

OptiLifeMD



EE15N

Professors Andrea Goldsmith & My T. Le

March 17, 2017

Stephanie Brito, Robert Muni, Jesse Calderon

Contents:

- I. Abstract (SB)
- II. Executive Summary (SB)
- III. Problem Statement (SB)
- IV. Introduction to Problem (SB)
 - A. Case Studies
 - B. Statistics
- V. Introduction to Solution (RM)
 - A. Existing Solutions & Critique
 - B. Monetizing the Concept
- VI. Constraints (RM)
- VII. The Design Process (JC)
 - A. Objectives
 - B. Potential solutions
 - a. Morphological Chart
 - b. Best of Class Chart
- VIII. Final Design (JC)
 - A. Detailed Design
 - B. Cost Analysis
- IX. Conclusion (SB)
 - A. Second Generation
 - B. Implications of the Product
 - C. Steps to Implementation
- X. Works Cited

I. Abstract

According to a study done by the Center for Disease Control, 7.5% of insured patients do not seek out or delay necessary medical treatment due to cost. This number goes up to 30.4% for uninsured patients. This study featured household interviews of U.S. patients. In the interviews, the CDC found that reasons for delay or non receipt include a cost barrier, doctors not accepting new patients, or doctors not accepting their insurance. Because of these three barriers, there is a need for a platform that will help patients maximize their insurance benefits and know what options are available for them if they are uninsured.

OptiLifeMD aims to create the first platform of this kind. With OptiLifeMD, patients will be able to upload their insurance benefits and see what providers are available inside and outside of their network. Patients will also be able to see their providers' earliest available appointments—all in the palm of their hands.

II. Executive Summary

This report aims to describe the design of a platform to improve patients accessibility to healthcare.

Problem

This report also analyzes the issue of delay and non receipt in which individuals postpone or simply do not receive medical treatment they need due to insurance or cost barrier.

Furthermore, the space of integrating technology and insurance is an up and coming field in Silicon Valley, with nearly \$2 billion and \$3 billion invested in insurance startups and over 290 different investors competing for deals in 2015.

Design Process

Design considerations included implementation of a solution in which patients utilize a call center and connect with employees to understand their insurance plans, a virtual reality environment where patients interact with an artificial intelligence agent, a website and a mobile application. After constructing a best-of-class chart, the team decided on implementing a mobile application due to its flexibility, accessibility and cost efficiency.

Final Design

The final design consists of a mobile application with a patient and provider user interface. Patients would upload their summary of benefits onto the application or answer a questionnaire about their coverage status onto the application. After uploading information, patients would then be able to search for providers within and outside of their network and see the following pieces of information: provider, location, phone number, estimated co-pay/cost,

whether the provider is within or outside of their network, and earliest available appointment.

The patient would then be able to schedule their appointment on the application with the selected provider. On the provider-end, providers would be able to sync their appointment scheduling system with the application to provide up-to-date information about their availability.

III. Problem Statement

At present, clients face difficulties fully optimizing their insurance plans. Patients encounter long wait times for doctor's appointments in some specialized cases and do not know what other options they have. Furthermore, insurance plans are full of legal jargon, which makes it difficult to understand one's benefits. This problem disproportionately affects limited English proficient patients and perpetuates the health care coverage gap. Additionally, patients often times lack an interface where they can store and access their medical information easily. There is a need for a way to connect patients with providers within their insurance plans and to provide options for those without insurance.

VI. Introduction to Problem

Every year, the Center for Disease Control releases its report on the state of health in the United States by interviewing households on a variety of issues related to their access to healthcare. In the 2015 report, the CDC reported that even insured patients were delaying or not receiving necessary treatment at a rate of 7.5%; the rate went up to 30.4% for uninsured patients.

The following sections will analyze the issue of delay and non receipt on a case study model and a national model.

A. Case Study

Vinh Ton, a freshman at Stanford University, realized how severe his sleep apnea was when it began to affect his ability to attend morning classes. Sleep apnea, a condition which constricts the flow of oxygen to the brain during sleep, is typically diagnosed in a sleep study. After going to a consultation for his condition in January 2017, Ton was told to schedule a sleep study. Because he is covered under Cardinal Care, a Stanford University health insurance plan categorized as an Exclusive Provider Organization Plan (EPO), he was referred to a Stanford network sleep clinic.

Making the appointment back in January, the earliest available appointment for his necessary sleep study was scheduled for May 30. By the time he can receive treatment for his condition, he will have already finished two more quarters as a college student. Seeing Ton's delay of necessary treatment due to the conditions of the EPO and the difficulty in seeking out external providers, helped inspire OptiLifeMD's problem statement.

B. Statistics

The CDC estimates that in 2015 7.5% of insured patients were delayed or did not receive medical treatment, with the figure increasing to 30.4% for insured patients. In the 2015 report,

the team analyzed disparities between individuals of higher socioeconomic status.

Table 63 (page 2 of 3). Delay or nonreceipt of needed medical care, nonreceipt of needed prescription drugs, or nonreceipt of needed dental care during the past 12 months due to cost, by selected characteristics: United States, selected years 1997–2014

Updated data when available, Excel, PDF, more data years, and standard errors: <http://www.cdc.gov/nchs/hus/contents2015.htm#063>.

