



Emergency Reporting and Intervention: A Smart Approach

A. LATIF⁺⁺ T. R. SOOMRO

Department of Computer Science, SZABIST, Dubai Campus, United Arab Emirates (UAE)

Received 18th January 2015 and Revised 2nd August 2015

Abstract: Local and federal government entities have been investing in providing mechanism and channels to the citizens for reporting issues. The advancement in telecommunication and mobile technologies has enabled them to devise several strategies in communicating with their customers. Apart from just getting the reported problem's details, these entities are keen to provide quick response to their customers with effectiveness. The issues being reported can be categorized from critical to normal priority groups. The critical issues include reporting medical emergency, road accidents, fire disruption and natural calamities, which can cause severe damages to human lives and the nature of urgency, require one touch reporting operation. Timely intervention in these cases is highly desired and required to save lives. This study suggests an improved reporting and intervention system for the concerned entities to cope with critical issues as mentioned above and reduce the ratio of damages to human lives. Governments have severe restrictions on the intervention of civilians in such cases and it results in loss of lives till the intervention is done. The proposed system will bond the citizens and government entities as a team to cope with such scenarios in accordance to their legal requirements. The study will include an idea for the proposed system and will discuss the technological and administrative requirements of such a system. Also the study will talk about the need for collaboration between various government reporting mobile applications and their benefits for the end user. At the end the challenges in terms of technology and data management will be discussed on abstract level.

Keywords: Mobile Application, Smart Government, Reporting Application, Collaboration, Municipal Affairs

1. INTRODUCTION

Public sector entities are improving their infrastructure and services to enable their employees provide best services, to the citizens as per their needs and requirements. This approach helps in converting their e-services to smart services or mobile services, availability of these services over the smart devices facilitate the users to take advantage of these services at their convenient. These smart devices provide better user experience, portability and mobility in using these services. The ultimate goal is to facilitate the citizens and users in any way possible and enhance their standard of life. United Arab Emirates, Mobile Government (UAE Mobile Government Guidelines, (2015). Telecom Regulatory Authority,) Initiative elevates the performance and effectiveness of the electronic governments in many ways and this all is done only by providing and creating such a working environment, where employees productivity is at its maximum and in return the citizens gets better services via mobile and smart devices. In short mobile technology is the key force to transform electronic government to mobile or smart government using various approaches to use mobile technologies at various stages and levels of the processes and services delivery.

Mobile devices are coming with various built in sensors, operating system incorporated applications and third party applications. Thus there is a great potential in

exploiting the possibilities of their usage in the real world. These devices and applications can be combined and can be used for health and fitness monitoring, environmental protection, art and photography, public services, travel and tourism and information collection and dissemination domains. The users expect the devices and the mobile applications to be intelligent and should be able to provide information either reactively or proactively based on their requirements. For instance the 'Where?' features in smart FUJAIRAH (SmartFUJAIRAH Mobile Application, (2015). Fujairah Municipality), takes the current location of the mobile user and provides details regarding events and promotions within in a certain range. Apart from events and promotions, any point of interest can be searched like shopping malls, health facilities, mosques, rentals etc. and navigation is provided to the selected point of interest. This kind of handy information is useful to citizens. Think about a scenario, when one is walking by a shop and an application message gives the notification that the shop has an offer or promotion for something one have been looking for, since long time. Mobile governments focus on the seamless integration of mobile applications across all the domains. These applications should be able to share information and data as well shall be able to support each other. Collaboration of these applications in public and government sector is crucial for the establishment of smart and mobile working environment. A travel and tourism mobile applications can get the details of the

⁺⁺Corresponding author A. LATIF email: lateefyusufzai@gmail.com

land and its location from the Global Information System (*Makani, Dubai Municipality, (2015). <https://www.makani.ae>*) server of the concerned authority. On top of that they can design various services that suites the user's requirements and the information and data is exchanged in the background without bothering the users for extra inputs and efforts. Think of scenario, when something unexpected is happening, then the first things comes to one's mind 'what to do?', 'whom to contact?'; here comes the need of mobile app through which one can report and get timely help from relevant authorities. This study has been done keeping in view this situation, and this paper is organized as follows: section 2 will explore the strategy of reporting app and intervention from relevant authorities; section 3 will propose the system that can utilize mobile and cellular technology to handle this situation; section 4 will discuss collaboration among all authorities using this proposed application; and finally in section 5 discussion and future work will be covered.

