PROPOSING WEB BASED EMERGENCY APPLICATION (CASE STUDY IN EGYPT)

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ABSTRACT

A significant burden of diseases in developing countries is brought by time-sensitive illnesses and injuries, such as severe infections, dehydration caused by diarrhoea, postpartum bleeding, and acute myocardial infarction. The provision of timely treatment during life-threatening emergencies should be a priority for many health systems in developing countries. Medical emergencies are time sensitive, because the longer the time that elapses before recognition and treatment, the greater the likelihood of morbidity, mortality or disability. Accessing emergency medical care should therefore be made easy. Delays in accessing care can be reduced through transportation. Systems for transporting patients with medical emergencies to health care facilities are essential. This paper designates the need to develop emergency application for access to nearest emergency care that indicates the regional referral transportation facilities.

KEYWORDS

Emergency Medical System, Health Services Accessibility, Transportation of Patient, Mobile Application

1. INTRODUCTION

One of the elements of the Health Investment Fund Project in the Republic of Moldova, funded by the World Bank, is the development of basic emergency care services [1]. In Romania, the Health Sector Reform Project, supported by the World Bank, aims to improve emergency medical services as a key component of the overall health programme [2]. Emergency medical care includes two major components: medical decision-making, and the actions necessary to prevent needless death or disability because of time-critical health problems, irrespective of the patient's age, gender, location or condition.

There is no empirical data on the number of lives or Disability-Adjusted Life-Years (DALYs) saved through emergency medical care. Nevertheless, it is clear that many of the conditions that contribute to the burden of disease in low-income and middle-income countries can be mitigated through prompt access to emergency services leading to better outcomes (see Table1) [3]. Access to medical care for urgent or life-threatening conditions is a key expectation in many communities. A study conducted in rural Nepal revealed that the population were in strong need

for accessible emergency medical and surgical services throughout the district [4]. In southern Nigeria, many women expressed a lack of faith in modern medical care when asked to identify their health service priorities; they mentioned better training of health centre staff and the provision of ambulances for emergencies [5]. Risking death or lifelong disability attributable to a delay in medical care can have a catastrophic long-term impact. Prompt access to care during an emergency is essential.

Table 1. Leading causes of deaths and Disability-Adjusted Life-Years (DALYs) in middle-income and low-income countries

Causes of deaths[a]	% of total deaths	Causes of DALYs	% of total DALYs
1. Ischaemic heart disease	11.5	1. Lower respiratory infections	6.8
2. Cerebrovascular disease	8.9	2. Perinatal conditions	6.7
3. Lower respiratory infections	7.3	3. HIV/AIDS	6.6
4. HIV/AIDS	6.1	4. Meningitis	4.6
5. Perinatal conditions	5.1	5. Diarrhoeal diseases	4.6
6. Chronic obstructive pulmonary disease	4.7	6. Unipolar depressive disorders	4.0
7. Diarrhoeal diseases	4.4	7. Ischaemic heart disease	3.5
8. Tuberculosis	3.4	8. Malaria	3.0
9. Road traffic accidents	2.4	9. Cerebrovascular disease	2.9
10. Malaria	2.3	10. Road traffic accidents	2.8
11. Hypertensive heart disease	1.7	11. Tuberculosis	2.6
12. Measles	1.6	12. Congenital anomalies	2.3
13. Trachea, bronchus, lung cancers	1.6	13. Chronic obstructive pulmonary disease	2.3
14. Self-inflicted injuries	1.5	14. Measles	2.0
15. Cirrhosis of the liver	1.4	15. Cirrhosis of the liver	2.0

Emergency medical care is related to the question of access. It is important to reduce delays in accessing emergency care in order to save lives. An absence of emergency medical transport is a common barrier to care. This may arise because of several factors; including the lack of appropriate vehicles, the absence or inadequacy of roads, and the inability to pay for transport services. The consequences of a lack of transport can be grave. In urban Guinea-Bissau, 20 of 125 acutely ill children died either on their way to hospital or while waiting in the reception area of an outpatient clinic [6]. In Malaysia, a team assessing the value of the risk-coding system in pregnancy concluded that better communications, a more effective transport system, and better emergency care in hospitals were needed in order to reduce maternal mortality [7]. This represents empirical evidence providing emergency transport saves lives.

2. BACKGROUND

Providing emergency medical care is as old as the practice of medicine itself, but the discipline of emergency medical services and the development of related integrated systems is a more recent phenomena. Prior to the 1960s, emergency medical care was a weak link in the chain of health care delivery worldwide [8], [9]. No integrated systems of EM care existed. Forty years on, EM has evolved into a coherent discipline comprising a unique set of cognitive, administrative and technical skills for managing all types of patients with acute illness or injury, regardless of age or gender [10]. This modern approach of EM care is “horizontally integrated” in that it combines knowledge and skills traditionally associated with multiple specialties together with the new knowledge and skills necessary for prompt and effective management of emergency patients. Delivery of EM care today is largely coordinated through integrated systems, through pre-hospital systems, and into hospital emergency departments. These systems are specifically designed to minimize morbidity, mortality and disability from acute illness and injury to the greatest extent possible, given available local resources.

2.1. Emergency Medical Services Accessibility

The history of EMS extends back to the biblical story of the Good Samaritan. Accounts of ancient wars reveal many examples of organized methods of transportation and care of the sick and injured. Historical archives suggest that Caesar designated battlefield medics among his troops. Napoleon's chief surgeons developed "les ambulances volantes", consisting of horse-drawn wagons staffed with battlefield care-givers [11].