[Data are based on household interviews of a sample of the civilian noninstitutionalized population]

Characteristic	Delay or nonreceipt of needed medical care due to cost ¹				Nonreceipt of needed prescription drugs due to cost ²				Nonreceipt of needed dental care due to cost ³			
	1997	2004	2010	2014	1997	2004	2010	2014	1997	2004	2010	2014
Hispanic origin and race and percent of poverty level ^{5,7}												
Hispanic or Latino:												
Below 100%	14.6	14.0	19.0	16.2	10.6	13.2	18.9	13.1	16.1	19.6	30.5	22.6
100%–199%	12.2	14.4	18.6	13.2	8.1	12.5	14.7	9.8	13.5	19.4	25.2	19.8
200%–399%	8.0	9.2	13.9	9.6	4.4	9.7	11.5	6.1	9.2	13.7	18.1	11.8
400% or more	5.1	4.6	7.7	5.1	*	4.2	4.6	*3.1	4.5	8.2	9.1	5.7
Not Hispanic or Latino:												
White only:												
Below 100%	24.3	25.3	26.1	24.7	17.3	19.8	24.6	17.9	23.4	25.2	31.8	25.3
100%–199%	20.9	23.0	27.6	21.3	12.4	19.1	19.9	14.6	20.6	26.1	31.7	22.8
200%–399%	11.4	13.3	16.0	12.3	5.4	9.4	11.3	7.0	10.6	15.4	18.0	13.7
400% or more	4.6	5.3	6.9	4.3	1.7	3.4	3.8	2.5	4.5	5.7	6.9	4.5
Black or African American only:												
Below 100%	16.1	19.3	24.4	18.0	14.9	20.8	21.1	18.0	14.8	23.4	29.7	24.1
100%–199%	14.3	16.2	22.9	17.3	13.9	18.2	21.3	13.2	16.4	20.0	28.2	17.2
200%–399%	8.8	9.6	14.6	12.6	7.0	9.0	13.7	8.6	8.6	11.2	16.1	11.4
400% or more	4.6	4.6	8.1	5.0	*2.9	*3.9	5.6	*	4.3	4.8	9.1	*4.3
Health insurance status at the time of interview ⁸												
Insured	6.8	6.9	9.1	7.5	3.7	5.9	7.3	5.7	7.2	8.7	11.8	9.6
Private	6.0	6.2	8.2	6.4	2.9	4.8	6.0	4.1	6.2	7.3	9.2	6.9
Medicaid	11.9	11.9	12.5	11.6	11.1	13.2	13.5	11.6	14.8	18.9	24.2	20.3
Uninsured	27.6	30.2	34.5	30.4	18.0	22.9	25.7	17.6	26.1	32.3	37.7	28.2

Figure 1.1: *Incidents of delay on non receipt of needed medical care, as documented by the CDC.*

Figure 1.1 shows that in fact those disparities do exist. As different groups reach higher socioeconomic levels, the rate of delay and non receipt substantially decreases. There is also a disparity between Medicaid recipients and those with private insurance. Medicaid beneficiaries experience delay or do not receive necessary treatment at a rate of 11.6%, while private insurance beneficiaries do so at a rate of 6.4%.

Besides a cost barrier for health care, many patients also end up with difficulties in just finding a provider. Some of the main issues in seeking a new provider is that some providers

don't accept new patients or that the desired provider doesn't accept the individual's insurance plan. Again, this phenomenon has been heavily documented by the CDC.

Figure 1. Percentage of people who had selected experiences with physician availability in the past 12 months, by age group: United States, 2012

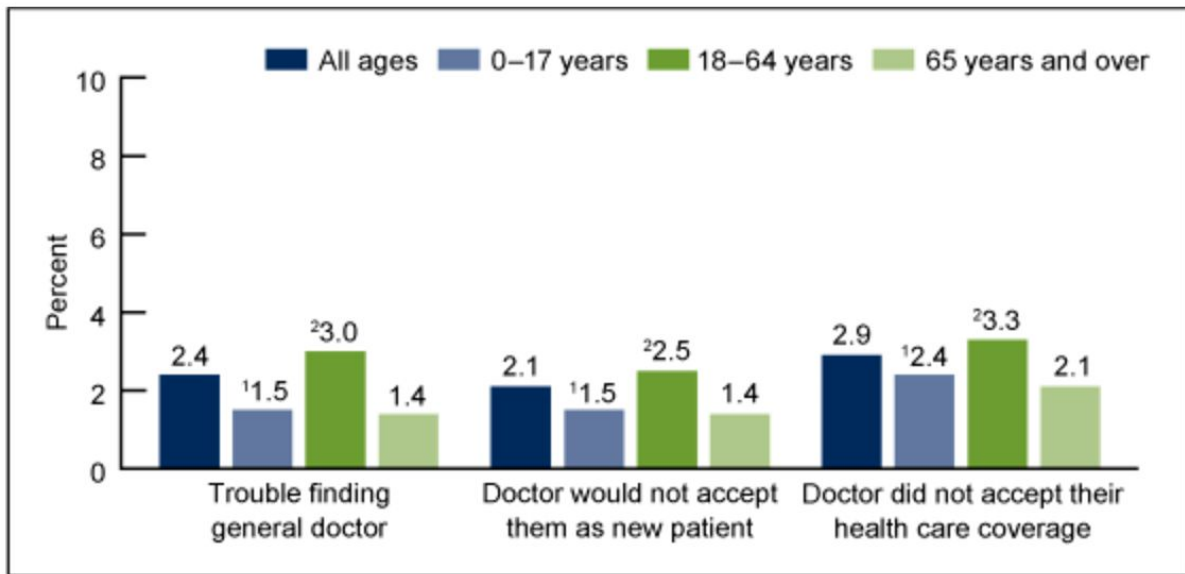


Figure 1.2: CDC data from 2012 on issues with physician accessibility.

