



Department of
APPLIED COMPUTER SCIENCE

Project on

DR. SEARCH

Advanced Computer Science

W/S 2016-17

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ABSTRACT

The requirement for health care is unfulfilling, in this day and age when new diseases and new technologies are coming every day. We have poor health care system, poor doctor information, inexperienced and unreview doctors. Many people find it difficult to find doctors and specialists in their cities. The same goes for medical stores as well, many people do not know medical stores and their availabilities.

The traditional ways of health care are time consuming and inefficient. With growth in usage of Internet, there is an opportunity for people to use digital means for retrieving and searching the needed information take care of their health in an efficient way.

In the following analysis we evaluate technologies, tools and methodologies that focus on challenges and implementation of the system. Agile software development practice introduced the project with three different Personas and User Requirements as User Stories and Scenarios to gain a solution with possible refinement through iterations.

Dr. Search web-application is built on following basic features:

- 1. Search a doctor:** This feature allows users to find specialized doctors in particular area with their clinics opening and closing time. In this, user can filter search results using disease, location and type of health insurance.
- 2. Find a medical store:** This feature allows users to find a medical store nearby specified location with their opening and closing timings.
- 3. Read health articles:** Using this feature users will be able to read health articles which are helpful in daily life for primary medication of health issues.

1. INTRODUCTION

In current situation it is a painful task to find a doctor best suited for you and your health. Searching a right doctor to diagnose health problems is tricky, as there is no trusted information regarding the competence of a particular doctor in his/her area of expertise. Many people do not know most of the doctors and medical stores in their cities. Many things are available on the internet but there is no centralized platform which will give users an information about Doctors, Medical stores with respect to their particular insurance.

In the digital era of computers & smartphones, it is very convenient to find a right doctor or a medical store on single click. Furthermore, such web-application comes in handy and can be used efficiently.

1.1 Purpose:

This document describes the complete multi-device graphical user interface based web-application development (Dr. Search) under agile software development methodology to find the right doctor and medical store.

1.2 Scope:

The new Dr. Search web-application that allows user to find the right doctor for specified health issue by filtering out user's location and health insurance parameters.

1.3 User Survey:

To access our potential users we constructed a survey on the basis of certain functionalities by comparing with other applications.

Following are the findings from our survey:

No.	Functionalities	JAMEDA	BUNDESARZTSUCHE	APOTHEKE VOR ORT	DR. SEARCH
1	Helps find Doctor	Yes	Yes	No	Yes
2	Helps find Medical store	No	No	Yes	Yes
3	Health articles	Yes	No	No	Yes
4	Opening/Closing timings of clinic	Yes	No	-	Yes
5	Opening/Closing timings of medical store	No	No	Yes	Yes
6	Location based search	Yes	Yes	Yes	Yes
7	Insurance based search	No	No	-	Yes
8	Doctors Qualification	Yes	No	-	Yes
9	Patients feedbacks/reviews	Yes	Yes	-	Yes

Table 1: User Survey

Justification:

As you can see from the above table, there are almost no other applications to find the doctor and medical stores depending upon specified criteria. This is our Unique Selling Point (USP). Some features such as to search doctor based on "Health Insurance Type", to find a medical store are completely unique in our web-application.

2. PERSONAS DESCRIPTION – Iteration 1

	Internationals	Locolites	Travellers
Goals	<p>To find doctor according to specific Insurance Company</p> <p>finding doctors who speak English language</p> <p>finding Medical Stores in nearby areas.</p>	<p>Difficult to find out how good the new or recommended Doctor is?</p> <p>finding out medical stores in nearby area</p>	<p>Finding medical Stores in near by area</p> <p>Finding Doctors in emergency situations</p>
Difficulties	<p>Everytime contacting insurance company to get the list of doctors</p>	<p>finding out whether new or recommended doctor is trusted or not</p>	<p>No idea about availability of information about doctors</p>
Basic Information	<p>Name Age Gender insurance company Educational background Occupation</p>	<p>Name Age Gender Educational background Occupation</p>	<p>Name Age Gender Educational background Occupation</p>

Figure 1: Persona Description - Iteration 1

3. INTERVIEWS

3.1 Interview Methods

We conducted interview by asking people questions face to face. Initially, all questions were prepared considering all scenarios and the interviewees answered them individually.

3.2 Questionnaire Construction

Basic questions for 'Internationals', 'Localities' & 'Travelers'

1. What is your name?

- To identify each and every person.

2. What is your age?

- From this parameter, we want to discriminate problems with different age groups.

3. What is your Gender?

- To make sure we have users based on their gender diversities.

4. Are you a student? Or working professional?

5. What is your educational background?

6. What are you studying here? (if student)

7. What is your occupation? (if working professional)

- (Questions - 4,5,6,7) Just to have basic information about our users.

8. How frequently you need to go to clinic for your health issues?

- To find out how often user will use our application (need of the user) (to take decision for building app or web-site)

9. How difficult it is for you to find new Doctor/clinic/medical store for your specific health problem?

Difficulty level 1. Easy 2. Moderate 3. Difficult.

- To get an exact idea where people are facing problem in finding doctors and how difficult it is for them.

10.How do you find a new clinic /Doctor/medical store in your nearby area?

- If user is already using some application for this task or to know exact process user follows to overcome the problem he/she is facing.

11.For searching new doctor what will you prefer? Mobile phone or laptop/desktop computer?

- To ask people with which device they are comfortable, to take decision about developing mobile application or web application.

12.Would you like to read health articles on our web application?

- This is one functionality we are adding in our project so we wanted to take feedback about it, to see if people would like to read some health related articles on our application.

13.In the recovery phase would you like to consult your doctor for some minor issues via email?

- To get an idea if this feature is useful for people, to get to know does this solve their minor issues over one message rather than taking appointments of doctors or actually calling them.

14.Do you use any web-based/ mobile application for searching Doctor/medical store/clinic? If yes, what are its advantages or disadvantages?

- Just for comparison, to state how our application is different from other applications or what additional functionality we are providing.

15.We would like you to give us feedback on the idea we just presented.

- To get an overview of what our users want our application to do for them to make their needs or searching easy and effective. To add some more ideas what we can implement and to see if user is satisfied by the idea we presented.

Special questions for traveler:

1. Do you have any insurance here?

- To see if traveler has appropriate insurance in the country, because sometimes they have only traveler insurance which does not cover the medical expenses while they are staying in the country.

Special questions for Localities:

1. How much time does it take to find specialist?

- As per our basic knowledge, we know usually localities first go to “Haus Arzt” for diagnosing the problem. But we wanted to know how much time it takes to find doctor, when someone needs to go to see some specialist doctor.

2. Would it help you to find a specialist doctor faster than the traditional ways using our website?

- We want to see if this functionality will serve the required purpose, in cases of emergency or any other scenarios we can save precious time by directly going to a specialist doctor.

3.3 Interviews

Interview – 1

Name	Marie Blache
Age	26
Occupation	Manager
Gender	Female
Marital Status	Single
Address	Heidelberg



Questionnaires

- 1. How frequently you need to go to clinic for your health issues?**
→ I only go to the Haus Artz when I need to and then I go to the specialist my Haus Artz suggests.
- 2. How difficult it is for you to find new Doctor/clinic/medical store for your specific health problem?**
Difficulty level 1. Easy 2. Moderate 3. Difficult.
→ 2. Moderate.
- 3. How much time does it take to find specialist?**
→ Via Haus Artz it is not that time consuming, but if I find one myself then it will take a day or two usually.
- 4. Would it help you to find a specialist doctor faster than the traditional ways using our website?**
→ Yes.
- 5. How do you find a new clinic /Doctor/medical store in your nearby area?**
→ Mostly Google, or If I see a clinic on my way then I use that when I need.
- 6. Are you a Smartphone user? Desktop user? Or both?**
→ Both
- 7. Would you like to read health articles on our web or mobile application?**
→ Yes, I can read it when I have time.
- 8. Would you like to interact with Doctor you visited previously? (Through Email)**
→ If I have a problem then yes.
- 9. Do you use any web-based application for searching Doctor/medical store/clinic? if yes, what are its advantages or disadvantages?**
→ For Doctors no, for medicals I use Google sometimes.
- 10. We would like you to give us feedback on the idea we just presented.**
→ It looks good, Will definitely use the idea for searching doctors in emergency.

Interview – 2

Name	Sabine Deubig
Age	50
Occupation	Working at SRH Hochschule
Gender	Female
Marital Status	Married
Address	Heidelberg



Questionnaires

1. How frequently you need to go to clinic for your health issues?
→ Twice a year.
2. How difficult it is for you to find new Doctor/clinic/medical store for your specific health problem?
Difficulty level 1. Easy 2. Moderate 3. Difficult.
→ 3.Difficult
3. How much time does it take to find specialist?
→ 1 day.
4. Would it help you to find a specialist doctor faster than the traditional ways using our website?
→ Yes.
5. How do you find a new clinic /Doctor/medical store in your nearby area?
→ Google.
6. Are you a Smartphone user? Desktop user? Or both?
→ Both.
7. Would you like to read health articles on our web or mobile application?
→ Yes.
8. Would you like to interact with Doctor you visited previously? (Through Email)
→ No.
9. Do you use any web-based application for searching Doctor/medical store/clinic? if yes, what are its advantages or disadvantages?
→ No.
10. We would like you to give us feedback on the idea we just presented.
→ It will be useful if I can forward my reports and documents to my doctor before my document.

Interview - 3

Name	Sujay Kulkarni
Age	23
Occupation	(Student)
Gender	Male
Marital Status	Single
Address	Bonhoefferstrasse 13



Questionnaires

- 1. How frequently you need to go to clinic for your health issues?**
-> Once every 2 months.
- 2. How difficult it is for you to find new Doctor/clinic/medical store for your specific health problem?**
Difficulty level 1. Easy 2. Moderate 3. Difficult.
-> 2. Moderate
- 3. How much time does it take to find specialist?**
-> 1 day minimum
- 4. Would it help you to find a specialist doctor faster than the traditional ways using our website?**
-> Yes, I think it will be faster.
- 5. How do you find a new clinic /Doctor/medical store in your nearby area?**
-> I ask my friends or I use Google.
- 6. Are you a Smartphone user? Desktop user? Or both?**
-> Both.
- 7. Would you like to read health articles on our web or mobile application?**
-> Yes, It can help me with diet tips.
- 8. Would you like to interact with Doctor you visited previously? (Through Email)**
-> Yes, Depending upon the scenario.
- 9. Do you use any web-based application for searching Doctor/medical store/clinic? if yes, what are its advantages or disadvantages?**
-> I do not use any web based application except Google, A problem is that I do not understand German that well, So I need a English speaking Doctor, Google cannot tell me which doctor can speak English.
- 10. We would like you to give us feedback on the idea we just presented.**
-> If I can get Doctors who can speak English, that will be great help.

Interview – 4

Name	Merve Celik
Age	30
Occupation	Content Manager
Gender	Female
Marital Status	Single
Address	Mannheim



Questionnaires

1. How frequently you need to go to clinic for your health issues?
→ I go maybe twice in 6 months.
2. How difficult it is for you to find new Doctor/clinic/medical store for your specific health problem? Difficulty level 1. Easy 2. Moderate 3. Difficult.
→ Moderate
3. How much time does it take to find specialist?
→ Around a day or two
4. Would it help you to find a specialist doctor faster than the traditional ways using our website?
→ Yes.
5. How do you find a new clinic /Doctor/medical store in your nearby area?
→ I usually ask my friends or search on Google.
6. Are you a Smartphone user? Desktop user? Or both?
→ Both.
7. Would you like to read health articles on our web or mobile application?
→ Yes, definitely.
8. Would you like to interact with Doctor you visited previously? (Through Email)
→ Sometime yes.
9. Do you use any web-based application for searching Doctor/medical store/clinic? if yes, what are its advantages or disadvantages?
→ No, I search on Google, but it doesn't shows all the details.
10. We would like you to give us feedback on the idea we just presented.
→ Nice idea, best luck ☺

Interview - 5

Name	Mandar Natoo
Age	37
Occupation	Cameraman
Gender	Male
Marital Status	Married
Address	Munich



Questionnaires

1. How frequently you need to go to clinic for your health issues?

→ I go maybe once in 6 months.

2. How difficult it is for you to find new Doctor/clinic/medical store for your specific health problem?

Difficulty level 1. Easy 2. Moderate 3. Difficult.

→ Difficult

3. How much time does it take to find specialist?

→ It depends. If the disease I am suffering is rare then it takes 4-5 days otherwise 1-2 days

4. Would it help you to find a specialist doctor faster than the traditional ways using our website?

→ May be yes.