It was not until the late 1960s to early 1970s that the modern era of EMS was created, with coordinated transport and pre hospital interventions, to provide earlier, more intensive care to the community. In the late 1960s, Dr. Frank Pantridge, a cardiologist from Belfast Ireland, developed the concept of Mobile Coronary Care Units (MCCU). He established mobile units or “Flying Squads” staffed by physicians and nurses to extend the coronary care unit to the pre- hospital setting [11].

The management of Emergency Medical Services (EMS) is largely dependent on the country context and on the overall organization of the delivery of medical care. No single system can be considered as the universal reference model. For each model, there occur specific arrangements in the various countries where the model is implemented. Nevertheless, there are two pre-hospital care models emerged from the International Emergency Medicine (IEM), has become a reference in developing EMS System [11].

The Anglo-American Model; where non-physicians initiate emergency care and transport of critically ill or injured patients to hospital-based emergency departments. And the Franco-German Model; where emergency care brings the hospital to the patient, delivering emergency physicians and technology to the scene in hope of providing a higher level of care. The models mentioned above are broad models of the type of pre-hospital emergency care provided in the field [11].
In developing countries, EMS is underdeveloped or sometimes non-existent. In one way or the other, there are already EMS whether it is hospital, private or volunteer based system that respond to emergencies. In the vast majority of developing countries, there are no real systems and no coordination of pre-hospital activities with hospital activities. In most of these countries, the pre-hospital management of emergency medical situations is under the control of agencies from other sectors rather than the health sector: the Civil Defense or National Red Cross/Crescent Societies, etc. There is usually no sharing of information between these partners and the receiving hospitals. The limited number of ambulances of the health sector is used mainly for secondary transfer of patients. The massive bulk of patients requiring hospital medical care are brought to the hospital setting by private non-ambulance cars such as pick up trucks or taxis [11].

Frequently this leads to the inappropriate transfer of patients to hospitals not having the technical capability (nor the capacity in the case of mass casualty situations) to treat these patients thereby secondary transfer of patients is necessary. Most often the patients are brought to popular hospital while the other nearby health care facility is not utilized or even sometimes patients are brought to the nearest hospital where in most cases they are unable to deal with the patient properly due to lack of expertise to manage such a case.

Often the receiving hospital cannot mobilize in appropriate time because of its internal resources due to the lack of timely information regarding the arrival of patients in the case of mass casualty situations. The activation of emergency procedures and mobilization of available resources

should start before the arrival of the emergency patients reaches the hospital. Coordination is more than just the mere one-way exchange of information; it is a tool to maximize the limited resources in the community to respond effectively to the emergency case.

3. SUGGESTED APPLICATION

The proposed tool is a simple smart phone software application specifically for Android operated systems. Inspired by applications such as Help Me App; It is supposed to assist in coping with the natural human response to emergency and dangerous situations that in most cases cause you to freeze in helplessly. It operates by GPS (Global Positioning System) Satellite technology that recognizes users' current location and can lead users to the appointed nearby emergency care unit chosen from the array of hospitals available in the software's database, after giving users the complete freedom to choose between public and private hospitals in accordance to their preferences. Also, a click button feature that provides a list of hospital hotline numbers and enables users to call an ambulance if needed.

The suggested application allows the Android operated smartphone in hands with Alexandrian residents to have full access to the software's database of hospitals that can offer medical emergency services based on their current location, detecting them on the map and directing users to the desired destination as well as allowing them to request an ambulance if needed. The following sections will include more description of the idea and screenshot of Data Flow Diagram, Entity Relation Diagram, Relational Model, and the Prototype.

Both the iOS and Android ecosystems are huge and filled with opportunities. However, an increasing amount of research indicates that the Android platform is larger and growing faster than iOS. Because Google Play provides a perfect environment for apps in their early stages: developers can react to feedbacks quickly and updates can be available on Google Play literally in a few hours. Suggested software application has been chosen to be developed on the Android operating system taking into consideration the following:

-Users must own and use a smartphone to be able to download the application.
-Smartphones that are operate by Android Operating Systems.
-Users cannot have access to the application without a created account.
-To create a new account the user needs a valid email address.
-Users can only read provided data and update their entered data.

The tools used are Microsoft Visio 2013 edition for making Data Flow Diagrams (DFD), IBM SPSS Statistics 20 version was used for the questionnaire analysis, Microsoft Word 2013 edition was used to write the documentation. Smart draw was used to create the Entity Relationship Diagram 2007 edition was used to create Relational Model (See Appendix). Microsoft Visual Studio 2013 edition for making prototype (forms), and Microsoft project 2013 edition was used for Project Plan. Finally, Illustrator CS6 version and Photoshop CS6 version were used to create Logo, Flyer and Brochure. Programming language used in implementation is Java coding, through Eclipse software, which is an Open Source Software (See Appendix). Graphical User Interface GUI implementation is done through API software (Application Programming interface). Application testing is performed through Android Emulation Program.

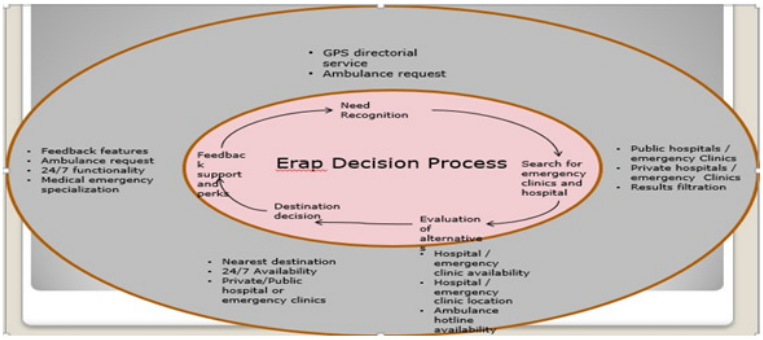


Figure 1 : Suggested Application

The proposed software application would apply unique capabilities through routing using GPS technologies; providing ambulance hotlines; redirecting users to the mobile network when requesting ambulance without the need of mutual agreements between application and hospitals; and helping user in decision process. Users would be able to evaluate alternatives by filtering out between public or private destinations before choosing one whether it is going to be based on their personal preference or the nearest destination. Satisfaction is granted through 24/7 functionality and the provision of more than just one ambulance hotline and the filtration of results in accordance to users' preferences. Those benefits would ensure user satisfaction. The above diagram provides a brief explanation of the suggested software application (Figure 1).