Figure 4. Percentage of people with health insurance who were told in the past 12 months that a doctor's office or clinic did not accept their health care coverage, by age group and coverage type: United States, 2012

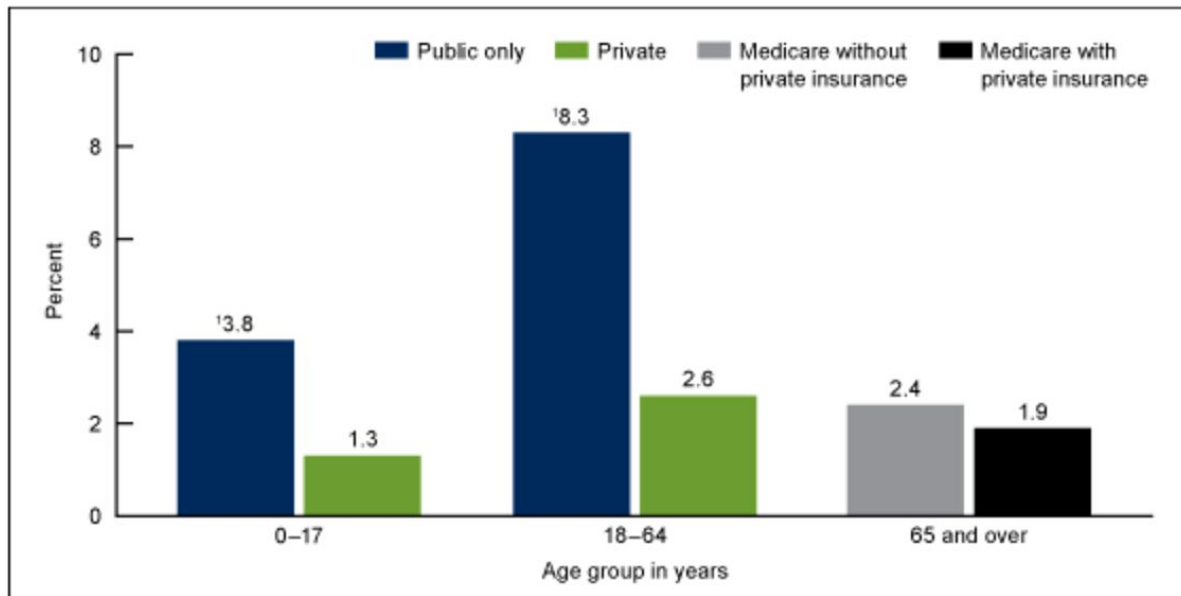


Figure 1.3: CDC data from 2012 on issues with physicians accepting patient's insurance plans.

Figure 1.2 and 1.3 show a different side of the issue as it pertains to physician availability. As Figure 1.2 shows, patients encountered three main issues when seeking out necessary health care. Patients either just could not find a doctor, were told they could not be accepted as new patients or were told that the physician would not accept their insurance plan.

Figure 1.2 elaborates on the issue of finding providers within one's own insurance plan. As stated previously, there is a disparity in access to care between private and Medicaid insurance beneficiaries. Figure 1.2 shows that this disparity is strongest between the ages of 18-64 (before one qualifies for Medicare). Nearly 1 in 10 in the 18-64 age bracket have trouble seeking a physician because they are told the physician will not accept their health insurance, while only 2.6% of patients with private insurance in the 18-64 age bracket have the same issue.

Seeing the disparities between different insurance plans and individuals from lower- and upper-socioeconomic status drove the team to think of creative solutions for this problem. Furthermore, because these disparities serve to exacerbate each other, the team believes that this is a national health issue that needed a solution.

V. Introduction to Solution

A. Existing Solutions & Critique

In this digital age, the age-old insurance industry is embracing new technologies to facilitate business. The team embarked on a few days of research to explore ways in which major providers are implementing Information Technology systems to ensure up-to-date management of their services to consumers. We decided to examine technology models adopted by Unitedhealthcare Group, Humana Insurance, and Kaiser Permanente. Illustrations of their websites showing tools available for their registered customers.

Dental Insurance
Choose coverage and pricing that will make you smile.
[Find Plans ▶](#)

Short Term Health Insurance
In times of change, find short term solutions that help you bridge the gap.
[Find Plans ▶](#)

Medicare
A federal health insurance program for people age 65 and older and/or are disabled. Enter your ZIP code to see Medicare plans in your area.
[Find Plans ▶](#)

Medicaid
Health care coverage for those with lower incomes. Enter your ZIP code to see Medicaid plans available in your area.
[Find Plans ▶](#)

Vision Insurance
See excellent value with vision insurance.
[Find Plans ▶](#)

Know Where to Go for Care
Review the options for where to get care – and see how you can save money by choosing wisely.
[Learn More ▶](#)

[Feedback](#)

Figure 1.1. A snapshot of United Healthcare's website which has options to shop for various kinds of coverages and a tool to search for physicians and other medical services. The information available to consumers is tailored to their location as they key in their zip codes.

Humana Insurance, another key player in the industry, has done a better job of elaborate information breakdown as they provide more on co-pay terms and any other expenses incurred for patients under different coverages.

Enjoy the flexibility to visit almost any doctor that accepts Humana’s plan terms.

What’s the difference?

Learn more about the managed care options Humana offers for your Medicare Advantage coverage. The chart below may help you determine which option is right for you: a health maintenance organization (HMO), a preferred provider organization (PPO), or a private fee-for-service (PFFS) plan.

	Type of plan	Primary care physician (PCP)	Specialist Referrals	Copay for office visits	Our-of-pocket costs	Monthly premiums	Annual Deductible
Humana Gold Plus® HMO	Health maintenance organization	Member must choose an in-network primary care physician	Required from PCP	As low as \$5	\$2,200 - \$6,700, depending on plan	As low as \$0	No
Humana Choice® PPO	Preferred provider organization	Open; in or out of network	Not needed	As low as \$0	\$3,400 - \$6,700, depending on plan	As low as \$0	Yes
Humana Gold Choice® PFFS	Private-fee-for-service	Open, but provider must accept Humana terms and rates	Not needed	As low as \$10	\$5,000 - \$6,700, depending on plan	As low as \$0	Yes

Figure 1.2.