5. How do you find a new clinic /Doctor/medical store in your nearby area?

→ I ask my insurance company to send me the list of doctors/clinic/medical stores.

6. Are you a Smartphone user? Desktop user? Or both?

→ Of course both.

7. Would you like to read health articles on our web or mobile application?

→ Amm, yes. It would be helpful.

8. Would you like to interact with Doctor you visited previously? (Through Email)

→ May be yes. But depends upon situation.

9. Do you use any web-based application for searching Doctor/medical store/clinic? if yes, what are its advantages or disadvantages?

→ Yes, in India I do use Dr. Practo app to find any nearest clinic/ doctor. Advantage is it lets you book an appointment for medical tests in pathology center. But it there is no option to find medical store.

10. We would like you to give us feedback on the idea we just presented.

→ That's great work. Good luck!!!

4. PERSONA DESCRIPTION (Iteration 2)

Following are the modified persona description based on the feedback analyzed from the interviews.

Marie Blache



"Life is beautiful."

Age: 26
Work: Manager at SRH Hochschule.
Years In Germany: 26
Location: Heidelberg
Character: Friendly

Goals

- To live a happy and a healthy life, with loved ones.
- To find cures for all health problems.

Frustrations

- Wait for Haus Arzt to refer to another specialist doctor.
- Finding medical stores nearby for a quick commute.
- To make sure a new recommended doctor is good and friendly.

Usual Procedure

Usually, booking of an appointment is made with the Haus Arzt and then usually wait till that appointment. After meeting the Haus Arzt, he/she will recommend a specialized doctor, another appointment is made to meet that specialized doctor. The time consumed here can be fatal depending on the disease. So it would be better if we can find a specialized doctor directly.

Preferred Channels to search Doctor and Medical store.

Channel	Score
Referrals	High
Online & Social Media	Medium-High
Advertising	Medium-Low
Known Before	Medium-High

Merve Celik



"Stay Happy Stay Healthy"

Age: 30
Work: Full time job
Years In Germany: 1
Location: Germany
Character: Emotional, friendly

Goals

- Arise! Awake and stop until the goal is reached.
- if plan doesn't work change the plan not the goal.

Frustrations

- There is no information about whether the doctor is available or not when needed.
- Trusting new recommended doctor is difficult.

Usual Procedure

In an emergency situations at nights or on weekends we have to shift the patient to a central hospital which is open at that time, So checking if a hospital is open or not will be useful. Many specialized doctors may or may not accept the health insurance the haus arzt accepts so searching that doctor's name to get information is also an added benefit.

Preferred Channels to search Doctor and Medical store.

Channel	Score
Referrals	High
Online & Social Media	Medium-High
Advertising	Medium-Low
Known Before	Low

Sujay Kulkarni



"What goes around comes around."

Age: 23

Work: Masters Student at SRH Hochschule.

Years in Germany: 2

Location: Heidelberg

Character: Friendly

Goals

- Live and let live.
- Curiosity is important to learn new things.

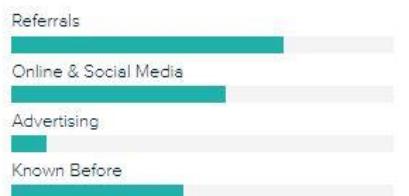
Frustrations

- As a private health insurance client I have to always check if the doctor will accept my insurance or not.
- As a private health insurance client I have to always check if the medicines bill will be covered under my insurance.

Usual Procedure

Usually, Call the insurance company and then wait for them to book an appointment with a Doctor, and after that depending on the diagnosis another appointment is made to a specialist doctor who supports my insurance type. This is time consuming and problematic as I may miss out on a good doctor. It will be useful to search doctors only for that particular insurance type.

Preferred Channels to search Doctor and Medical store.



Sabine Deubig



"Health is wealth."

Age: 50

Work: Sekretariat at SRH Hochschule.

Years in Germany: 50

Location: Heidelberg

Character: Friendly

Goals

- Do your best, Always.
- If you believe, you can achieve.

Frustrations

- There is no information available that how good the new recommended doctor is, will be helpful to have that information.
- In emergency situations we need all information quickly and always available.

Usual Procedure

Usually, Call the Haus Arzt and get an appointment and then wait for another appointment for specialist doctor and then get the diagnosis and treatment but we do not know if new doctor is good or not, so a system for doctor review can be useful.

Preferred Channels to search Doctor and Medical store.



Mandar Natoo



Great gift to yourself is a healthy you.

Age: 37

Work: Camera Expert at National Geographic.

Years in Germany: 2

Location: Berlin

Character: Friendly, Adventurous

Goals

- Today you are a step closer than you were yesterday.
- Obstacles are those frightful things you see when you take your eyes off your goal..

Frustrations

- There is no information available that how good the new recommended doctor is, will be helpful to have that information.
- In emergency situations we need all information quickly and always available.

Usual Procedure

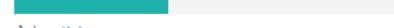
Usually, Call the Haus Arzt and get an appointment and then wait for another appointment for specialist doctor and then get the diagnosis and treatment but we do not know if new doctor is good or not, so a system for doctor review can be useful.

Preferred Channels to search Doctor and Medical store.