User benefit is summarized (as shown in Figure 2 below) in providing people with a sense of security regarding medical emergency cases knowing that they can find the nearest emergency clinic or hospital in a critical situation / request an ambulance when needed. Such application would be the first application that delivers this specific service domestically, there is currently zero applications specializing in emergency clinic or hospitals GPS locator in the market. There exist more than twenty hospitals scattered around the city of Alexandria in Egypt providing medical emergency services. None of the GPS based applications in Egypt is dedicated for locating emergency clinics or hospitals. Therefore, being the first application that specializes only in directing users to emergency clinics or hospitals in addition to enabling users to request an ambulance when needed; gives the application a certain edge in filling one customer inquiry.

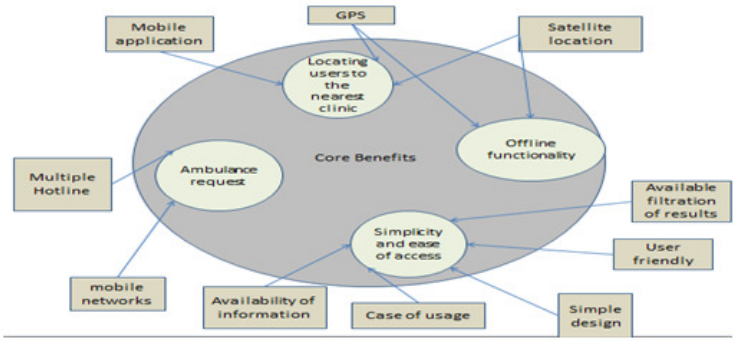


Figure : 2 User Benefit

4. CONDUCTED QUESTIONNAIR

This paper discusses the need for a mobile application to help people to locate the nearest hospital or medical center/ clinic to serve emergency cases. The coming illustrates the collection of data for the questionnaire investigating the user requirements and ultimately software features needed to satisfy these requirements, then provides a detailed the description of the analysis and finally ends up with a conclusion.

Dear participants,

Due to the complicated Egyptian traffic problem, it is interesting to gain some insight on your views about how a GPS based system can help locating an emergency clinic in a critical situation or when needed.

Taking into consideration that **the collected data will be confidential;** knowing that your time is greatly appreciated. Thanks in advance.

1. Do you use a mobile Smartphone?
   - o Yes
   - o No
   - o Sometimes, when needed

2. How much do you rely on your smartphone applications instead of the web-based ones?
   - o Lightly
   - o Heavily
   - o I rely on both, whenever available at that moment.

3. How many applications do you download on your mobile phone per month?
   - o Less than 5
   - o 5 - 10
   - o 11 - 20
   - o More than 20

4. How many times have you been in a need of emergency service?
   - o Never
   - o Once
   - o More than once

5. Have you ever got lost during an emergency situation?
   - o Yes
   - o No

(Part A)

Please indicate the extent to which you agree or disagree with each of the following statements. You are simply asked to choose from (1) strongly agree to (5) strongly disagree.

Statements	*Strongly Agree (1)*	*Agree (2)*	*Neutral (3)*	*Disagree (4)*	*Strongly Disagree (5)*
1. A MOBILE APPLICATION COULD BE USED IN A CRUCIAL EMERGENCY SITUATION.					
2. A SIMPLE TOOL IS NEEDED TO DIRECT AND HELP IN REACHING AN AMBULANCE AS SOON AS POSSIBLE.					
3. A SMART PHONE APPLICATION WILL BE HANDIER IN TERMS OF					

2. A SIMPLE TOOL IS NEEDED TO DIRECT AND HELP IN REACHING AN AMBULANCE AS SOON AS POSSIBLE.					
3. A SMARTPHONE APPLICATION WILL BE HANDIER IN TERMS OF SAVING TIME AND EFFORT.					
4. CLINICS THAT PROVIDE EMERGENCY SERVICES ARE DIFFICULT TO LOCATE WHEN CRITICALLY NEEDED.					
5. DIRECTIONS FOR HOSPITALS CAN BE MISLEADING AND HARD TO GET A HAND ON.					
6. GPS SYSTEMS AREN'T REALLY PRACTICAL IN EGYPT.					
7. GPS SYSTEMS AREN'T RELIABLE ENOUGH IN CRITICAL SITUATIONS.					
8. IT IS PREFERRED TO FOLLOW A GPS BASED APPLICATION THAN MISLEADING HUMAN INSPECTIONS.					
9. NOWADAYS, IT IS NEEDED TO DEPEND ON GPS BASED SERVICE FOR DIRECTIONS.					
10. SMARTPHONES AREN'T WIDE SPREAD ENOUGH IN EGYPT.					

Please feel free to add a comment/suggestion that might not have been overlooked and was not addressed which you think it would be relevant to our cause, kindly point it out in the comment box below:

(Part B)

Please indicate the extent to which you agree or disagree with each of the following statements regarding the features of the suggested software application.