A snapshot of Humana’s website which elaborates more on co-pay terms and the various kinds of benefits under different care coverages.

The team also did research to see the extent of mobile technology usage by insurance companies and what form it took. Kaiser Permanente has a mobile app available to its customers, through which, consumers get up-to-date information, set up appointment reminders, manage their pharmaceutical needs and a tool to store patient information.

Critique of Existing Solutions

While the sampled companies have made huge strides in embracing technology in rendering their insurance services, we realized that there are still issues and inefficiencies that have not been addressed:

1. The navigation tools are tailored specifically to customers with the companies' coverages. Is it possible to have one general technology to help consumers under different coverages/ companies?
2. There is no evidence of plans that offer options to get earliest available appointments, meaning that insurance companies have yet to do something about the 'clog' that is causing delay of appointment scheduling by several months especially for specialist care.
3. Implementation of mobile technology is off to a slow start as shown by the fact that only Kaiser Permanente, among the big insurance companies, has a mobile application available for their customers. In addition, according to a study by health business consulting company, TrueVault in 2016, on the consumers' side, mobile technology has shown a low uptake. This is attributed mainly to inefficient mobile software provided by some companies.
4. Consumers are not offered the advantage of being able to easily and elaborately compare multiple insurance packages offered by different companies. Therefore, they are not able to judge correctly what plans are price-competitive and most beneficial to their specific needs.

The team had the amazing opportunity to meet with Bob Lin, a successful investor who has ventured into the healthcare industry in China. Lin advised the team to look closer at these

shortcomings and come up with a disruptive mindset that can find a niche in the industry and thrive.

B. Initial Constraints

HIPAA(1996)

During our first meeting with our mentor, Dr. Erica Weirich, MD, she pointed out a major overarching factor that we had to consider in our design thinking process- the Health Insurance Portability and Accountability Act (HIPAA) of 1996. This came up because our first design concept would include a tool for storing patient data using mobile technology or otherwise.

The HIPAA Privacy regulations require health care providers and organizations, as well as their business associates, develop and follow procedures that ensure the confidentiality and security of protected health information when it is transferred, received, handled, or shared and expects that .only the minimum health information necessary to conduct business is to be used or shared.

Therefore, any design concept that we would come up with would have to fit into the specifications spelled out by this bill. However, as we continued working on the project, we took input from Professors Andrea Goldsmith and My T. Le under advisement and decided not to implement the data storage tool for our first-generation concept. We all agreed that such an implementation would require a lot of legal maneuvers.

C. Monetizing the Concept

The team brainstormed ideas on how our concept could potentially earn revenue for OptiLifeMD and came up with a few models we could implement as third-party administrators.

1. *A charge for appointments directly facilitated through our portal.*

We could charge the hospitals a minimum fee for every appointment that customers set up through our app. By helping hospitals avail their earliest available appointment slots, we'd be giving incentive and advantage to physicians to get more patients coming in for their services.

2. *Advertising tailored for insurance companies.*

OptiLifeMD could offer insurance companies advertisement deals through which a more informative approach would be implemented. Our ads would not only highlight the main features of insurance packages but comprehensively break-down the details of each plan's benefits. We could also partner with insurance companies and work with them towards the implementation of mobile technology.

3. *Potential Partnerships with Big Data Healthcare Management Systems*

If adopted, our tool for patient data storage in the second generation concept, would place us in a good position to engage in the growing big data analytics industry whose key players include Microsoft Health Solutions. In keeping with our mission to increase efficiency in healthcare management through providing information that is based on credibly sourced data that has been optimized for effective use.

4. *Premium features that come with our app*

Through the app, we could have some exclusive features for which customers may pay a fee. For example to get information about general pricing for MRIs and compare it to the cost incurred

for the same service through their insurance plans, which helps clients hold insurance companies accountable for any unnecessary bill inflations.

VII. The Design Process

Upon beginning the design process, Team OptiLifeMD began discussing what issues they found most pertinent to the medical world today before honing in on one prominent problem. The group recognized how difficult it can be to exchange medical information, understand one's insurance, and the lack of power a patient has in knowing the breadth of options available for medical care. Initially, we believed there was an immense need for a digitalized space that would allow patients and providers to freely exchange medical documentations between each other. Creating a service that would make those interactions easier would allow for medical documentation to be more accessible to individuals, making it easier to show other providers their medical history in a situation where they would be going outside of their network or are not being seen by their primary care doctor. Additionally, the team investigated how different types of insurance, such as HMOs, PPOs, EPOs, and the difficult jargon associated with these insurance plans affect an individual's ability to seek out medical treatment.

As mentioned before, people often encounter extensive wait times to be seen by a physician or will decide not to seek out care due because of the long wait. The team also saw that there is a need for a design that would allow patients to optimize their insurance plans by empowering them to be knowledgeable about what their other options are in terms of seeing physicians outside of their network, the copays associated with them, and seeing what physicians have the next available appointments.

The team assessed the two potential problems that could be addressed and decided upon designing a product that would solve the aforementioned issues surrounding patient access to medical appointments. After conducting extensive research on medical documentation in the United States, we discovered that most hospitals and medical facilities within the U.S. utilize EHR (Electronic Health Record) for medical documentation.

