even natural disasters. The Emergency Notification application expands native 911 and standard emergency number support [2]. Its capabilities are ideally suited for all kinds of public and isolated locations. The application operates on determining the personality type of a person, which will vary based major factors like on age, geographic location and gender and give the user a personalized re-ordered emergency contact list.

1. Introduction

A notification system designed to be used in any emergency situation. This application will reorder the UI (User Interface) based on user personality, emergency situation, past experiences and user demographics. This notification system primarily works on the idea that the user need not waste time navigating inside the smart phone menu i.e. unlock the smartphone and the steps that follow. A fraction of a second wasted, can lead to a great loss. The notification alert system needs to be user-friendly along with other requirements such as, consistent, informative feedback, error free, permit easy reversal of actions and more. The properties mentioned are the main goals of this notification system, also called as Shneiderman's 8 Golden Rules. Our UI follows Dreyfuss Design i.e. the system should have minimum or no friction at the point of contact, in this case the UI interaction with the user. As no more than three colors are used at a time (on screen), our UI also takes care of the Color Theory making it look more appealing as well as easy to use and comprehend. The emergency notification system supports Internationalization (I18N) features, which is designing and developing the system that enables easy localization for target audience that vary in culture, race, region, religion or language.

2. Big problem definition

There is a need for an Emergency Application for public safety, risk of death, injury or damage to property. We do not have a system of incident reporting of suspicious activity, theft or emergency by first responder. We need a system which can be used to communicate between the public and emergency communication services via audio, text messages and video is a must. People with disabilities such as hearing impaired, visually impaired are also taken into consideration and the system is customized to cater all their needs in case of emergency. Citizens should be provided

with notifications of situational knowledge during emergency and activities around the neighborhood.

3. Small problem definition

For public safety users should be able to report emergency situations without delay, should be notified and given situational knowledge when an emergency situation occurs and should be alerted by notifications from emergency communication systems.

4. Related work.

Observing the Mobile Mason application for Android and Apple devices we noticed that there seems to be a lot of problems and inconsistencies with it. The main limitations being, very basic in terms of functionality, not user friendly, confusing, lagging at times, taking time to fire up, the GPS location services are not accurate and also the application crashes frequently. In addition the main aim of the Mobile Mason application is not to provide emergency services but to give the user a summary of the Mason campus. The symbol of the application is the George Mason University logo which makes it confusing and doesn't make sense for an emergency application because it doesn't specify that the application contains emergency contact information, which further leads to making the application more confusing unless the user explores it.

5. Proposed solution

The amount of time spent trying to remember important contact information during an emergency situation is time that can be saved and spent reacting to the situation. Our proposed solution will reduce the time taken to respond to an emergency situation by decreasing the time it takes the user to report the situation. After installing the app on a mobile device the user will face a series of questions, these questions will be based on the personality divisions of the Myers-Briggs personality type indication. The Myers-Briggs type indicator states that you should know the user so that you may be able to provide an accurate interface with which he may interact in a user friendly way. Different personality types and age groups have varied reactions to the same situations hence it becomes a necessity for us to accurately gauge how the user will react to a wide variety of situations. Once the personality type is determined we will proceed with collecting ethnographic data. Every country has a different culture along with specific rules and limitations that the people abide to. Once we have the ethnographic observations we can use this to determine how the user will react to a given emergency situation with context to the culture he belongs to. Not only will the application reorder the user entered emergency contact information to best suit the user’s need according to previous status, current geographic location, user personality, user demographic but will also completely utilize the Usability Theories such as Color Theory, Skeuomorphism, Gestalt design Principles, Shneiderman's 8 Golden Rules, Fitts’s law, Myers-Briggs Type Indicator, Ethnographic Observation and Contextual Inquiry. The inclusion of all these Usability Theorems enables us to efficiently design the exact requirements for the user on the fly and ensure that the user interface is not a point of friction between the user and the application.

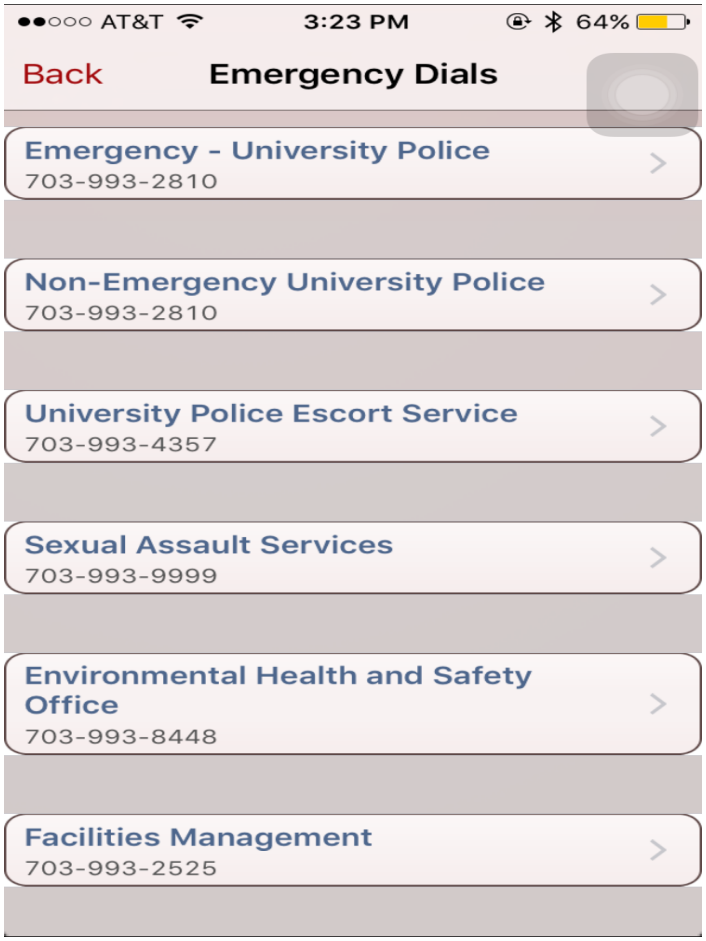

Fig. 1. Mobile Mason Contact Numbers List

6. Data Analysis and Experimental Work.

There are continuous changes in technology, environmental regulations, public safety rules and concerns. There are certain tests we performed such as if you search on Google Play or App Store you get search results for Emergency games or other useless apps. There is a need of an Emergency app. We are focusing on User and UX design for our emergency application taking into consideration Norman's stages of action during an emergency situation. The information conveyed to the user during an emergency situation is crucial and victims suffer from a wide range of psychological experiences and mental health problems during and after emergencies. People are more likely to recover if help arrives in time, they feel safe, connected, calm and hopeful. Having social, physical and emotional support during and after emergency situation is very helpful. When the user dials 911 the caller can be traced when he contacts the PSPA (Public Safety Answering Point) in case of an emergency. PSPA is a call center responsible for answering calls in case of emergencies. We strongly propose that this PSAP system needs to notify the users in that demographic area using the GPS location services for alerting people in close proximity and making people in a certain physical radius aware of the emergency situation.

References

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