Statements	*Strongly Agree (1)*	*Agree (2)*	*Neutral (3)*	*Disagree (4)*	*Strongly Disagree (5)*
1. A customized user data entry is always preferred in any kind of software application.					
2. A software application locating emergency clinics in critical situations should be functional 24/7.					
3. An application that is especially designed for crucial emergency situations should be as simple and practical as possible.					
4. Icons and buttons are the modest way to utilize an emergency hotline application.					
5. In a critical emergency situation, getting directed to the nearest clinic possible is what matters, regardless whether it is public or private.					
6. It is preferred to have an understandable and simple application rather than an attractive one.					
7. It would be more efficient and less time consuming if the application could provide a filtered out list of hospitals according to user's preference.					
8. It would be useful to have instructions guiding users when needed.					
9. Minimal response time is extremely significant during a critical situation.					
10. Most people would prefer private hospitals to public ones due to better and more efficient service.					
11. Personal information should be regarded as highly confidential.					
12. Receiving frequent emails notifying users to any updates would unnecessary and annoying.					
13. Users should always be able to provide feedback about their experience with such a software application.					
14. Usually applications with minimal tabs and simple interface are the most practical.					

Please rank the significance of each of the following software attributes relating to the above software features using the scale below from **1 (Extremely Unimportant) to 5 (Extremely Important).**

Feature	Extremely Unimportant 1	Unimportant 2	Neutral 3	important 4	Extremely Important 5
Available					
Fast					
Reliable					
Secure					
Usable					

Please mark your answer:

1. Gender:

O Male
O Female

2. Age

O 16-21
O 22-30
O 31-40
O 41-50

3. Degree

O High School
O College/Bachelor
O Post Graduation

Features and Variables View:

	Name	Type	Width	Decimals	Label	Values	Role
1	Q1a	Numeric	8	0	Do you use a mobile Smartphone?	{1, Yes, Re...	Input
2	Q2a	Numeric	8	0	How much do you rely on your smartphone applications instead of the web-based ones?	{1, Lightly}...	Input
3	Q3a	Numeric	8	0	How many applications do you download on your mobile phone per month?	{1, Less tha...	Input
4	Q4a	Numeric	8	0	How many times have you been in a need of emergency service?	{1, Never}...	Input
5	Q5a	Numeric	8	0	Have you ever got lost during an emergency situation?	{1, Yes}...	Input
6	Q1b	Numeric	8	0	Clinics that provide emergency services are difficult to locate when critically needed.	{1, Strongly ...	Input
7	Q2b	Numeric	8	0	Directions for hospitals can be misleading and hard to get a hand on.	{1, Strongly ...	Input
8	Q3b	Numeric	8	0	Nowadays, it is needed to depend on GPS based service for directions.	{1, Strongly ...	Input
9	Q4b	Numeric	8	0	It is preferred to follow a GPS based application than misleading human inspections.	{1, Strongly ...	Input
10	Q5b	Numeric	8	0	A smartphone application will be more handy in terms of saving time and effort.	{1, Strongly ...	Input
11	Q6b	Numeric	8	0	GPS systems aren't reliable enough in critical situations.	{1, Strongly ...	Input
12	Q7b	Numeric	8	0	A simple tool is needed to direct and help in reaching an ambulance as soon as possible.	{1, Strongly ...	Input
13	Q8b	Numeric	8	0	GPS systems aren't really practical in Egypt.	{1, Strongly ...	Input
14	Q9b	Numeric	8	0	A mobile Application could be used in a crucial emergency situation.	{1, Strongly ...	Input
15	Q10b	Numeric	8	0	Smartphones aren't wide spread enough in Egypt.	{1, Strongly ...	Input
16	Q1c	Numeric	8	0	A software application locating emergency clinics in critical situations should be functional 24/7.	{1, Strongly ...	Input
17	Q2c	Numeric	8	0	It is preferred to have an understandable and simple application rather than an attractive one.	{1, Strongly ...	Input
18	Q3c	Numeric	8	0	Personal information should be regarded as highly confidential.	{1, Strongly ...	Input
19	Q4c	Numeric	8	0	An application that is especially designed for crucial emergency situations should be as simple and practical as possible.	{1, Strongly ...	Input
20	Q5c	Numeric	8	0	Minimal response time is extremely significant during a critical situation.	{1, Strongly ...	Input
21	Q6c	Numeric	8	0	Usually applications with minimal tabs and simple interface are the most practical.	{1, Strongly ...	Input
22	Q7c	Numeric	8	0	Icons and buttons are the modest way to utilize an emergency hotline application.	{1, Strongly ...	Input
23	Q8c	Numeric	8	0	A customized user data entry is always preferred in any kind of software application.	{1, Strongly ...	Input
24	Q9c	Numeric	8	0	Most people would prefer private hospitals to public ones due to better and more efficient service.	{1, Strongly ...	Input
25	Q10c	Numeric	8	0	In a critical emergency situation, getting directed to the nearest clinic possible is what matters, regardless whether it is public or private.	{1, Strongly ...	Input
26	Q11c	Numeric	8	0	It would be more efficient and less time consuming if the application could provide a filtered out list of hospitals according to user's preference.	{1, Strongly ...	Input
27	Q12c	Numeric	8	0	Users should always be able to provide feedback about their experience with such a software application.	{1, Strongly ...	Input
28	Q13c	Numeric	8	0	It would be useful to have instructions guiding users when needed.	{1, Strongly ...	Input
29	Q14c	Numeric	8	0	Receiving frequent emails notifying users to any updates would unnecessary and annoying.	{1, Strongly ...	Input
30	Q1d	Numeric	8	0	Understandable	{1, Extremel...	Input
31	Q2d	Numeric	8	0	Usable	{1, Extremel...	Input
32	Q3d	Numeric	8	0	Stable	{1, Extremel...	Input
33	Q4d	Numeric	8	0	Accurate	{1, Extremel...	Input
34	Q5d	Numeric	8	0	Fast	{1, Extremel...	Input
35	Q6d	Numeric	8	0	Secure	{1, Extremel...	Input
36	Q1e	Numeric	8	0	Gender	{1, Male}...	Input
37	Q2e	Numeric	8	0	Age	{1, 16 - 21}...	Input
38	Q3e	Numeric	8	0	Degree	{1, High sch...	Input

All data was collected through five pages questionnaire, handed out to a sample of randomly picked 40 Alexandrian residents having smartphones, 10 from each age group. Their answers were analysed through SPSS Statistics Software.