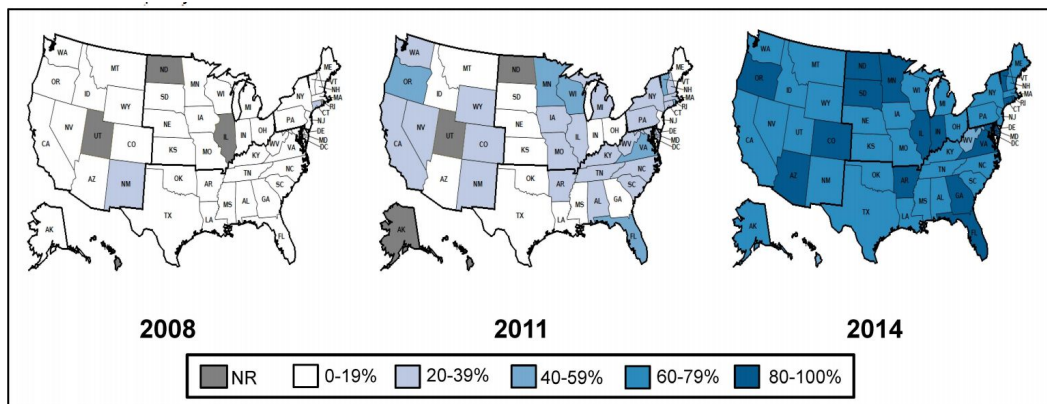


Figure 3.1: State adoption rates of the EHR nationwide from 2008 to 2014.

Health Information Technology (Health IT) and how there has been a widespread adoption of some form of the Electronic Health Platform throughout the nation. Seeing how EHR spread across the country, the team begin the process of designing a solution to the current issue surrounding patient access to health care.

A. Objectives

The team embarked on this project by first assessing what functions the product should have. The primary goal of the product is to empower patients using the platform. In order to achieve this, the product must be user friendly, allowing any individual to use it. It would make the process of finding a physician, scheduling appointments, and seeing the cost of treatments through different providers more transparent. These functions essentially would augment the

user's knowledge about the different options they have. Additionally, the product must have a function geared towards physicians, allowing them to upload their schedules. The collaboration between doctors and the product is necessary, otherwise patients would not be able to see the next available appointments with different providers. Because the product works largely with medical documentation, it must also be secure and comply with all of HIPAA's laws as well as any other security laws involved with handling medical insurance information.

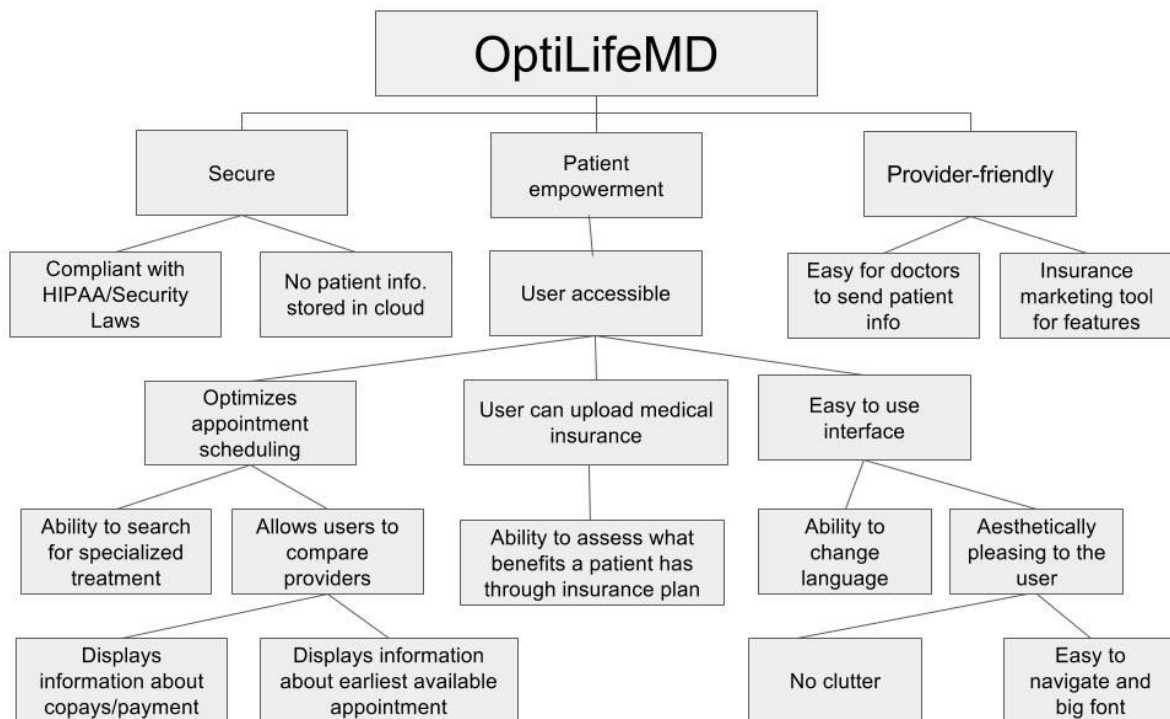


Figure 3.2: Team OptiLife MD's Objective Tree

Figure 3.2 depicts the objectives imperative to the creation of the product. By formatting it in an objective tree, the figure clearly depicts the three main goals and what each specific need will require to make the product function correctly.

B. Potential Solutions

The team then progressed to discussing what method of implementation would best meet the objectives of the product. In order to efficiently approach this, the team first developed a morphological chart. The graphic assesses the different functions required for the objectives to be fulfilled and the options of implementing them.

Function	Options				
Platforms	Computer		Mobile	Tablet	Device in doctor's office
Navigation	Home page	Ability to translate pages	Insurance plan menu	Appointments page/available appointments and cost	Camera for medical documents/page where they're stored
Input options	Type	Voice	Calendar synchronization		Write Document uploader
Insurance analysis	Pre-made versions for different types of plans		Plan generator for uninsured/underinsured		Ask user questions about their plan for non pre-made plans
Appointment scheduling	Doctor uploading portal for earliest available appointment			User can see appointments within their network and the cost of it	
Security	No medical records saved on server		Two-step authentication	Password-protected	Users must sign disclosure

Figure 3.3: *Team OptiLife MD's Morphological Chart*

First, we thought about different platforms that could be used to meet our objectives for the product. Computers, mobile technology, tablets, devices in doctor's offices, and artificial intelligence all served as potential platforms. Each platform would require a different method of navigation, inputs, insurance analysis, appointment scheduling, and methods of security; these specifications are included in the chart above.