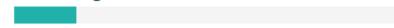
Referrals



Online & Social Media



Advertising



Known Before

5. UML DIAGRAMS:

5.1 Software Architecture Diagram:

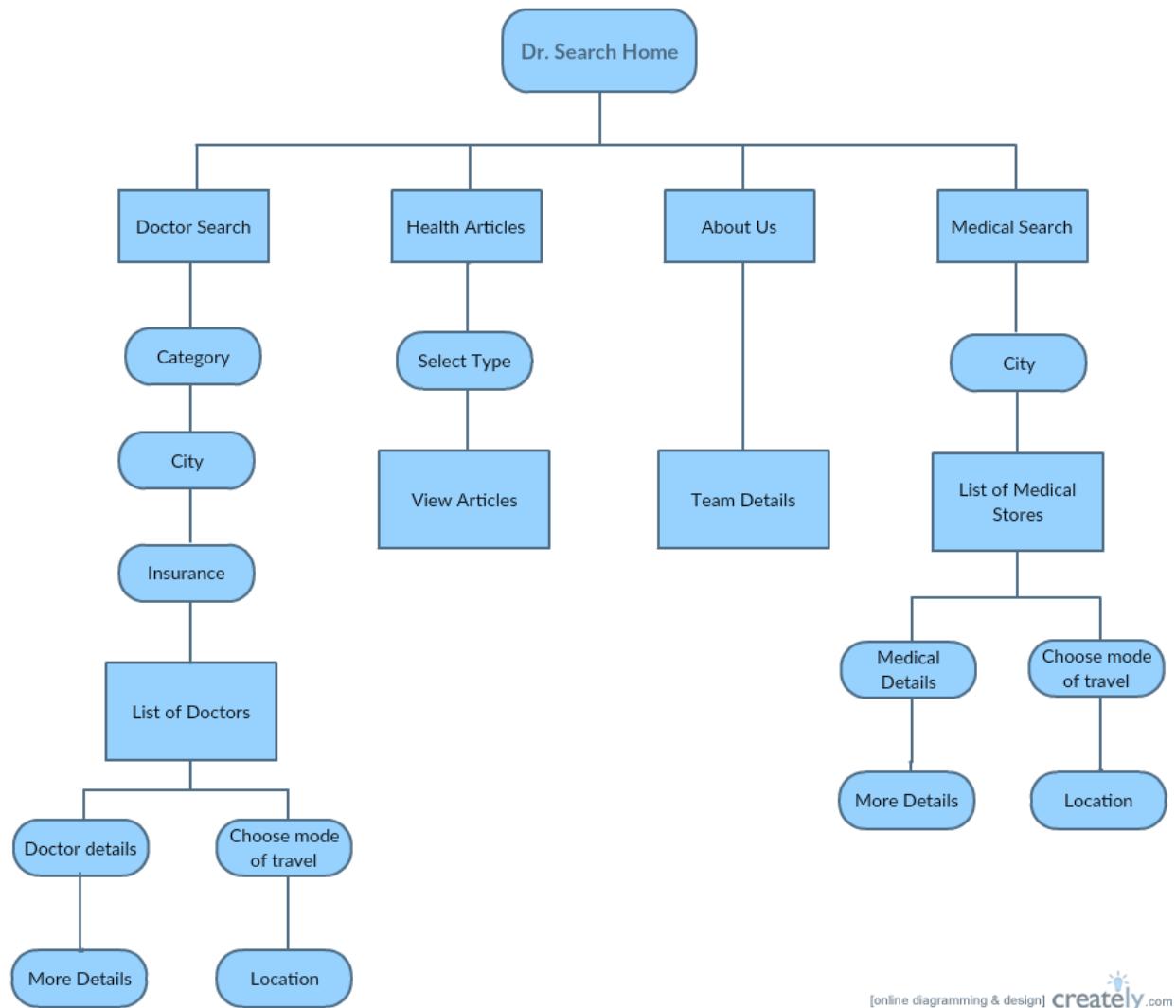


Figure 2: Software Architecture Diagram

5.2 Sequence Diagrams:

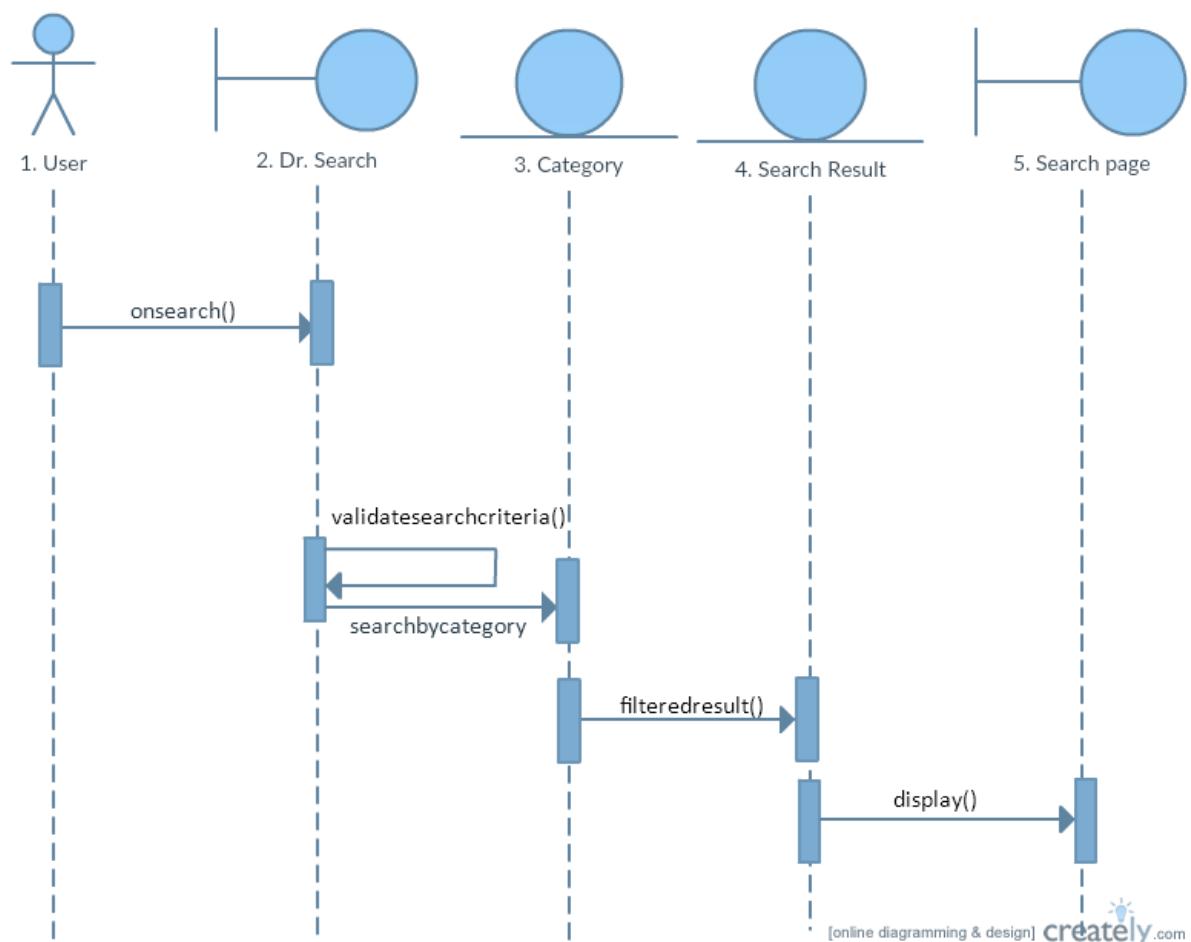


Figure 3: Doctor Search Sequence Diagram

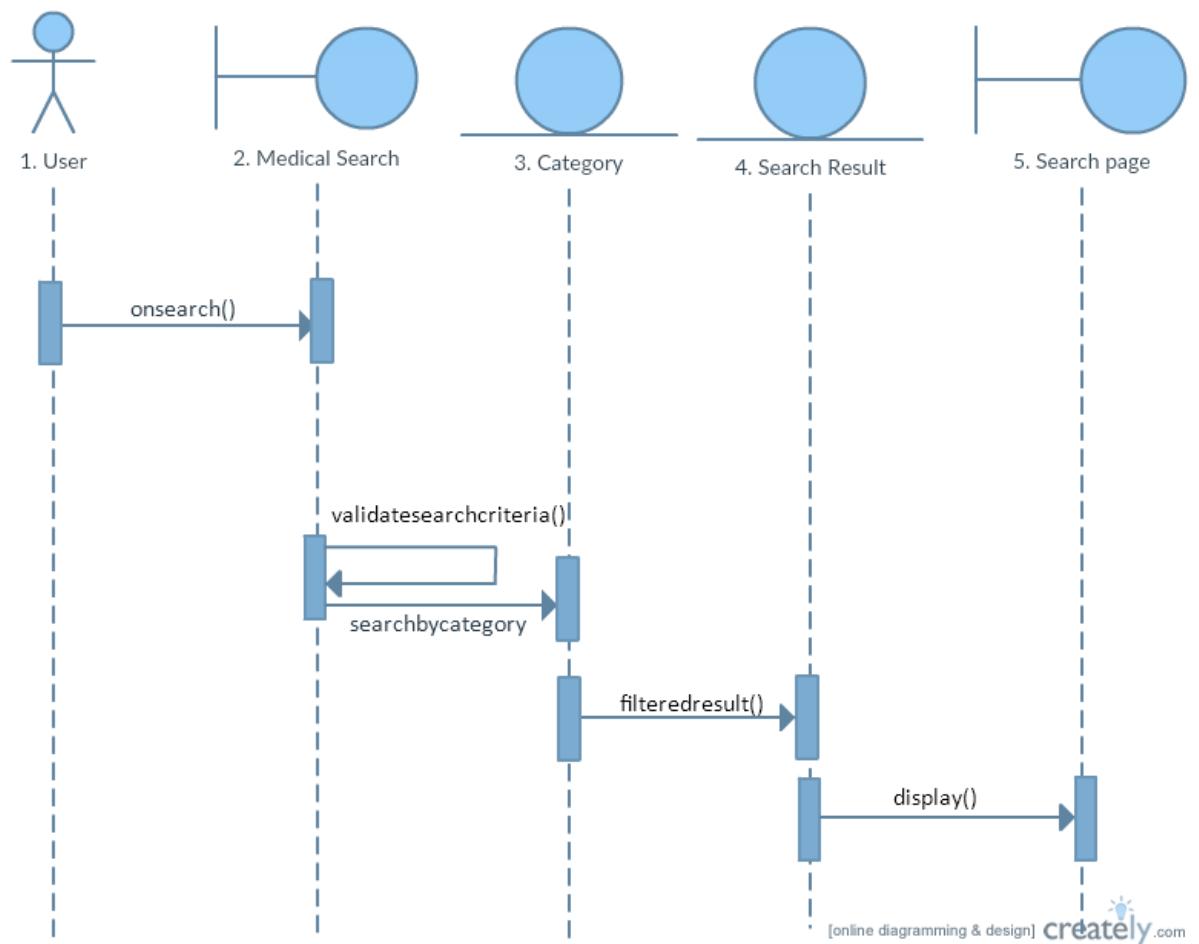


Figure 4: Medical Search Sequence Diagram

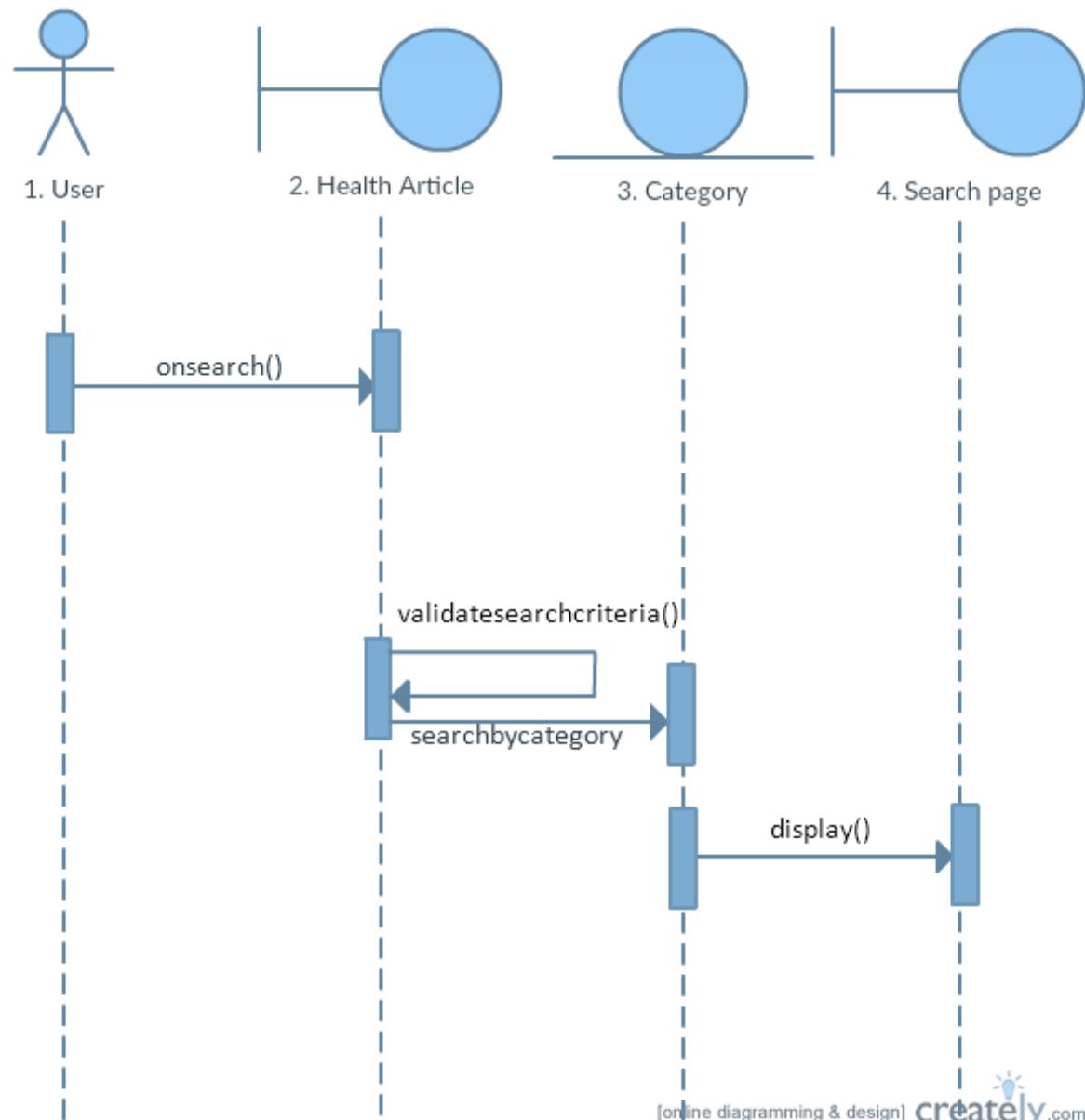


Figure 5: Health Articles Sequence Diagram

5.3 Use Case Diagram:

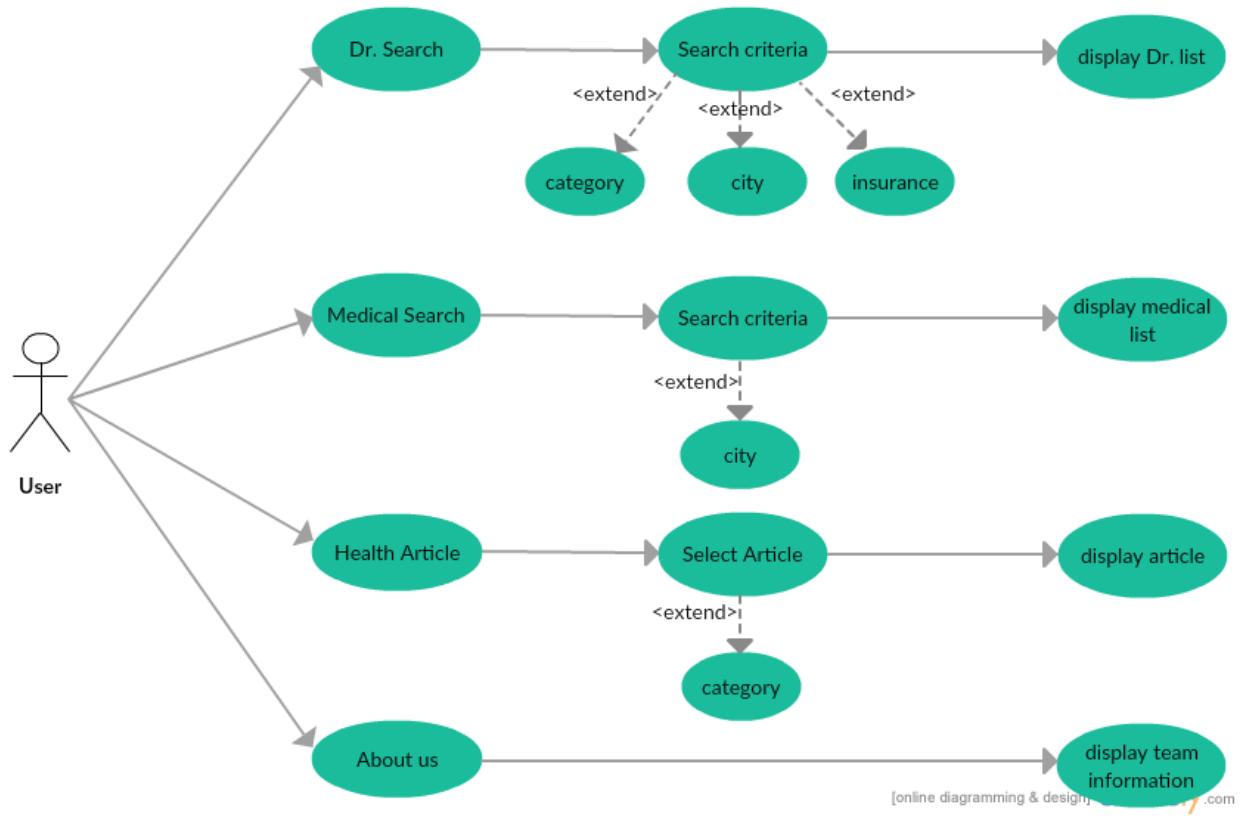


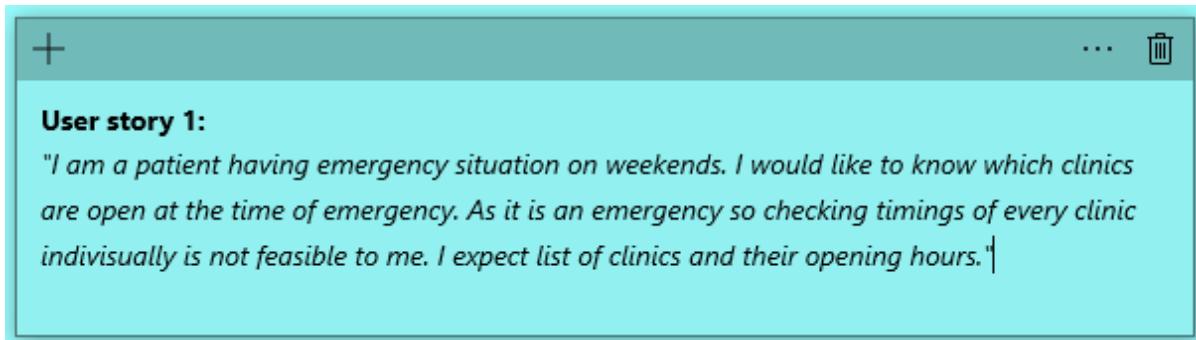
Figure 6: Use Case Diagram

6. USER STORIES:

A user story is an informal explanation of one or more feature of the software system. End user perception is deliberated while writing user stories.

Functionalities of the system being developed are influenced by these stories.