2. MATERIALS AND METHODS

2.1 Reporting Application and Intervention Strategy

Reporting Application has been in the market since quite long time. Public and government sectors use them as a channel to facilitate the citizens in reporting issues in their daily lives concerning specific department or entity (*CityGuard Abu Dhabi, Abu Dhabi e-Government, (2015)*). For instance sending report to the local municipal corporation about the road condition of potholes. The aim of these applications and associated systems is not only the reporting part, but the intervention plan and its effectiveness. Based on the critical nature of the issue the entity needs to respond in that urgency. A medical accident report has more urgency and priority for intervention and needs more accuracy for the correction of the data, while reporting a graffiti issue is of not that much urgency and can be delayed. Looking into the critical nature of some of issues being reported on daily basis associated with our lives before physical intervention technology can be utilized and various measures can be taken from the remotest locations till the intervention team arrive and operate. Reporting road accident, fire abruption, medical emergency and natural calamities are of critical nature as a delay can cost lives as well the loss of valuable resources.

For instance in United Arab Emirates road accidents and its intervention is done by the facilitation of both police and hospitals, medical emergency is also facilitated with the help of police and hospitals, fire abruption cases are handled by the help of police and civil defense. In case of natural calamities it might be the case that multiple departments will work in collaboration to achieve the desired goal or results.

Thus the collaboration between these entities or authorities is also essential and its effectiveness is a key point to successful intervention. The concerned official entities can't do the job alone, citizens and civilians are required to participate and their involvement should be made effective. The laws of various geographic territories forbid civilians and citizens to engage or interact in such cases because it might result in the destruction of actual facts and event/crime scene till the concerned authorities reach for intervention. Due to these restrictions there is a possibility that a lot of human lives and resources can be lost. To make the reporting and intervention system more effective, this study propose a system which can make a difference in the stated domain by utilizing mobile and cellular technology.

3. PROPOSED SYSTEM

As discussed above all the entities or authorities involved in such situations are government organizations and is easy to bind them legally.

3.1 Scenario

To understand the proposed system, (see Fig. 1), consider a scenario, where god forbid an accident happened and the police or medical team will take 15-20 minutes in order to arrive for intervention. According to the proposed system, a passerby will open the mobile application and will report the accident with a single touch alarm. On the back end the current location i.e. latitude and longitude (in some case if altitude may be required as in a multi storied building) will be sent to the concerned authority(s). The details will be received by the service desk and automatically live streaming of the incident scene will be started. The video conference will be bi-directional and the service desk representative can guide the alarm initiator to do the first aid as per their expert opinion on the live visuals of the incident scene. Everything will be saved on the backend Server for security and historical reasons to be referred to in the future. In the same time the service desk representative can dispatch and inform the intervention team as per the live visuals and their intervention effectiveness can be maximized. Thus the intervention team can reach the exact location without wasting time and invaluable lives and resources can be rescued.

3.2 Infrastructure

In this propose system the infrastructure should be shared and no single entity shall own the data, in fact on requirement basis the archived data should be fetched and used for any verification or legal purposes.

- Hosting Server and Archival: The hosting server shall be able to archive the video, audio and pictures of

the incident. The streaming server should be scalable and fault tolerant to accommodate large number of simultaneous users' interaction with the service desk.

- The telecommunication providers in the region can make this specific service free of cost and should allow live streaming even on GSM/3G/4G and LTE.

3.3 Human Resources

The human resources involved in the proposed system shall have the necessary domain skills to assist the public who initiated the alarm. For instance in case of medical emergency they must have the necessary skills to guess or understand the situation of the emergency through live camera and guide the assistant over there to minimize the damages. Also the team should be well versed in the legal and ethical norms of the region.

