Bilkent University

Department of Computer Engineering

Senior Design Project

Project Short Name: MedTour

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Project Specifications Report

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1.Introduction

Medical tourism is rapidly developing in Turkey and apparently it will become a much more popular sector in the future. There are many patients all over the world visiting the country in order to have operations. To be more specific; in 2017 seven hundred thousand patients are warmly welcomed. In 2008, Turkey hosted seventy-five thousand visitors and the numbers increased tenfold and the future figures expected to hit more than a million according to Istanbul Health Tourism Association (ISTUSAD).

The reason behind the high demand lies under economic reasons and the quality of the operations. "The cost of angiography is $47,000 in the U.S., $13,000 in Singapore, $11,000 in India and $10,000 in Thailand, while $5,000 in Turkey," [1].

This project is aiming to become the main platform of medical tourism in Turkey by providing a web-based service. First mission is to embody transportation, accommodation and surgical information and provide the options to the users. When the user enters the site, there will be many alternatives of aforementioned choices. Clinics and hospitals are going to be listed according to the surgery chosen by customer and the doctors are going to be listed with their profiles including their background and previous operations which will help the user make an accurate selection. Than the user is going to have the option to choose where to stay. Many hotels are going to be listed as well and the final step will be the transportation. The existing flights are going to be provided between the specified dates. With the help of our system, a patient could prepare a medical trip to Turkey without getting distracted from different sources.

Furthermore, the system is going to offer certain privileges to the customers in order to increase our sales. This feature will make our system appealing to patients. Every patient who made a booking from the system will receive a card which will offer privileges at the places which we have partnership with.

1.1 Description

The purpose of this product is to build a more secure and improved platform for the people all around the world who is looking for a comprehensive medical tourism guide. In today's world, the way medical tourism has been managed is very primitive and costly. The hospitals in Turkey are selling the packages which include the cost for the operation, transportation and the accommodation without giving any preferences to the patient.

We propose a system that solve all the conflicts that may occur for both patient side and the hospital side. In our system, we will have sufficient number of clinics with their ratings and comments that has been written by previous patients to provide reliable options to the user to choose their hospital and doctor which is suitable for their budget and preferences. All the operations will have an estimated price; but the exact amount of money that required for the operation will be showed to the user after they send a request to the doctor, by the clinic. This personal experience will be smooth and fast for the user to make things faster.

Moreover, for the people who want to rest after the operation has been done, we will provide hotel options to the user. We will work with the tour company that already have large number of hotel options to provide safe and secure relaxation plans. The cost of the accommodation will also be added to the total budget of the tour.

The last step that user will take action is to choose their transportation plan. We will work with a travel fare aggregator website to offer different transportation options to the user.

1.2 Constraints

1.2.1 Economic Constraints

- The application will be free to use.
- AWS will be used, the pricing of the service will be determined depends on the usage limit.

- A server is required to contain necessary data of the user.
- We will be paid by the clinics for each patient.
- Discount advertisement on the app will be a source of income.

1.2.2 Ethical Constraints

- We will abide by the Code of Ethics.
- The application will not distribute any personal user information to the third parties.
- The user will be able to access their information after a successful authentication.
- User data on our servers will be encrypted.

1.2.3 Social Constraints

- There will be age limit, since the user is directly communicate with the hospitals, which shouldn't be amused.
- The application will not have any sort of mechanism that enables negativism while user communication.

1.2.4 Sustainability Constraints

- Constant user feedback is a must for more convenient UX.
- User will be able to get their price offer from the clinics as soon as possible to run the platform better.

1.2.5 Language Constraints

- The application's language will be English because customers will be use our system from all over the world.
- New languages might be added in the future.

1.2.6 Implementation Constraints

- The product will be web-based because the process will not be short to complete, so using the computer will be more reliable for the user.

- The application will have client-server architecture.
- Client side will be developed using ReactJS.
- Server side will be implemented using NodeJS.
- GitHub will be used as version control system.
- APIs will be used to provide hotel and transportation options.
- The server will run on AWS.
- Firebase will be used to manipulate database, notifications and authorization.

1.3 Professional & Ethical Issues

Our platform will not store any sensitive data which might harm user privacy. The patient will be paying only their clinic fee on our system, other payments(hotel, transportation) will be done on other websites. We will not be keeping the credit card information of the user in our database; only in payment process. The application will not distribute any personal user information to the third parties.

On top of that, the codes included in our application will either be our development of open source. If the application includes free source code, this will be indicated. Any additional source relevant to the application development will be properly referenced.

2. Requirements

2.1 Functional Requirements

- Customers can create their personal account on MedTour. With this account customers can choose a clinic, transportation, hotel, doctor of their choice on the clinic and when they complete all the process they can safely pay the cost of treatment from MedTour. Transportation and hotel payments are going to be paid on the site that offers the corresponding service.
- Clinics will have the ability to register themselves to the system. Amount of doctors a clinic is going to register the MedTour is limited to clinic’s choice.

- Clinics can communicate with customers from MedTour in real time with a basic chat implementation.
- Customers can rate the clinic and doctor(s) they choose for their treatment.
- Customers will be able to search doctors and clinics according to their cost, rating, proximity.
- Users can have a discount card that would let them to have discounted prices with partnership companies or clinics if they choose to use MedTour.

2.1 Non-Functional Requirements

- Usability: MedTour web page should be pretty straight forward and easy to use.
- Availability: Requested non-sensitive data should be accessible at any time if required.
- Security: MedTour must secure user's sensitive data from any possible publications from external sources.
- Response Time: MedTour must allow users to communicate with each other in real time if needed. Customer's search option shouldn't be longer than two seconds.
- Reliability: MedTour's web page and database should support a large number of users during its runtime without causing any significant delays.
- Scalability: As the user base increases gradually, application's database and search functionalities should be compatible with growth rate.
- Extensibility: MedTour system should be able to handle adding new functionalities with minimal to none downtime.
- Maintenance: MedTour system and source code should be able to easily understood and maintained by a software engineer.

3. References

[1] “700,000 medical tourists visited Turkey in 2017 - Latest News,” *Hürriyet Daily News*. [Online]. Available: http://www.hurriyetdailynews.com/700-000-medical-tourists-visited-turkey-in-2017-134942.