With this information, the team delved into creating a preliminary design for a mobile application:

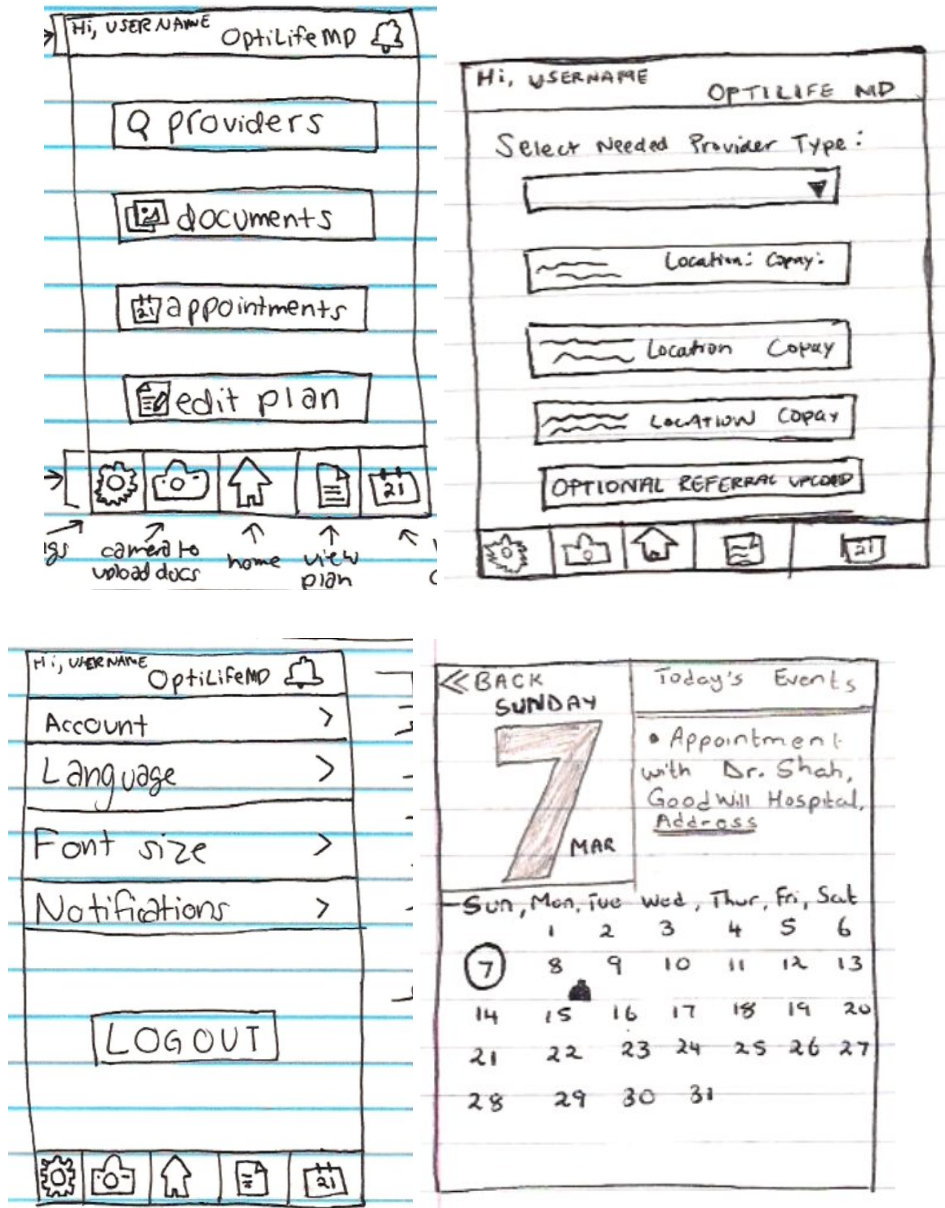


Figure 3.4: Team OptiLife MD's Preliminary Design Sketches

The initial design sketches depict how a mobile application would function. The interface on the top right side shows what a potential home page would look like, where a user would be able to search for providers, upload documents, see appointments, and edit their insurance plan. If a user were to click on the search key, they would be directed to the interface on the top left

corner. This page includes a drop down menu where an individual would be able to select what issue they currently are dealing with. From there, a list of providers who offer the necessary service would be shown, as well as the copay associated by going to that particular doctor and their next available appointment. Additionally, a user would be able to see what appointments they have scheduled by clicking on that function, which would direct them to the interface shown in the bottom left corner. Lastly, the edit plan function would allow the user to upload their insurance on the page they would be directed to. A sketch for the setting page, shown in the bottom right corner, also depicts features that would allow the individual to access their account information and change the language, font size, and notification settings associated with the mobile application.

Although Team OptiLifeMD completed a thorough preliminary design, they realized after drawing and submitting sketches for a mobile application that they had narrowed their focus too quickly. It was not clear how exactly this specific platform would serve the objectives best. In response to this, the team brainstormed more in depth about other potential design.

Reexamining different potential platforms, the team assessed the differences between utilizing mobile technology, a website, call center, and virtual reality/artificial intelligence. The group had originally decided that the product should be cost efficient, secure, easy to use, show available physicians and co-pays, and show future appointments. This criteria was thus utilized to effectively compare between the different options. A priority checkmark chart and best of class chart was utilized to carry this comparison out.