Reliability Analysis:

Scale: ALL VARIABLES

Reliability Statistics

Cronbach's Alpha	N of Items
.707	40

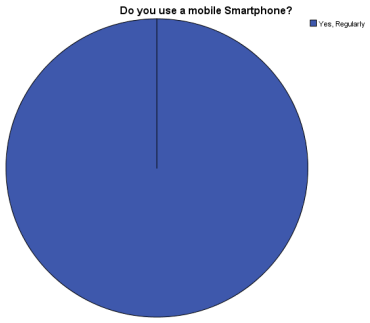
Cronbach's is used to measure the internal consistency of questionnaire.
As shown, it is 0.707, which means it is reliable and enables the authors to continue with their research.

Frequency Analysis:

Frequencies: shows the number of occurrences, and calculates measures of central tendency.
The following analysis represents a question that was crucial to proceed with the survey in order to make sure that the surveyed individual is eligible for using the proposed software application.

Do you use a mobile Smartphone?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, Regularly	40	100.0	100.0	100.0

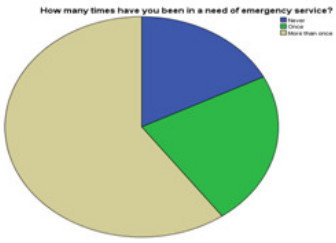


This statistic is about smartphone users; according to the analysis above, it shows that all 40 of the surveyed individuals are using smartphones. This indicates the extent to which smartphones are wide spread and vastly used among the Egyptian educated community.

The proposed software application is a medical emergency care locator, therefore inquiring about the frequency of which the Alexandrian residents have been in need of a medical emergency service represents essential key.

How many times have you been in a need of emergency service?

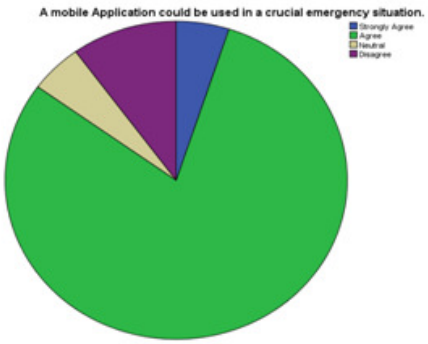
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	7	17.5	17.5	17.5
	Once	9	22.5	22.5	40.0
	More than once	24	60.0	60.0	100.0
	Total	40	100.0	100.0	



According to the 40 surveyed individual sample; 24 have been in medical emergency situations for more than once, 9 of them have been in medical emergency situations at least once. This highlights the need of a simple yet effective tool that can help individuals find their way around the city to the emergency care of their choice.

A mobile Application could be used in a crucial emergency situation.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	2	5.0	5.0	5.0
	Agree	32	80.0	80.0	85.0
	Neutral	2	5.0	5.0	90.0
	Disagree	4	10.0	10.0	100.0
	Total	40	100.0	100.0	



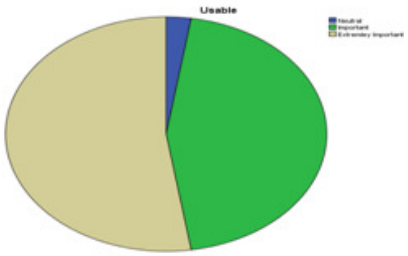
This statistic shows that 32 out of 40 individuals would resort to the use of a smart phone application that can help them during an emergency condition. This result debunks the assumption that people in general (Egyptian community in particular) are not ready yet to take full advantage of the technological convenience or rely on one.

The following features (Usability, and Availability) were the top most agreed upon features in terms of importance regarding the proposed software application.

Usable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	2.5	2.5	2.5
	Important	18	45.0	45.0	47.5
	Extremely Important	21	52.5	52.5	100.0
	Total	40	100.0	100.0	

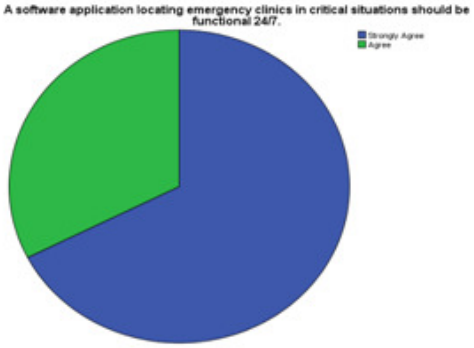
Pie Chart



39 out 40 individuals are divided between important and extremely important when asked to rank the usability feature regarding the software application. This supports the initial choice of simplicity that should be considered in the application.

A software application locating emergency clinics in critical situations should be functional 24/7.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	27	67.5	67.5	67.5
	Agree	13	32.5	32.5	100.0
	Total	40	100.0	100.0	



All 40 of the surveyed individuals have agreed on the fact that the suggested software application should be available 24/7, which is made possible through GPS technology dependent on the exchange of satellite signals.

Cross Tabs Analysis:

Cross Tab: is a statistical process that summarizes categorical data to create a contingency table. They are heavily used in survey research, business intelligence, engineering and scientific research. They provide a basic picture of the interrelation between two variables and can help find interactions between them. Some entries may be weighted, unweight tables are commonly known as pivot tables.