5.1 User Story – 1



Story decomposition:

*I am a user would like to know list of clinics with their timings altogether
So that I would not face problem checking timings in emergency situation.*

This user wants an application where he/she can easily get the list of clinics along with their timings such as open now or close now, in one go. As he/she will be facing an emergency situation so opening each clinic's portal and checking opening and closing hours will not be time permissible.

Story Elaboration:

Start situation	Action	Outcome
Patient having emergency situation - Do not have time to go on every clinic's portal and then check whether the clinic is currently open or not depending upon patient's disease and location.	<ul style="list-style-type: none">• Select the doctor search option from application.• Enter search parameters.• Hit search button.	Patient will be satisfied as he/she will get output as a list of doctors along with timings of clinic in one go. Emergency situation patient will be glad as time will be saved.

5.2 User Story – 2

The screenshot shows a user story card with the following details:

User story 2:

"I am a retired woman, who would like to get some useful tips about health related issues which are handy because at this age it is not possible for me to approach a consultant for daily health tips."

Story decomposition:

*I am a retired woman would like to get some useful health related tips
So that every time I need not go to a health consultant for minor problems.*

This user would like some platform for beneficial and handy health related tips regarding as it is not possible for the user to every time consult an expert for home remedies or minor suggestions.

Story Elaboration:

Start situation	Action	Outcome
A retired woman - Would like to get some useful health related tips and home remedies. Do not want to visit a consultant for these tips.	<ul style="list-style-type: none">• Select the health articles option from application.• Choose articles from the given list according to interest.• Read the articles.	Person will get desired knowledge handy and easily.

5.3 User Story – 3

The screenshot shows a user story card with the following details:

User story 3:

"I am new person in Germany, I have limited/no knowledge of German language, I need a Doctor who can speak and understand English. I need a list of doctors who can speak English or any other language if possible."

Story decomposition:

I am a new person in Germany

Need a doctor who understands and speaks English

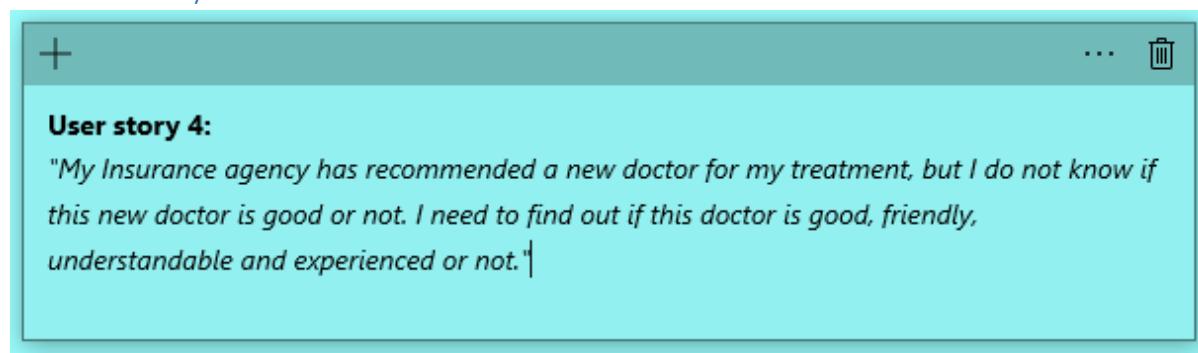
So that I do not have to face communication problem with him/her.

This user faces communication problem due to lack of German language knowledge. So he/she expects a list of doctors who are comfortable with English so that it will be beneficial at the time of treatment or consultancy.

Story Elaboration:

Start situation	Action	Outcome
A user new to Germany - Having limited or no knowledge of German language needs a doctor with whom he/she can communicate in English.	Select the doctor search option from application. Enter search parameters. Select Clinic from list where doctor can speak English.	User will be happy as he/she do not need to face communication problem with doctor.

5.4 User Story – 4



Story decomposition:

I am a user

would like to know about the doctor's reviews

So that I can decide to visit this doctor or not.

This user wants to have some initial information about the doctor. Factors like doctor's character, experience, ratings, etc. will be useful for this user to decide whether to visit the doctor or not.

Story Elaboration:

Start situation	Action	Outcome
A user - Whose insurance company has recommended him/her a new doctor. So user wants to know whether recommended doctor is trust worthy or not.	Select the doctor search option from application. Enter search parameters. Look for star rating of doctor individually.	User will get to know whether the recommended doctor is friendly, good, experienced or not.

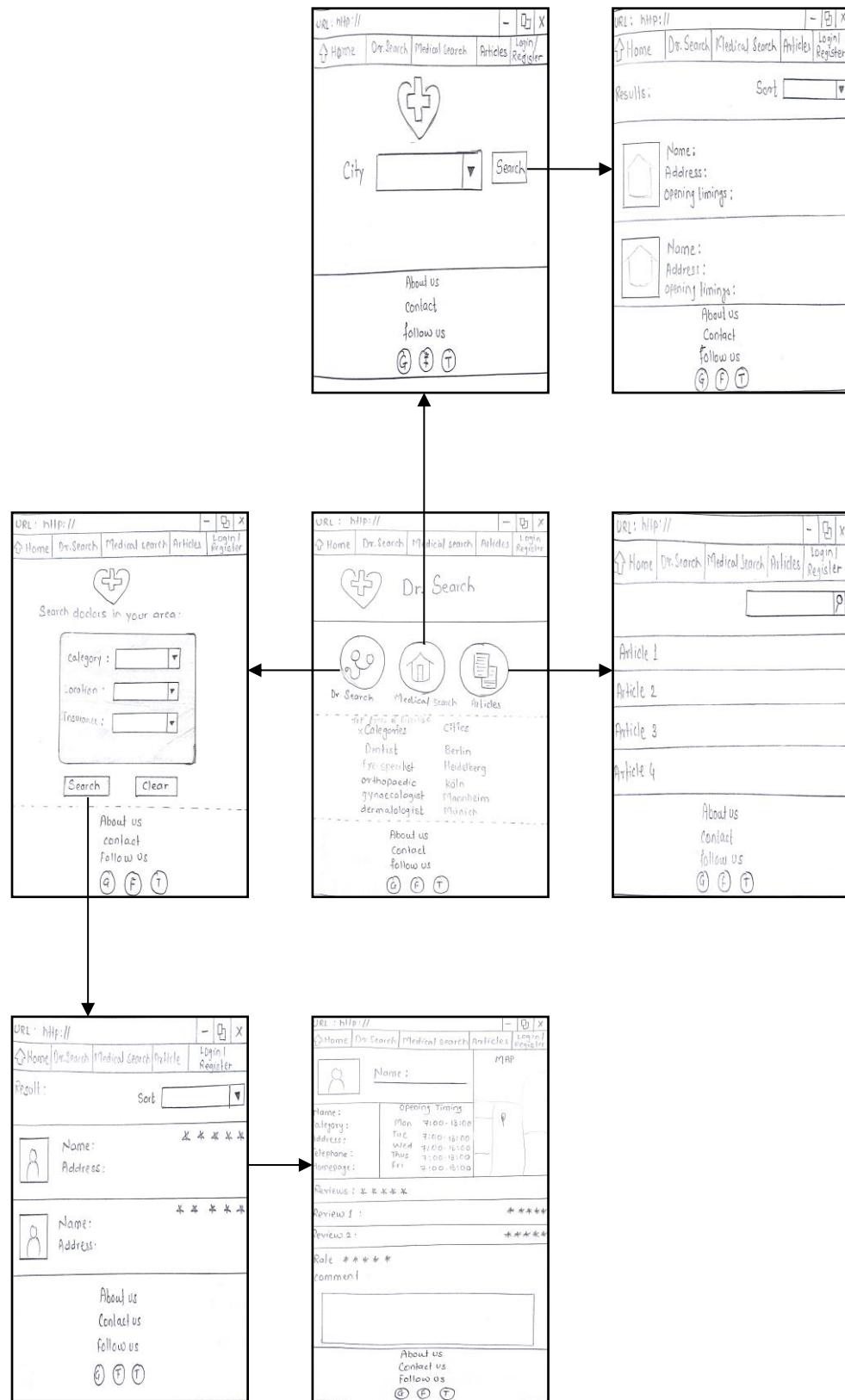
7. MAPPING

6.1 User Story Mapping:

User Story	Search	Login/Register	Upload
I am a middle aged person who wants to convey the new doctor about my medical history. So I want an option through which my medical history can be conveyed to the new doctor truly and easily.	NA	Application allows this user to login or register himself/herself.	User can easily upload the document containing his/her medical history records.
A patient having emergency situation would like to know which clinics are open at the time of emergency. As it is an emergency so checking timings of every clinic individually is not feasible to me.	User can select the option of doctor search in the application. The search will result into a list of doctors and clinics with their timings.	NA	NA
As a retired woman, I would like to get some useful tips about health related issues which are handy because in this age it is not possible for me to approach a consultant for daily health tips.	User can select the option of Health articles from the application. She can filter which category of articles she would like to read.	NA	NA
I am new person in Germany, I have limited/no knowledge of German language, I need a Doctor who can speak and understand English.	User can select the option of doctor search through the application. This search will enlist the doctors along with languages known.	NA	NA
My insurance company has recommended me a new doctor for my treatment, but I do not know if this new doctor is good or not.	User can select doctor search option from the application. Then look for reviews and star ratings of every doctor individually.	NA	NA

Table 2: User Story Mapping

6.2 Screen Flow:



7. VISION & MISSION STATEMENT:

7.1 Vision Statement:

Introduce a Dr. Search application that meets the need and solves complexity of searching the perfect doctor for users. Dr. Search will also solve problem of finding Medical stores and will also keep the users engaged and informed about health by providing them with articles related to health and in terms improve overall quality of health management system.

7.2 Mission Statement:

To produce better results of doctors and medical stores on a single platform. Besides this, to provide health articles for users to take proper home remedies or necessary precautions.

8. PROTOTYPE & USABILITY TESTING

Prototype Building Method:

For the High Fidelity prototype we have used an online prototyping tool called UXPin. Although it is generally a paid version, we have 1 month of free fully featured service. It is possible to add new users to review, since this could be a little tedious for the reviewer, we have exported each of the prototypes to HTML format.

Usability Testing Method:

We chose a user for each prototype and were given a list of tasks to be done, assuming the user is signed up. And while doing so, we manually recorded if the task was a success or if it failed what were the reasons for it. We later used this information to re-create/iterate a new prototype.

8.1 Low-Fidelity Paper Prototype:

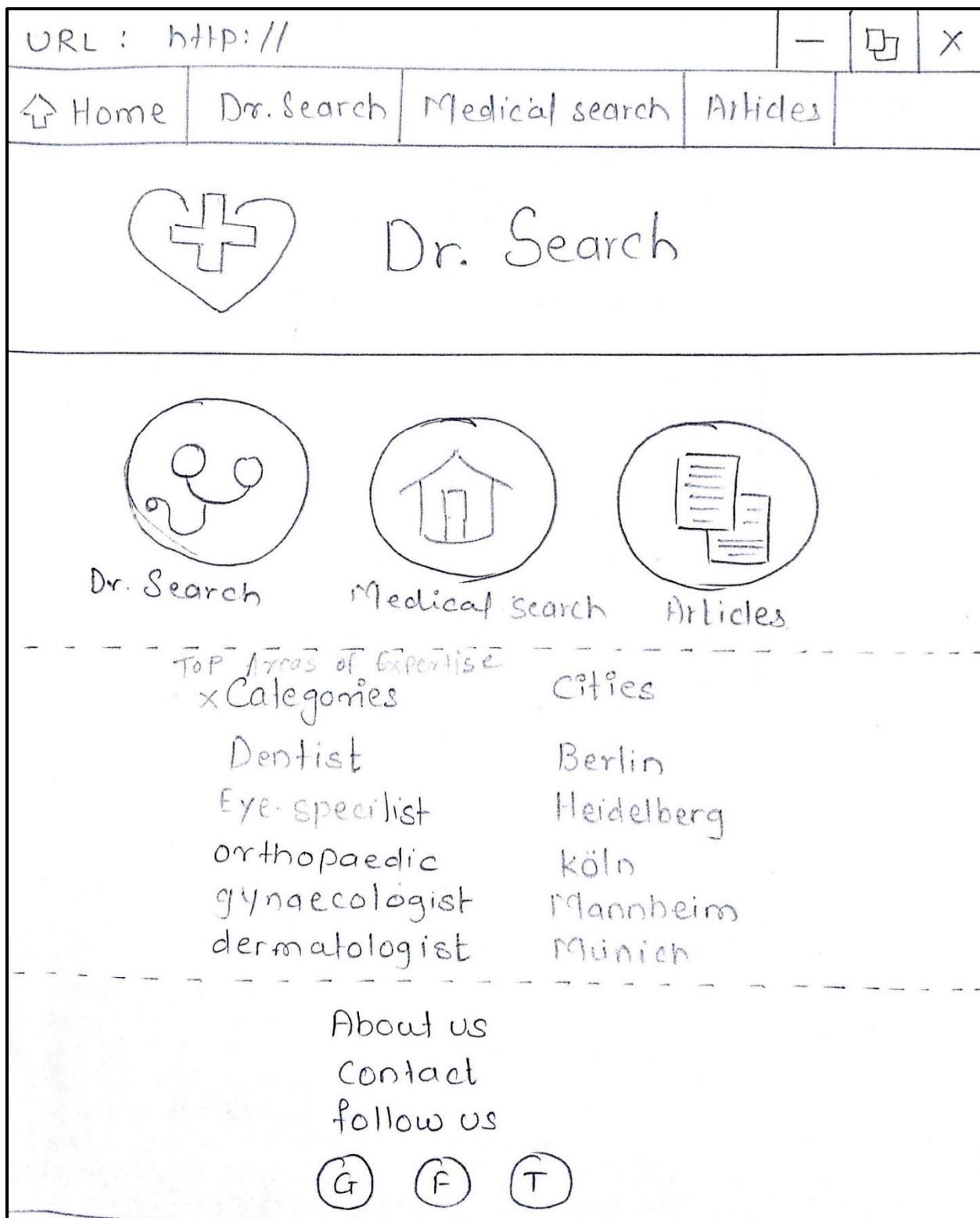
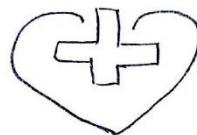