DESIGN CONSTRAINTS AND OBJECTIVES	Priority (✓)	Mobile App	Website	Call center	VR AI
C: Must be free for patients				x	x
C: No patient data stored in cloud				x	
O: Easy to use	✓	1x✓	1x✓		
O: Shows available physicians & co-pays	✓✓✓	1x✓✓✓	0x✓✓✓ ...		
O: Shows future appointments and schedules	✓✓	0x✓✓ ..	1x✓✓		

Figure 3.5: Team OptiLife MD's Priority Checkmark

DESIGN CONSTRAINTS AND OBJECTIVES	Priority (✓)	Mobile App	Website	Call center	VR AI
C: Must be free for patients				*	*
C: No patient data stored in cloud					
O: Easy to use	✓	1	2		
O: Shows available physicians & co-pays	✓✓✓	1	2		
O: Shows future appointments and schedules	✓✓	2	1		

Figure 3.6: Team OptiLife MD's Best of Class Chart

To augment the information provided in figures 3.5 and 3.6, the specific reasoning on why Team OptiMedMD decided to utilize mobile technology will be elaborated upon here. Initially, they believed that virtual reality, while an intriguing concept, would be too inaccessible to different groups of people because the technology required to employ it only complies with a select group of smartphones. This simple fact would limit many people from using the product. Contrasting this, the team felt that having a call center that would directly assist individuals over the phone would be more accessible. Yet they grappled with the fact that it would take a longer amount of time to digest insurance information and verbally tell someone over the phone what their health care options. Additionally, if medical information were to eventually be exchanged over the platform, the call center would be less secure and likely have issues with HIPAA regulations as information would need to be stored in some type of cloud.

These conclusion left the team to battle over whether a website or mobile application would better serve the product's features. While both platforms are relatively easy to use, each one has its own flaws. A mobile application would be readily accessible and easy to use anywhere, whereas one must have a computer to utilize a website to its fullest capability. Yet, the appointment making function would be easier to view on a larger screen, thus making a computer more favorable with this specification. However, Team OptiLife MD foresees the product being usable anywhere in the U.S. so patients can get medical attention regardless of where they are. This concern led the team to choose a mobile application for the final design.

VII. Final Design

A. Detailed Design

Team OptiLife MD came to the consensus that their final design would be a mobile application. Originally, they had hoped that the design would include a feature allowing the user to upload their health care documents. This would allow them to show different physicians to see their medical documents if they did not have access to their record. However, the team agreed that the primary focus for the application at this stage would be to provide a platform where a patient could recognize that they have options, empowering them. To achieve this, the final design employs three main functions: uploading insurance plans to analyze the user's health care benefits, searching for a provider and seeing the copays and next available appointment with each respective physician, and creating appointments that integrate into the user's calendar.

1. Insurance uploading function: A specialized team of computer scientist would develop an algorithm that analyzes the benefits an individual has through their particular health insurance plan. The algorithm would take into account what the copay is through facilities that are within the network of the insurance company, as well as determine what percentage of fees a person would have to pay going outside the network. For example, a patient who is insured through X Company may have a \$20 copay at facilities within the network, whereas they would have to pay for 30% of an appointment at a facility that is not directly associated with that network.
2. Searching for a provider: The user would be prompted to input the reasoning why they need medical attention. The algorithm would then generate a list of physicians within and

outside of their network, pairing the copay associated with that specific doctor and the next available appointment. For example, a patient who has sleep apnea and requires a sleep study would input this, and then a list of physicians who perform this medical procedure would be generated with the copays and next available appointments.

- a. This function requires physicians to upload their schedules to our platform so that their next available appointment can be shown to the user
3. Creating appointments that integrate into the user's calendar: Once a specific physician is selected, the user will be able to create the appointment over our platform. The notification would be sent back to the doctor's office and be approved there. Once it is approved, the user would be notified and it would be integrated into their calendar.

B. Cost Analysis

The cost of a mobile application varies depending on the complexity of the mobile application. Using various websites that explained the general price of creating an application, Team OptiLife MD determined that the cost would range from 20,000 to 50,000 dollars depending on how it is designed to look; our application would tend towards the higher price within that range. Once the application is completed, there will be fees for continual maintenance which can range from 15% to 20% of the initial cost. Additionally, the product would require the development of an algorithm that would be utilized to dissect the insurance information and find physicians in the area depending on the medical need. The price of hiring one freelance computer scientist to create an algorithm is about 50 dollars per hour, so this would be factored into the total price.