How many times have you been in a need of emergency service? * Have you ever got lost during an emergency situation?

Cross tabulation
Count

		Have you ever got lost during an emergency situation?		Total
		Yes	No	
How many times have you been in a need of emergency service?	Never	3	4	7
	Once	3	6	9
	More than once	14	10	24
Total		20	20	40

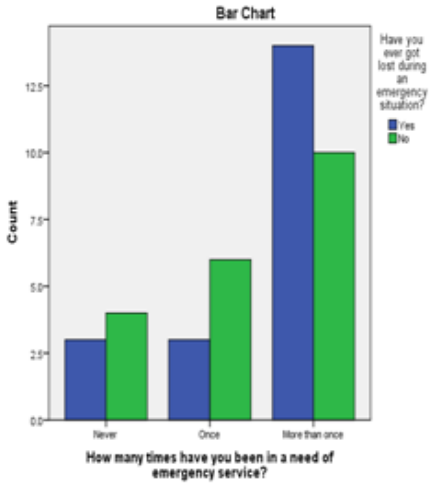


Chart above describes the correlation between being in need of a medical emergency care and getting lost trying to navigate through the city looking for the desired emergency care.
One would think that the more you have been put in the same situation, the easier it is to find the desired emergency care point. Apparently, that is not the case, as shown in the analysis; it does not get any easier.

Nowadays, it is needed to depend on GPS based service for directions.
* Gender Crosstabulation
Count

		Gender		Total
		Male	Female	
Nowadays, it is needed to depend on GPS based service for directions.	Strongly Agree	13	2	15
	Agree	10	4	14
	Neutral	4	7	11
Total		27	13	40

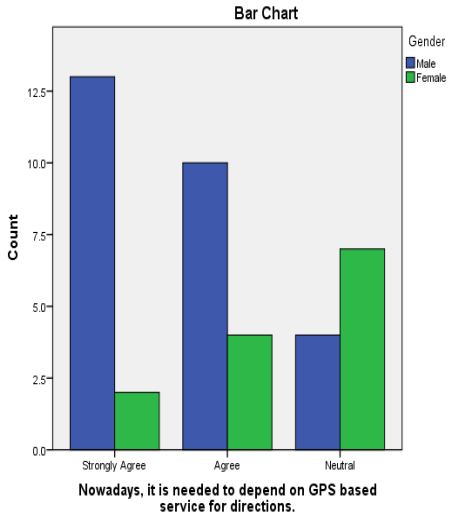


Chart above points out the correlation between gender, and the decision of relying on GPS technology. It shows that the idea of depending on GPS and age is more common among males than it is among females. Perhaps, this could be linked to the high probability of males being put in different situations and circumstances all the time while being the ones in charge

5. CONCLUSIONS

The links between the common situations such as accidents and rare situations such as major emergencies and disasters should receive more attention. The creation of networks, of best practices, of reference standards for the services offered should become a part of the overall policy of the health sector in promoting health risk management. The EMS plays a key role in the case of disasters and should be upgraded to become the backbone of the medical response for including pre-hospital as well as hospital activities. The EMS is part of the community-based services that are governed by the conceptual framework of risk management.

Health care facilities differ widely in respect of equipment, staff and resources, and they consequently possess varying capacities to provide emergency care. Nevertheless, some capacities should be available at every level of health care system. The level of demand placed on the specialization by the population may also dictate which services are needed and where they can be accessed. Despite the scarcity of empirical data on emergency medical care in developing countries, it is possible to specify the user requirements of such a system, notifying the emergency care system of patients in need; transport, preferably motorized, for moving patients to the nearest health care facility to ensure efficient and timely utilization of GPS routing. The minimum standards for emergency medical care mobile application should be made clear. This matter should be further discussed by communities, health system researchers, and other

interested parties. The greatest possible goodness is achieved through risk reduction of district and regional hospitals becoming overwhelmed by nonemergency cases.

The mobile application proposed can benefit large number of patients. The incorporation of a basic level of emergency application into health care systems could have a significant impact on the well-being of populations. It would respond to the self-perceived needs of populations and consequently decrease the long-term human and economic costs of illness and injury. Priority should be placed to the induced requirements to develop minimum guidelines for further enhancements to the suggested emergency mobile application.

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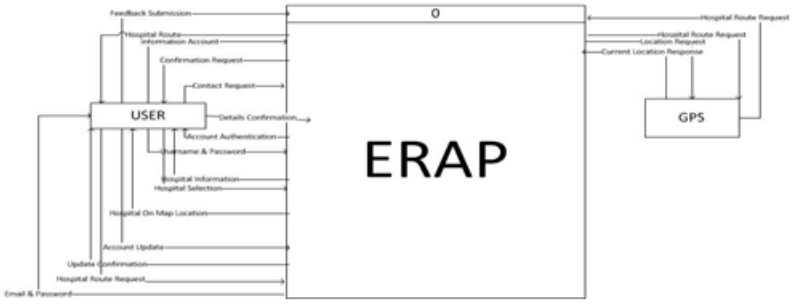
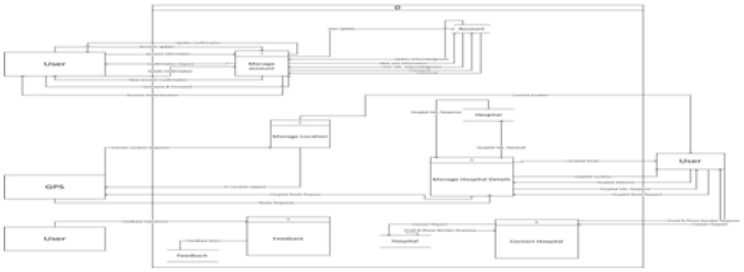
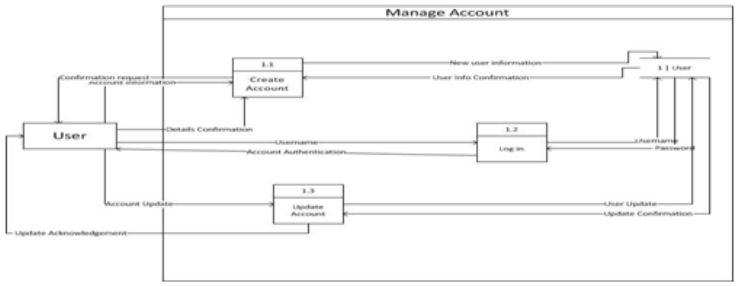
APPENDIX