Figure 8: Low Fidelity Prototype (All Screens)

URL: http://

- ⌂ X

Home Dr.Search Medical search Articles



Search doctors in your area:

category :	<input type="text"/>	<input type="button" value="▼"/>
Location :	<input type="text"/>	<input type="button" value="▼"/>
Insurance :	<input type="text"/>	<input type="button" value="▼"/>

Search

Clear

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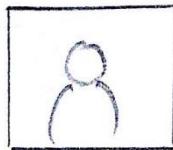
URL : http://

- |  X

 Home | Dr. Search | Medical Search | Article

Result :

Sort



Name:

* * * *

Address:



Name:

* * * *

Address:

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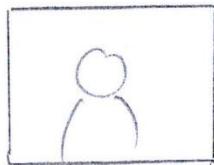
Follow us

G F T

URL : http://

- ⌂ X

Home Dr Search Medical search Articles



Name :

MAP

Name:	Opening Timing
Category:	Mon 7:00 - 13:00
Address:	Tue 7:00 - 13:00
Telephone:	Wed 7:00 - 13:00
Homepage:	Thus 7:00 - 13:00
	Fri 7:00 - 13:00

Reviews: ★★★★★

Review 1 : ****

Review 2 : ****

Rate **** *

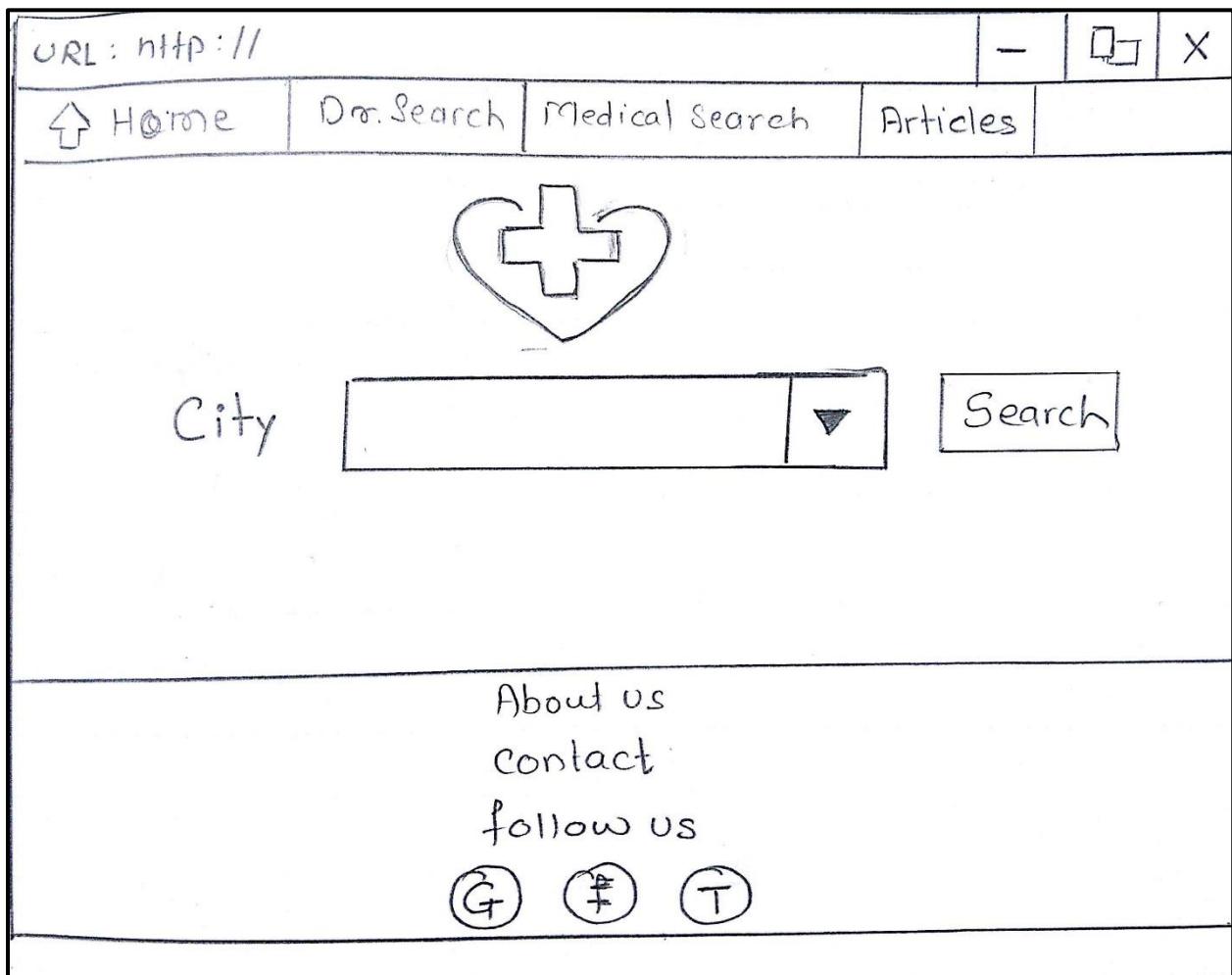
comment :

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URL : http://

- |  | 

 Home

Dr.Search

Medical search

Articles

Results:

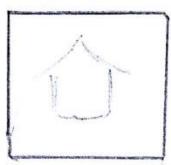
Sort



Name :

Address :

Opening timing :



Name :

Address :

opening timing :



Name :

Address :

opening timing :

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URL: http://

-



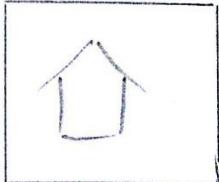
X

Home

Dr. Search

Medical Search

Articles



Name:

MAP

Name :

Opening Timings

Mo: 7:00 - 13:00

Tue: 7:00 - 13:00

Wed: 7:00 - 13:00

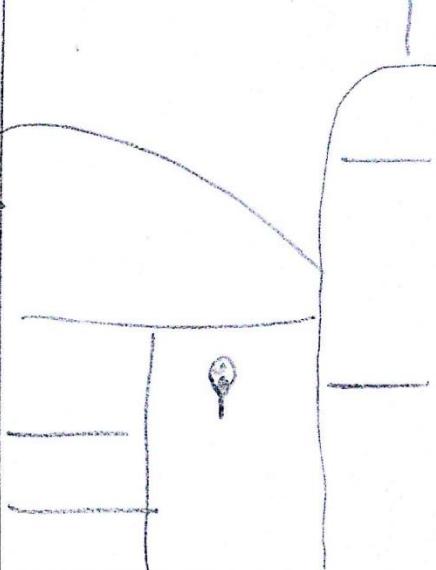
Thus: 7:00 - 13:00

Fri: 7:00 - 13:00

Address:

Telephone:

Homepage:



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URL: http://

- ⌂ x

↑ Home | Dr. Search | Medical Search | Articles |

9

Article 1

Article 2

Article 3

Article 4

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8.2 Hi-Fidelity Prototype

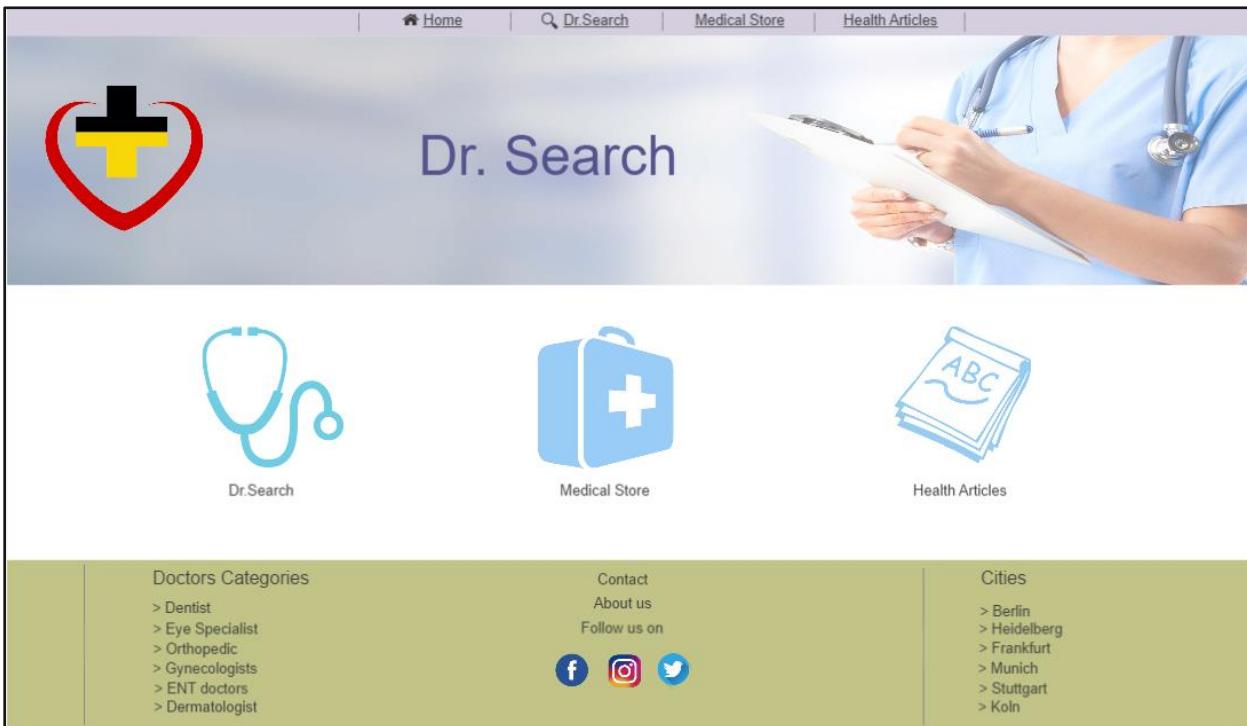
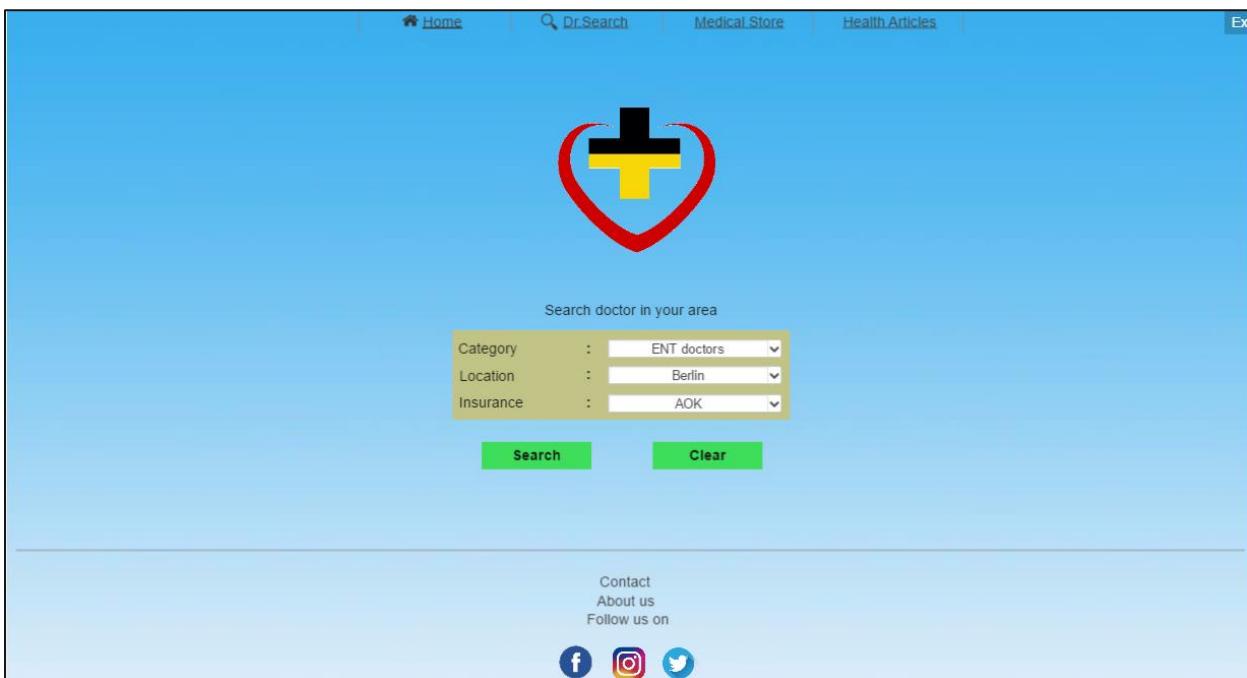