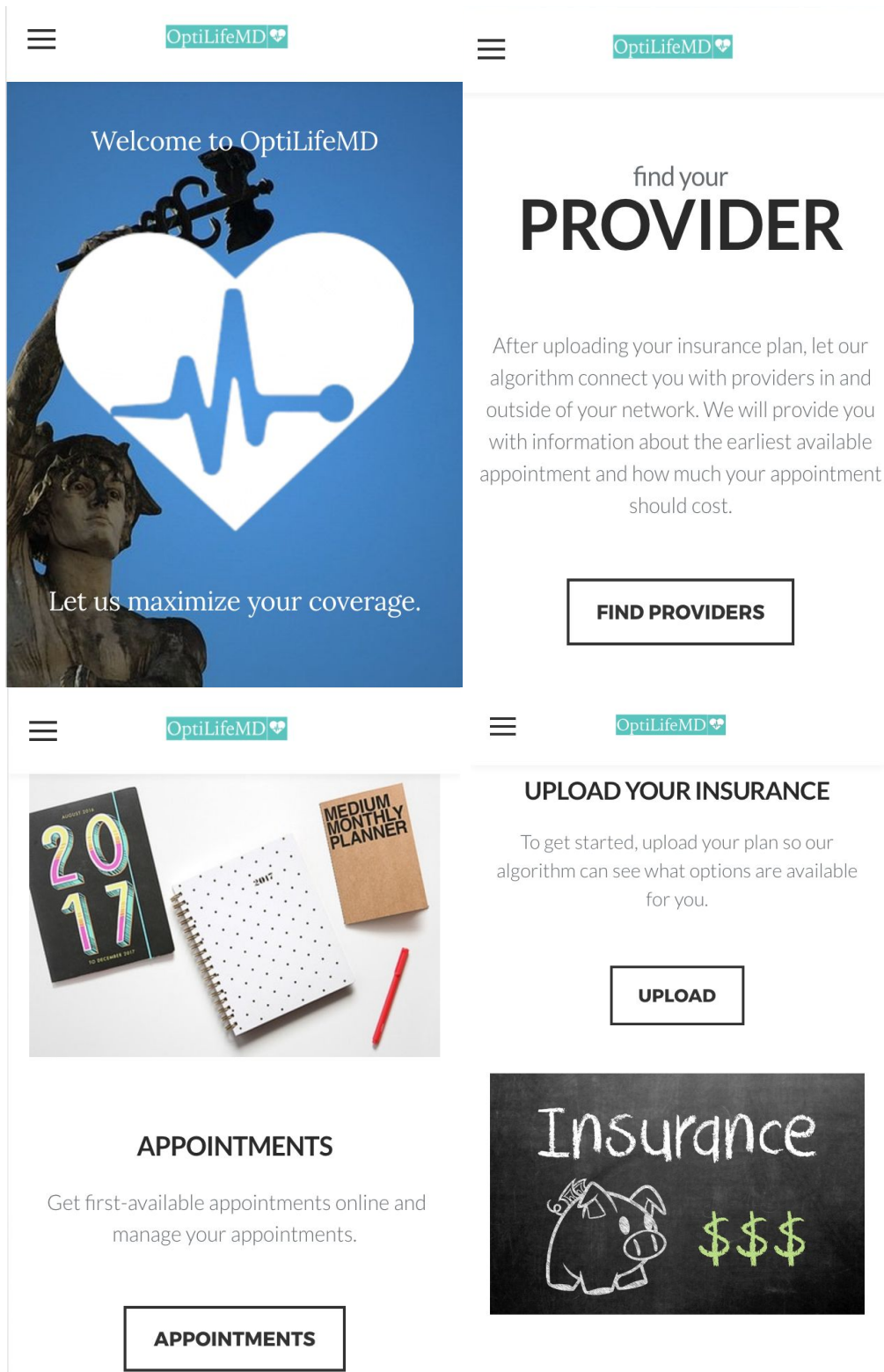


Figure 3.7: Team OptiLife MD's Final Design

IX. Conclusion

A. Second-generation

The team's motivation in creating a second generation product comes from the same motivations as the first-generation product: to address healthcare disparities.

The team realized that other areas of disparity continue to exist and would not be fully addressed by the first-generation version of OptiLifeMD. Some of these disparities include the language barrier between patients and providers, patient's immigration status, and the cost of seeking a provider.

To address the last disparity, the team has discussed plans to introduce a service on the app that could compare costs for medical services across different facilities to increase competition for fair costs across providers. For example, if a patient needed an MRI scan, they could go onto the app and find the most affordable provider for the scan within or outside of their network. This new feature would continue the team's goal of creating a platform centered around patient empowerment.

B. Implications of the Product

The team's goal is quite simple, and focused on the patient's experience. The team aims to create a technology that will disrupt the current insurance industry and make healthcare accessible to all.

C. Steps to Implementation

Over the next quarter, the team plans to conduct interviews with individuals on all sides of the issues we are trying to address.

Types of individuals we plan to speak with include, providers, patients, leaders in healthcare non-profits, government officials, experts in health technologies, insurance companies, and leaders in healthcare ventures in Silicon Valley.

After collecting interviews, we plan on revising our objectives and design and expanding our team to begin the implementation of our technology. The tentative goal is to have a functioning application in beta by the end of the summer of 2017.

X. Works Cited

- "Access to Health Care." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 20 Jan. 2017. Web. 21 Mar. 2017.
- "Adoption of Electronic Health Record Systems among U.S. Non-Federal Acute Care Hospitals: 2008-2014." *The Office of the National Coordinator for Health Information Technology*. N.p., 15 Apr. 2015. 21 Mar. 2017.
- "Driving Business Value through Mobile in the Health Insurance Industry." *Driving Business Value through Mobile in the Health Insurance Industry - TrueVault*. N.p., n.d. Web. 21 Mar. 2017.
- "Health Information Privacy." *Hhs.gov/hipaa*. N.p., n.d. Web. 21 Mar. 2017.
- "Health Insurance Coverage and Adverse Experiences With Physician Availability: United States, 2012." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 17 Dec. 2013. Web. 21 Mar. 2017.
- "Health Insurance Plans for Individuals & Families, Employers, Medicare | UnitedHealthcare." *Plans for Individuals & Families, Employers, Medicare | UnitedHealthcare*. N.p., n.d. Web. 21 Mar. 2017.
- "Health, United States, 2015. With Special Feature on Racial and Ethnic Health Care Disparities." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, May 2016. Web. 21 Mar. 2017.

"Healthier Tomorrows Start Here." *Custom Care & Coverage Just for You - Kaiser*

Permanente. N.p., n.d. Web. 21 Mar. 2017.

"Microsoft in Health." *enterprise.microsoft.com/en-us/industries/health/* N.p., n.d. Web.

21 Mar. 2017.

"Tables of Summary Health Statistics." *Centers for Disease Control and Prevention*.

Centers for Disease Control and Prevention, 24 Jan. 2017. Web. 21 Mar. 2017.

"The Journey to Wellness Begins Here.#StartWithHealthy ." *Health Insurance, Medicare*

Insurance and Dental Insurance | Humana. N.p., n.d. Web. 21 Mar. 2017.