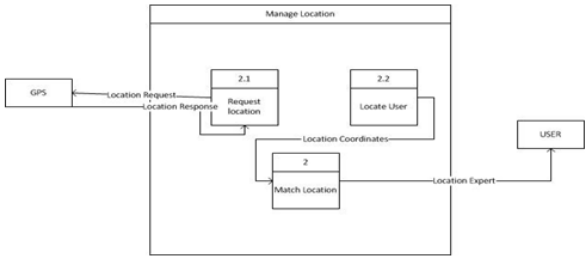
Level 0 Diagram



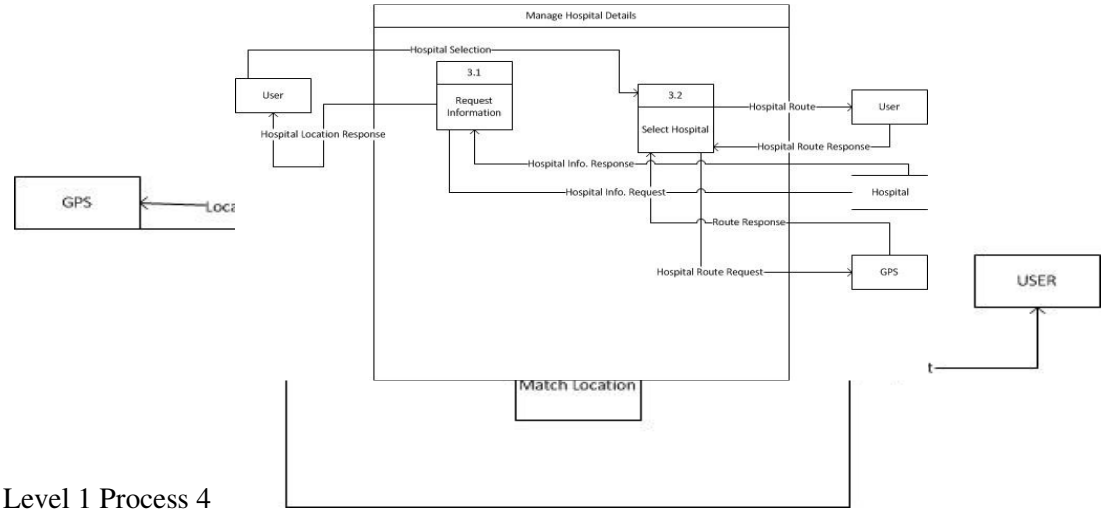
Level 1 Process 1



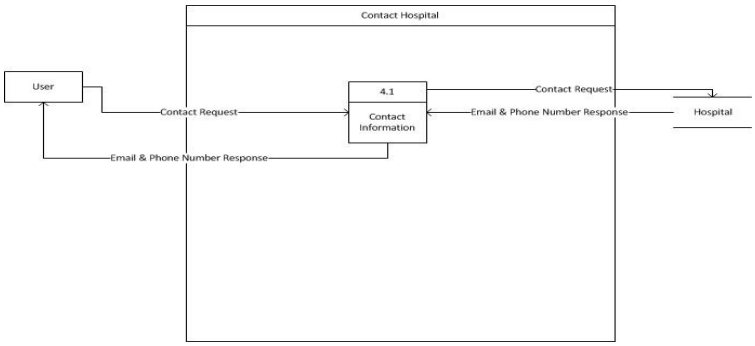
Level 1 Process 2



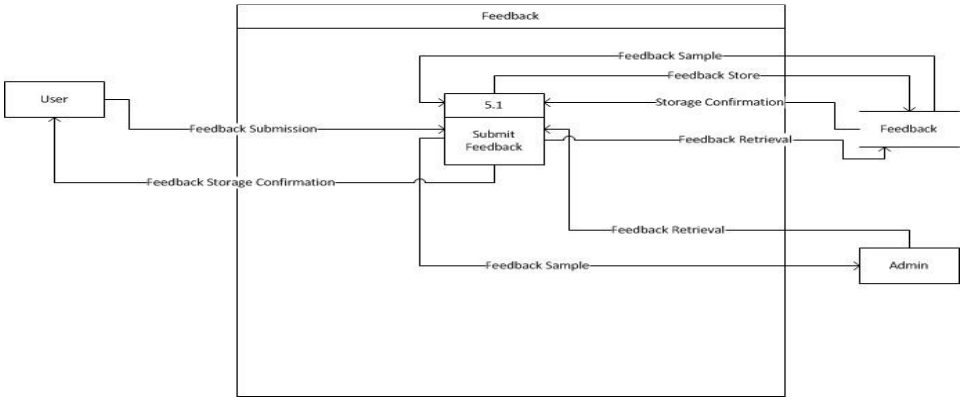
Level 1 Process 3



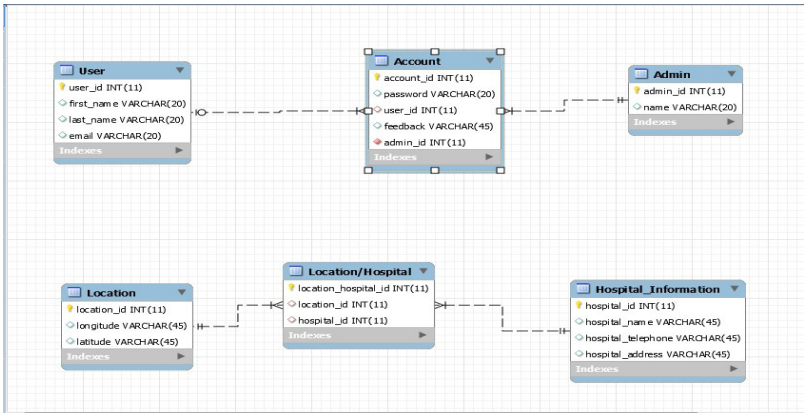
Level 1 Process 4



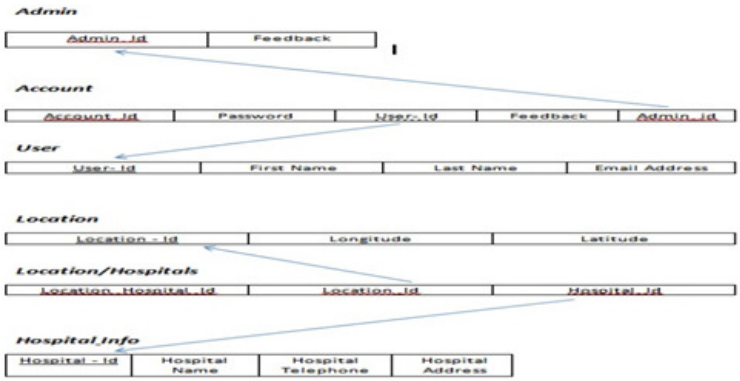
Level 1 Process 5



Entity Relationship Diagram



Relational Model



Data Definition

User

Attribute	Description	Type	Length
User ID	This is a generated ID for each User. It is the primary key.	Number	8
First Name	This is the entered first name of the user	Alphabetic	10
Last Name	This is the entered last name of the user	Alphabetic	10
Email Address	This is the valid email address entered by the user. It will the username required for access.	Alphanumeric	20

Account

Attribute	Description	Type	Length
Email Address	This is the valid email address entered by the user. It will the username required for access. It is the primary key.	Alphanumeric	20
Password	This is the chosen 8 digit password entered by user which is required for access. This is the primary key.	Alphanumeric	8
User ID	This is a generated ID for each User. It is the foreign key.	Number	8
Feedback	This is a feedback that is submitted by the user.	Alphanumeric	50
Admin_id	Admin receives feedback from the user.	Alphanumeric	50

Location/Hospital