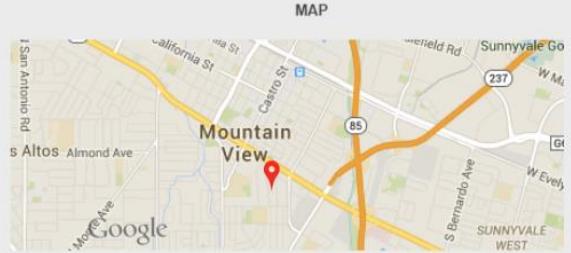
Figure 9: Hi-Fidelity Prototype (all screens)



Sort

	<p>Name : Dr. med. Andreas Dacho Address : Blumberger Damm 130 12685 Berlin, Germany Telephone : 030/322923322</p>	★★★★
	<p>Name : Dr. med. Ilkay Kazak Address : Bayerischer Platz 9, 10779 Berlin, Germany Telephone : 030/3229771462</p>	★★★★★
	<p>Name : Dr. Tobias Baumert Address : Spandauer Damm 130, 14050 Berlin, Germany Telephone : 030/3263491067</p>	★★★

Map

<p>Name : Dr. med. Andreas Dacho Address : Blumberger Damm 130 12685 Berlin, Germany</p> <p>Category : ENT doctors Opening timing</p> <table border="0"> <tr><td>Telephone :</td><td>030/322923322</td><td>Mon</td><td>7.00-13.00</td></tr> <tr><td></td><td></td><td>Tue</td><td>7.00-13.00</td></tr> <tr><td></td><td></td><td>Wed</td><td>7.00-13.00</td></tr> <tr><td></td><td></td><td>Thus</td><td>7.00-13.00</td></tr> <tr><td></td><td></td><td>Fri</td><td>7.00-13.00</td></tr> <tr><td></td><td></td><td>Sat</td><td>7.00-11.00</td></tr> <tr><td></td><td></td><td>Sun</td><td>Close</td></tr> </table> <p>Homepage : dacho.andreas-berlin.de</p>	Telephone :	030/322923322	Mon	7.00-13.00			Tue	7.00-13.00			Wed	7.00-13.00			Thus	7.00-13.00			Fri	7.00-13.00			Sat	7.00-11.00			Sun	Close	
Telephone :	030/322923322	Mon	7.00-13.00																										
		Tue	7.00-13.00																										
		Wed	7.00-13.00																										
		Thus	7.00-13.00																										
		Fri	7.00-13.00																										
		Sat	7.00-11.00																										
		Sun	Close																										
<p>Review 1: ★★★ My doctor is an excellent doctor. He has a very good bedside manner and excellent skills. He is also very patient, compassionate and understanding.</p> <p>Review 2: ★★★★ He is friendly and takes his time listen to patients. He gave me prompt diagnosis of my problem which i think is excellent.</p>																													
<u>Your Review</u>																													
<p>Rate ★★★</p> <p>Comments</p>	<p>Write your comments</p> <hr/> <hr/>																												

Home | Dr. Search | Medical Store | Health Articles



Search medical in your area

City :

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[!\[\]\(a3eb03a5c8986403088c805f2b6925ab_img.jpg\)](#) [!\[\]\(99dcb597cb056f825e42c89e89e303b2_img.jpg\)](#) [!\[\]\(a2da5fb7a20ca7de746853aa4b76bd02_img.jpg\)](#)

Home | Dr. Search | Medical Store | Health Articles

Sort

	Name : Katharinen Apotheke Address : Oberdorfstraße 10, 12681 Heddesheim Berlin, Germany Telephone : 030/324562322
	Name : Winthir Apotheke Address : Nymphenburger Str. 160, 80634 Edeka medic, Berlin, Germany Telephone : 030/324756302
	Name : Paracelsus Apotheke Address : Peterstaler Str. 57, 80711, Galberg, Berlin, Germany Telephone : 030/325321672

[Home](#) [Dr. Search](#) [Medical Store](#) [Health Articles](#)



Sort

Article - 1	Studies Look at Effects of Marijuana on Vision	Article - 6	Eyebrow and Eyelash Coloring Could Harm Your Vision
Article - 2	Phakic Intraocular Lenses for Nearsightedness	Article - 7	Shedding Light on Night Blindness
Article - 3	Does Pre-Eclampsia During Pregnancy Increase Risk to Mothers' Eyes?	Article - 8	Three Things You Can Learn About Dry Eye
Article - 4	Eye Muscle Stimulation May Delay the Need For Reading Glasses	Article - 9	An Eye Test for Early Alzheimer's Detection?
Article - 5	The Bright Future of Vision Care	Article - 10	Foods Rich in Vitamin C Help Curb Cataracts

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8.3 Screenshots:

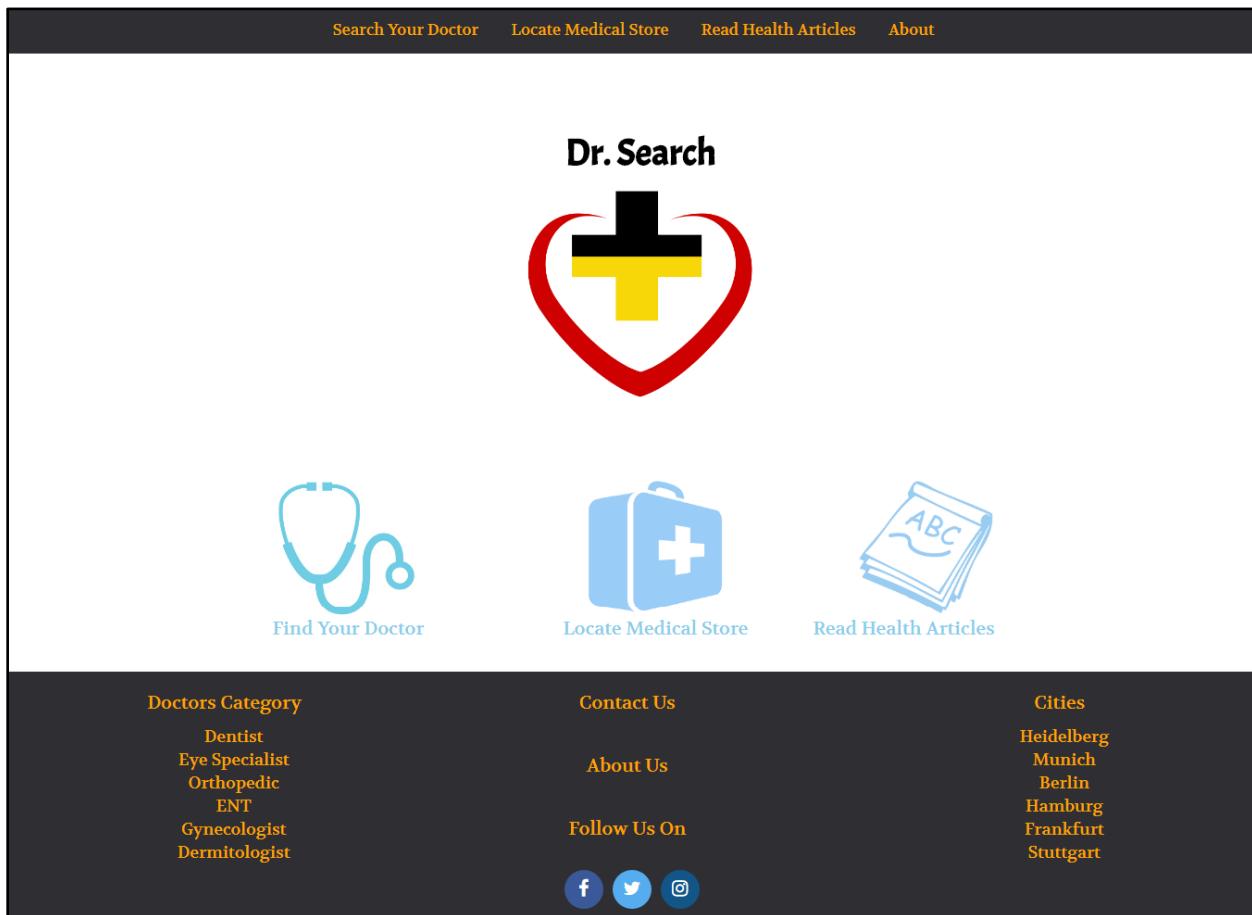


Figure 10: Home Page Screenshot

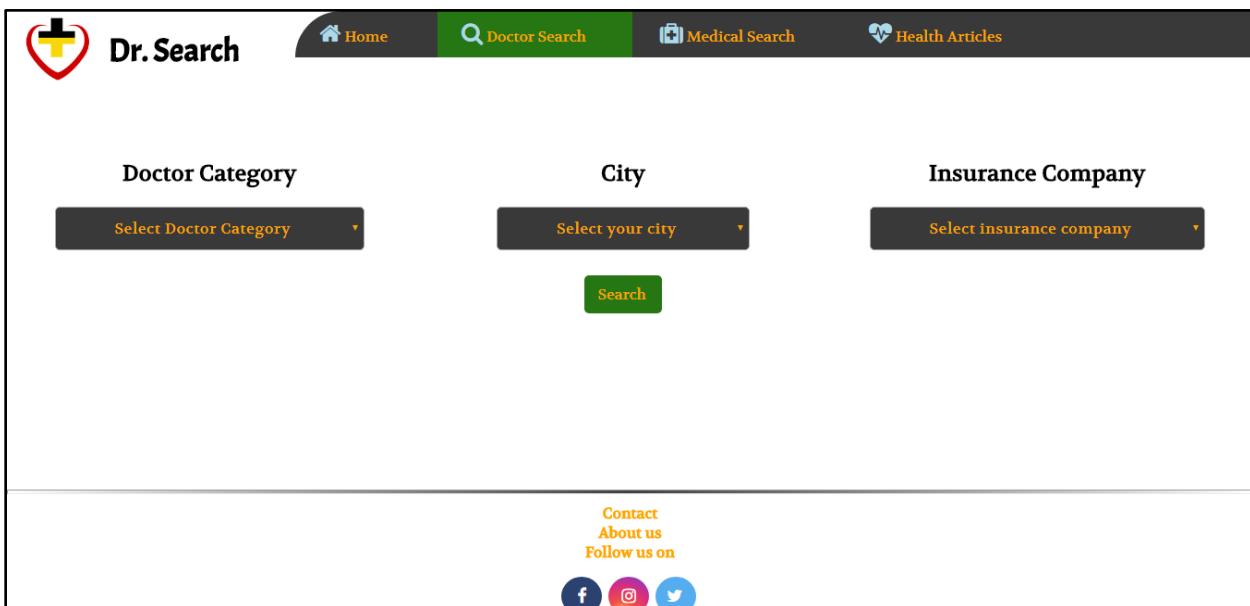


Figure 11: Doctor Search Screenshot

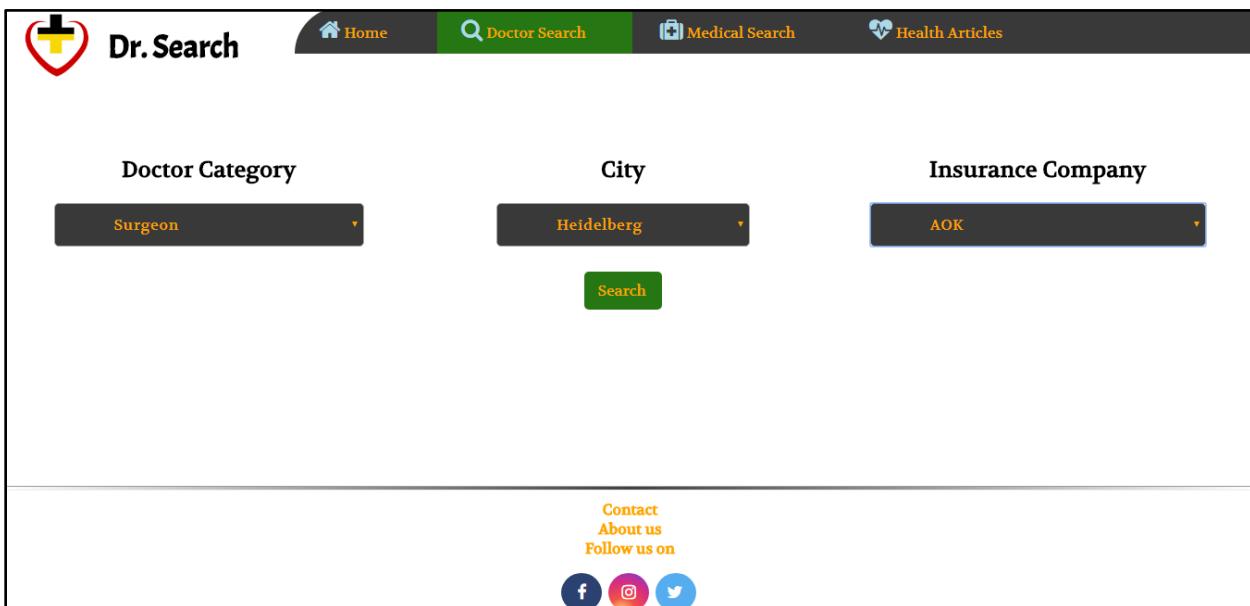


Figure 12: Doctor Search Screenshot

Dr. Search

Choose Your Mode of Travel: Driving

Dr. med. Christoph Czermak

Address : Max-Reger-Str. 5 69121 Heidelberg, Germany
Phone Number :

[show on map](#) [Show/Hide more data](#)

Prof. Dr. med. Matthias Reichenberger

Address : Voßstr. 6,69115 Heidelberg
Phone Number : 06221/87230

[show on map](#) [Show/Hide more data](#)

Priv.-Doz. Dr. med. Andreas Dacho

Figure 13: Doctors List Screenshot

Dr. Search

Choose Your Mode of Travel: Driving

Prof. Dr. med. Matthias Reichenberger

Address : Voßstr. 6,69115 Heidelberg
Phone Number : 06221/87230

Email : Matthias.Reichenberger@gmail.com
Languages : English, German
Website : ethanum-klinik-heidelberg.de
Timings : [{"dayTime": "Mon:8:00-19:00"}, {"dayTime": "Tue:8:00-19:00"}, {"dayTime": "Wed:8:00-19:00"}, {"dayTime": "Thur:8:00-19:00"}, {"dayTime": "Fri:8:00-19:00"}]
Specialization : Surgeon
Qualification : Ph.D.
Ratings :

- Ratings By users: 5>

Comment By Users: Excellent Doctor
Date and time by user: 28-05-2017
Ratings :

- Ratings By users: 4>

Comment By Users: Good doctor
Date and time by user: 29-05-2017

Figure 14: Doctors Detailed List Screenshot

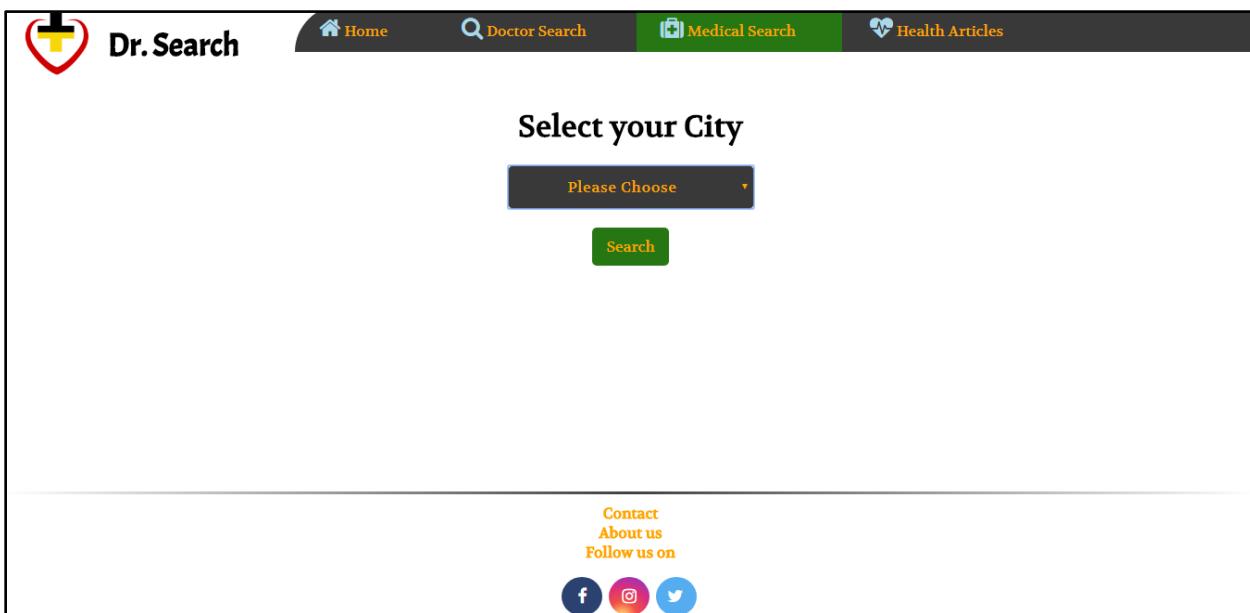


Figure 15: Medical Search Screenshot

Business Name	Address/Location
Pharmacy Baiertal	Not explicitly listed, but indicated by the map location near the Neckar River.
Czerny Pharmacy	Not explicitly listed, but indicated by the map location near the Neckar River.
adViva GmbH	Not explicitly listed, but indicated by the map location near the Neckar River.

Figure 16: Medical Search List Screenshot

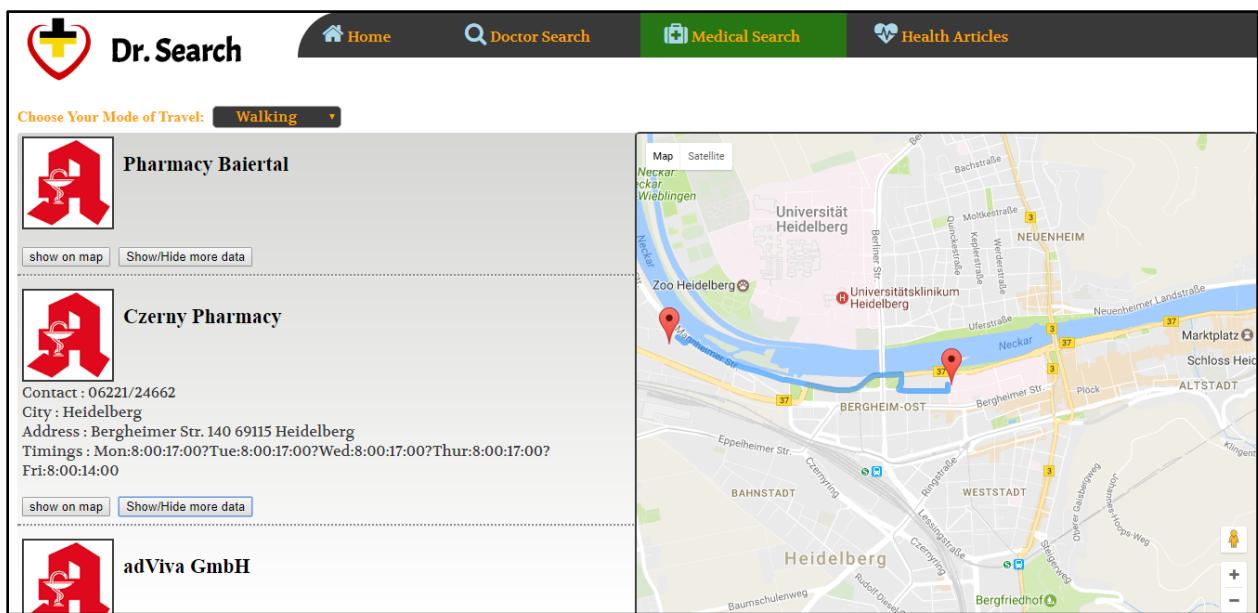


Figure 17: Medical Search Detailed List Screenshot

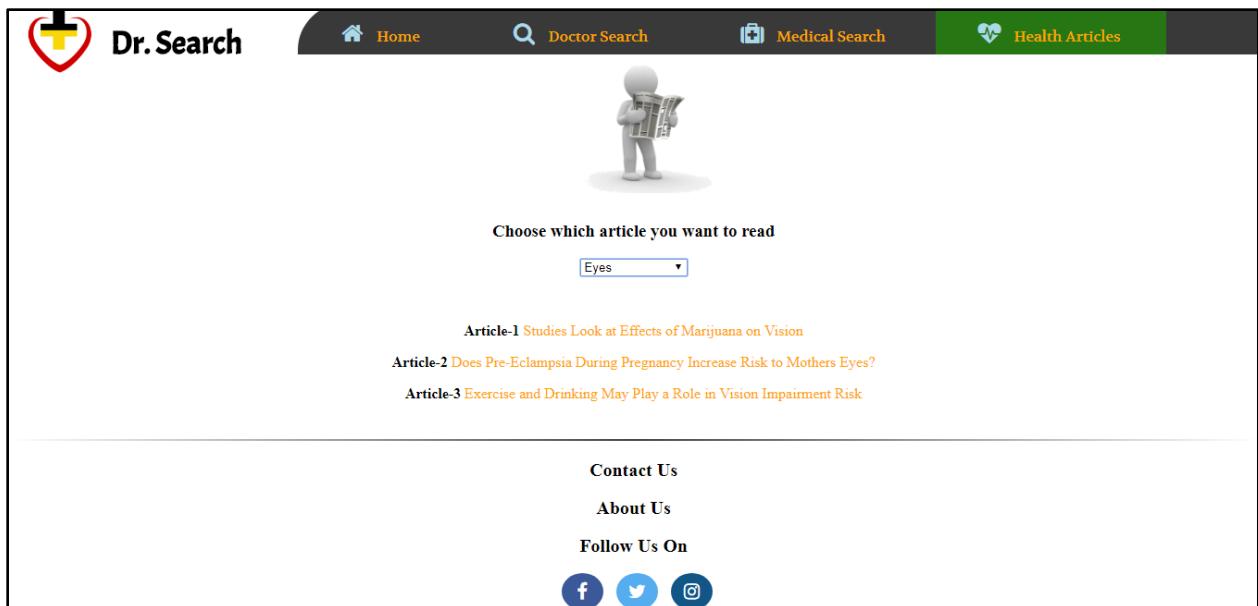


Figure 18: Health Articles Screenshot

8.4 Usability Testing for Browser Prototype:

Usability testing:

This part of document describes a test plan for conducting a usability test during the development of "drsearch.de". The goals of usability testing include establishing a baseline of user performance, establishing and validating user performance measures, and identifying potential design concerns to be addressed in order to improve the efficiency, productivity, and end-user satisfaction.

The usability test objectives are:

- To determine design inconsistencies and usability problem areas within the user interface and content areas. Potential sources of error may include:
 - Navigation errors – failure to locate functions, excessive keystrokes to complete a function, failure to follow recommended screen flow.
 - Presentation errors – failure to locate and properly act upon desired information in screens, selection errors due to labeling ambiguities.
 - Control usage problems – improper toolbar or entry field usage.
- Exercise the application or web site under controlled test conditions with representative users. Data will be used to assess whether usability goals regarding an effective, efficient, and well-received user interface have been achieved.
- Establish baseline user performance and user-satisfaction levels of the user interface for future usability evaluations.

Methodology:

We will be giving the application for five personas and ask them to use the application in different browsers. We will be collecting the feedback and making sure that the unit test cases which we have created are passing. If they are not we have to figure out and solve the problem. There is no training given to the participants as this is a simple website functionality testing.