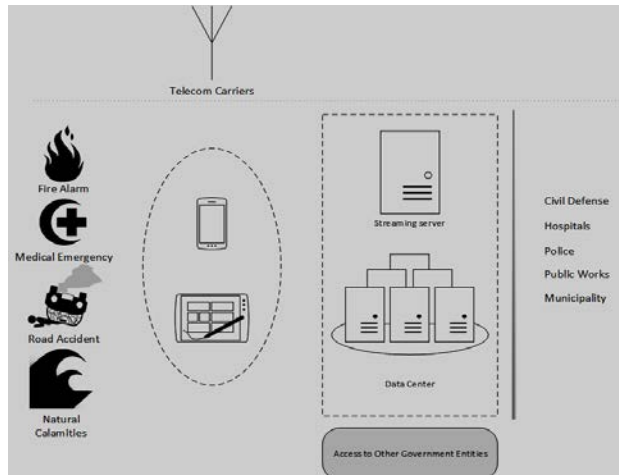


Fig. 1: Proposed System

4. COLLABORATION IN REPORTING APPLICATIONS

If every government entity or city is having their own mobile applications and it's hard for users to install and have all the applications with them. Consider the United Arab Emirates (*United Arab Emirates Government, (2015)*), which comprise of seven emirates, a resident of UAE will have to install 7 different applications if he has to utilize the service of each emirate. User can travel between the emirates and might have interaction with more than one emirate administration. Consider CityGuard and iDubai (*iDubai, Dubai Municipality, (2015)*). interaction, if the geo-fencing is done for these applications then a resident of Dubai can report an incident to the local administration of Abu Dhabi through iDubai and vice versa. This will create a more interactive and collaborative government infrastructure and service environment for the residents. There might be a need to settle some administrative arrangements between these administrative bodies to achieve this goal. So the

proposed application as shown in (Fig. 2) wireframe screenshots is the solution, where all the entities or authorities are connected at backend and users are not going to worry for any emirates he/she is resident or travelling to.

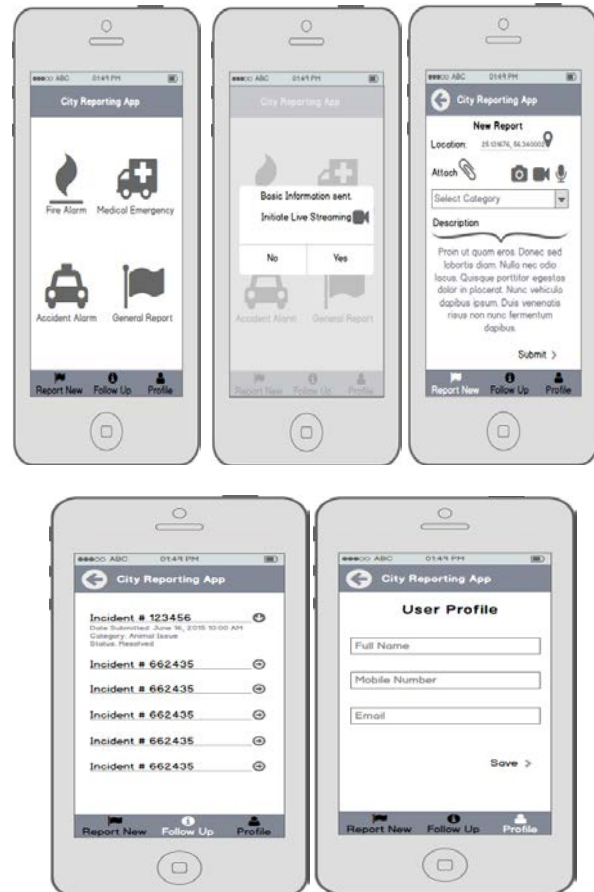


Fig. 2: Reporting Mobile Application Wireframes

5. DISCUSSION AND FUTURE WORK

Mobile apps in government especially the one discussed above aims to improve government services and the city and emirate image by engaging public with them. The ideas discussed above regarding use of cutting edge of technology and collaboration requires strong communication policies and the government should enforce these local departments to focus on collaboration. Although various issues and challenges might arise e.g. Cellular networks in UAE doesn't allow live video streaming through cellular data from the mobile and might create hurdle in implementation of such solution. Thus there is a need to bring all the key stakeholders of Government processes onboard and push them to collaborate for more integrated services through seamless integration and collaboration. Another challenge is 'False Alarms', which need to be handled with legal solutions.

REFERENCES:

CityGuard Abu Dhabi, Abu Dhabi e-Government, (2015).

https://www.abudhabi.ae/portal/public/en/citizens/safety_and_environment/safety/gen_info26?docName=ADEGP_DF_301998_EN, retrieved on 13 June, 2015.

Dubai, Dubai Municipality, (2015).
<https://itunes.apple.com/us/app/idubai/id427718650?mt=8>, retrieved on: 16 June, 2015.

Makani, Dubai Municipality, (2015).
<https://www.makani.ae>, retrieved on: 12 June, 2015.

SmartFUJAIRAH Mobile Application, (2015). Fujairah Municipality,
<https://itunes.apple.com/us/app/smartfujairah/id789236939?mt=8> retrieved on: 15 June, (2015).

United Arab Emirates Government, (2015). Official Portal, <http://government.ae/en> retrieved on: June 17, 2015.

UAE Mobile Government Guidelines, (2015). Telecom Regulatory Authority,
http://government.ae/documents/10138/1921890/Mobile_Government_Guidelines_EN.pdf, retrieved on: June 14, 2015.