Attribute	Description	Type	Length
Email Address	This is the valid email address entered by the user. It will the username required for access. It is the Foreign key.	Alphanumeric	20
Hospital_id	This is a id given to each hospital.	Numeric	20
Location ID	This is an assigned location. It is a Foreign key.	Number	8

Admin

Attribute	Description	Type	Length
Admin_id	This is the admin id. It is the Foreign key.	Alphanumeric	20
Admin_name	This is the admin name.	Numeric	20

Location

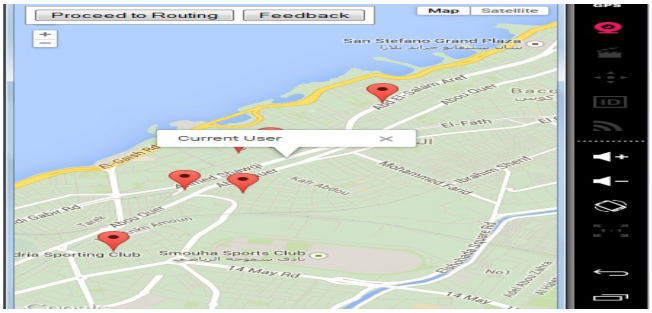
Attribute	Description	Type	Length
Location ID	This is an assigned location. It is a primary key.	Number	8
Longitude	This is the Longitude of the hospitals for geo location.	Alphanumeric	20
Latitude	Latitude of the hospitals for geolocation	Number	10

Hospital Information

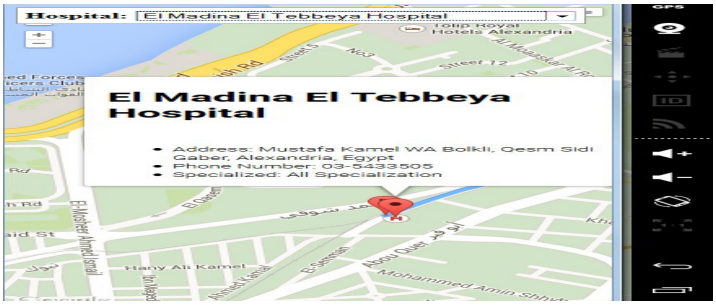
Attribute	Description	Type	Length
Hospital ID	This is the generatedid for each hospital location. It is the primary key.	Number	8
Hospital Name	The name of each hospital acquired in the database.	Alphabetic	15
Hospital Telephone	It is a number assigned to each hospital for emergency situations.	Number	10
Hospital Address	It is the fixed Address of the hospital.	Alphanumeric	20

Form1

Form2



Form3



Form4


Hospital: El Madina El Tebbeya Hospital
Stanly
Ahmed Shawqi
Abou Quer
Victor Emanuel
Smouha Academy
McDonald's
Street 38

Form5


Feedback:
Submit
Reset
Back