Test case Id	DRS-UT-1	Test case description	Test the functionality to find a list doctor for eyes for a given city.
--------------	----------	-----------------------	---

Reviewer's log:

Reviewer's Name	XYZ	Date Tested	May 8,2017	Test case (Pass/Fail/Did not execute)	Pass
-----------------	-----	-------------	------------	---------------------------------------	------

Test Scenario:

Step number	Step Details	Expected Results	Actual Results	Pass/Fail/Not Executed.
1	Open the home page URL	The home page for "Dr. Search" should open	The page is opening	Pass
2	Click on the doctor button	After clicking on the Doctor button a search page for doctors should open	The page is opening	Pass
3	Entering values in search boxes	Should see the search boxes	Able to see the search boxes	Pass
4	Click the search button	Should be able to click the button	Button clicked	Pass
5	See the list of Doctors	The user should see list of doctors.	The user was able to see all the values.	Pass

Table 3: User Test Case-1

Test case Id	DRS-UT-2	Test case description	Test the functionality to find a list of medicals for a given city.
---------------------	----------	------------------------------	--

Reviewer's log:

Reviewer's Name	XYZ	Date Tested	May 8,2017	Test case (Pass/Fail/Did not execute)	Pass
------------------------	-----	--------------------	------------	--	------

Test Scenario:

Step number	Step Details	Expected Results	Actual Results	Pass/Fail/Not Executed.
1	Open the home page URL	The home page for Dr. Search should open	The page is opening	Pass
2	Click on the medical button	After clicking on the medical button a search page for medicals should open	The page is opening	Pass
3	Entering values in search box	Should see the search boxes	Able to see the search boxes	Pass
4	Click the search button	Should be able to click the button	Button clicked	Pass
5	See the list of medicals	The user should see list of medical.	The user was able to see all the results.	Pass

Table 4: User Test Case- 2

Test case Id	DRS-UT-3	Test case description	Test the functionality to find a list of health articles and search and select one from them.
--------------	----------	-----------------------	---

Reviewer's log:

Reviewer's Name	XYZ	Date Tested	May 8,2017	Test case (Pass/Fail/Did not execute)	Pass
-----------------	-----	-------------	------------	---------------------------------------	------

Test Scenario:

Step number	Step Details	Expected Results	Actual Results	Pass/Fail/Not Executed.
1	Open the home page URL	The home page for Dr. Search should open	The page is opening	Pass
2	Click on the article's button	After clicking on the article's button a page for medical articles should open	The page is opening	Pass
3	Entering values in search box	Should see the search boxes	Able to see the search boxes	Pass
4	Click the search button	Should be able to click the button	Button clicked	Pass
5	See the list of medicals	The user should see list of medical articles	The user was able to see all the results	Pass

Table 5: User Test Case- 3

Test case Id	DRS-UT-4	Test case description	Test the functionality to navigate from a doctor search result page to medical search page.
---------------------	-----------------	------------------------------	--

Reviewer's log:

Reviewer's Name	XYZ	Date Tested	May 8,2017	Test case (Pass/Fail/Did not execute)	Pass
------------------------	------------	--------------------	-------------------	--	-------------

Test Scenario:

Step number	Step Details	Expected Results	Actual Results	Pass/Fail/Not Executed.
1	Open the home page URL	The home page for Dr. Search should open	The page is opening	Pass
2	Click on the article's button	After clicking on the Doctor button a search page for doctors should open	The page is opening	Pass
3	Entering values in search box	Should see the search boxes	Able to see the search boxes	Pass
4	Click the search button	Should be able to click the button	Button clicked	Pass
5	See the list of medicals	The user should see list of doctors	The user was able to see all doctors	Pass
6	Click on Medical search button at the top of page	Should navigate to medical search page.	Navigates to medical search page.	Pass

Table 6: User Test Case- 4

Test case Id	DRS-UT-5	Test case description	Test the functionality to navigate from a medical search page to doctor search result page.
---------------------	----------	------------------------------	--

Reviewer's log:

Reviewer's Name	XYZ	Date Tested	May 8,2017	Test case (Pass/Fail/Did not execute)	Pass
------------------------	-----	--------------------	------------	--	------

Test Scenario:

Step number	Step Details	Expected Results	Actual Results	Pass/Fail/Not Executed.
1	Open the home page URL	The home page for Dr. Search should open	The page is opening	Pass
2	Click on the article's button	After clicking on the Doctor button a search page for doctors should open	The page is opening	Pass
3	Entering values in search box	Should see the search boxes	Able to see the search boxes	Pass
4	Click the search button	Should be able to click the button	Button clicked	Pass
5	See the list of medicals	The user should see list of medicals	The user was able to see all medicals	Pass
6	Click on Doctor search button at the top of page	Should navigate to Doctor Search page.	Navigates to Doctor Search page.	Pass

Table 7: User Test Case- 5

8.5 Test Cases

Test ID	Name	Description	Expected Result	Actual Result	Pass/Fail
1	Searching Doctors	Select Doctors Category Select City Select Insurance Type	It should display the list of doctors according to given parameters.	The list of expected doctors is displaying along with Google Map and navigation to particular Doctors place.	Pass
2	Searching Medical Stores	Select City	This should display the list of medical stores which are available in the selected city.	List of medical stores is displaying as per the given input.	Pass
3	Reading health articles	Select Category	This should display the list of articles published on selected category.	List of various articles of selected category is displaying	Pass
4	Current Location	For Doctor Search: Select City Select Category Select Insurance Type For Medical Search: Select City	This should display the list of Doctors/ Medical Stores alongwith the current position of user.	The current position of user is displayed on the map.	Pass
5	Doctors Location	Select Doctors Category Select City Select Insurance Type	This should display the location of Doctor (or Clinic) on the Google Maps.	The location of Doctor is displayed on the map.	
6	Medical Location	Select City	This should display the location of Medical Store on the Google Map.	The location of Medical Store is displayed on the map.	Pass
7	Health Article Link redirect	Select Category	This should display the list of Health articles related to selected category.	The list of health articles of particular category is displayed. (List contains links)	Pass

8	Travel Mode	For Doctor Search: Select City Select Category Select Insurance Type For Medical Search: Select City Select Mode of transportation from the list.	This should display various options to the user for transportation from his/her current location to the Doctors/Medical stores location on the map.	Four modes of transportation are given to the user, and by selecting any of the option, the proper navigation is shown on the map.	Pass
9	Social Media Links	Click on social media buttons	This should redirect user to the selected social media.	Re-direction to the social media is working.	Pass
10	Responsiveness	-	Webpage should be displayed on any screen size such as Mobile, Tablet, and Desktop.	Responsiveness on web page is achieved, and it is working well on all types of resolution.	Pass

9. SOFTWARE ARCHITECTURE & TECHNOLOGY STACK

As our application is to be supported for cross platform, such as web and the mobile, it's crucial task to decide technology stack. Our team have gone through a lot of research to land up on several technologies that will be used to build this application.

However, there are numerous ways of implementation. Our team have decided on something new/ alternative to the traditional ones.

Following table presents the complete description of it.

HTML 	HTML is Hypertext Markup Language which is core technology for building web pages. HTML provides the structure of the page using markup. HTML elements are represented by tags. We used HTML tags in our project to structured Dr Search web page. We majorly use heading <code><h1>...<h6></code> , paragraph <code><p></code> , table tags, <code></code> tag for displaying image, <code><center></code> tag, <code><a></code> tag which defines the link and many more tags to structure our web page. HTML <code><body></code> represented the content of HTML document. The contents of <code><body></code> element are actually getting displayed on the web page. Each page contains a connection to other pages by hyperlink. For example, in our first page many hyperlinks show connection to other pages (Home->Medical Search). HTML tags provide the proper formatting of text and image so that it will display in proper intended format.
--	--

CSS 	CSS stands for Cascading Style Sheets which allows us to create great looking web pages. It helps to control multiple layouts of web pages in one web page code. CSS pages load faster also support for offline browsing. We create external stylesheet CSS and link to our all HTML pages for controlling the color of text, the font of style, most important spacing the content using margin and padding around images, social media effects also button effects(hover effect), layout design, alignment of div tag (document division), screen size and many more effects. In CSS, we created rules contain within a stylesheet and apply this rules to many element within the website. When we viewed the file, the browser converts HTML and CSS into DOM (Document Object Model) and then combines the documents content with its style. Basically CSS is used for formatting structured content. For example, in our project we create structure for navigation bar by using simple HTML tags and then formatting that structured content by CSS tags. In this way CSS gives perfect look to our web page.
---	--

 ANGULARJS	<p>Angular is fully-featured MVC architecture and firebase supports cross platform which fulfils the requirement of our web application.</p> <p>Angular functionalities used in our web application are as follows:</p> <ol style="list-style-type: none"> 1. Ng-app : This directive starts an AngularJS application. 2. Ng-controller: <ul style="list-style-type: none"> - Used to control the flow of data of AngularJS application. - Controller is a JavaScript object containing attributes, properties, and functions. - It accepts \$scope as a parameter which refers to application/module that controller is to control. (\$Scope is binding part between the HTML & JS) 3. AngularJS Routing: <ul style="list-style-type: none"> - Ng-route: This module routes your application to different pages without reloading the entire application. - \$routeProvider: We use \$routeProvider to configure different routes in your application. 4. Now your application needs a container to put the content provided by routing. For that we use (ng-view) directive. 5. The \$route provider calls when() and otherwise() functions. 6. The when() function takes a rootpath and JavaScript object as parameters i.e., templateUrl and controller function that should be used with HTML template. 7. For routing with parameters you should define \$routeParams with scope. 8. Ng-ref will wait for AngularJS to load before filling up their respective values (overwrites original href attribute). 9. Ng-repeat used for repeating the set of collections, the collection must be an array or an object.
---	---

Firebase Database  Firebase	<p>Firebase is used to store and sync data with NoSQL database. Data is synced across all clients and available to us when app goes offline. Real-time, offline, accessible from client devices are the key capabilities of firebase database. For the need of Real-Time data to our web application we are using Firebase database in the back-end.</p>
--	--

Google API's



In our web application, we are providing the functionality of Google maps. The purpose of this Google map is to calculate the distance between user's current location and a clinic or medical. For the implementation of these Google Maps, we used some functionalities already developed by Google. Latitude and Longitude are main values for measuring distance or displaying a particular location.

By using of Direction Service object actual directions can be calculated. This object communicates with the Google Maps API Directions Service which receives direction requests and returns an efficient path.

Travel Modes:

For the calculation of directions, you need to specify the mode of transportation. Following travel modes are currently supported in our web application to find a clinic and a medical store.

- DRIVING: This indicates standard driving directions using the road network.
- BICYCLING: This requests bicycling directions via bicycle paths & preferred streets.
- TRANSIT: This requests directions via public transportation (Bus, Tram, Train, etc.)
- WALKING: It shows walking directions via pedestrian paths & sidewalks.

Several functions has been used in the application for location. Some of them are explained below:

Geolocation.getCurrentPosition():

This method is used to get the current position of the device. The Geolocation API defines a high-level interface to location information associated only with the device hosting the implementation, such as latitude and longitude. The **Navigator.geolocation** read-only property returns a Geolocation object that gives Web content access to the location of the device. This allows a Web site or app to offer customized results based on the user's location.

Marker:

The google.maps.Marker constructor takes a single Marker options object literal, specifying the initial properties of the marker. The following fields are particularly important and commonly set when constructing a marker:

- Position (required) specifies a LatLng identifying the initial location of the marker. One way of retrieving a LatLng is by using the Geocoding Service.
- Map (optional) specifies the Map on which to place the marker. If you do not specify the map on construction of the marker, the marker is created but is not attached to (or displayed on) the map. You may add the marker later by calling the marker's setMap() method.

Direction.service.route

A DirectionsRoute contains a single result from the specified origin and destination. This route may consist of one or more legs depending

	<p>on whether any waypoints were specified. As well, the route also contains copyright and warning information which must be displayed to the user in addition to the routing information.</p> <p>addEventListner()</p> <p>addEventListner() method adds the specified Event-listeners compatible object to the list of event listeners for the specified event type on the Event-Target on which it's called. The event target may be an Element in a document, the Document itself, a window, or any other object that supports events.</p>
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Table 8: Technology Stack

11. CONCLUSION

For designing the proposed system, we have focused on users who are facing problems for searching doctors and medical stores. We interviewed people from different age groups and categories such as localities, international students and travelers. They shared their pain points considering which we have planned and designed our complete system. After analyzing various frontend as well as backend technologies we decided to go with AngularJS & Firebase as they have features such as cross-platform support and three-way binding respectively.

12. GITHUB DETAILS:

GitHub repository link of our project:

<https://github.com/Shimpisagar7/DoctorSearch>

<https://github.com/Dr-6/Dr.-Search>



Figure 19: Workflow chart by team members from GitHub

13. REFERENCES

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