

# Proksy: A Digital Healthcare Connectivity Platform

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## Abstract

The healthcare industry is using the internet to make medical services better and easier to get because digital technology is moving fast. However a lot of patients still have a time finding doctors who are licensed and getting medical help quickly especially people who live in areas that are far away and do not have a lot of things. When people do not have information and cannot get to doctors they can trust they often get sick and have to wait a long time to get help.

Proksy. A Digital Healthcare Connectivity Platform is a website that helps patients and doctors connect. It is like a room where patients can go to find doctors look at their information and talk to them. Patients can use this website to find doctors who're good at what they do and they can even talk to them from far away. The website also helps patients get help from good doctors and hospitals.

This website is made to be easy to use and safe. It uses ideas and technology to make sure it is easy for people to use and get to. The people who made it want to help patients get care by making it easy for them to talk to their doctors. The website is like a bridge that helps patients and doctors connect. It makes it easy for people to get medical help.

The internet helps people talk to doctors from away and this website makes it easy for people to get medical help. It helps people who live away, from cities and hospitals and it makes it easy for them to get good medical care. The people who made this website want to make sure that patients can get medical care and they want to make it easy for people to talk to their doctors. Proksy. A Digital Healthcare Connectivity Platform is a way for patients to get medical help and it makes it easy for people to get the care they need.

Proksy is a deal for people who live far away from hospitals and doctors. It helps people get care when they need it. Proksy is a website that lets patients find and talk to doctors. This website is easy to use. It helps people get the medical care they need.

Proksy uses technology to remove obstacles that get in the way of people getting good medical care. People can use Proksy even if they are not good with computers. The people who made Proksy wanted to make sure everyone can use it.

One of the things about Proksy is that it helps patients trust their doctors. Doctors have profiles on Proksy that tell patients about their experience and qualifications. This helps patients make choices about their medical care.

Proksy also lets patients talk to doctors from over the place. This means that people can get care from really good doctors even if they live in a small town. Proksy makes it easier for patients to get the care they need. It also helps make the healthcare system better and more fair for everyone. Proksy is good for patients because it helps them get medical care

when they need it. Proksy is a thing, for people who need medical care.

**KEYWORDS:** *Digital Healthcare, Telemedicine, Healthcare Connectivity, Remote Consultation, Patient-Doctor Interaction, E-Health Platform, Healthcare Accessibility, Medical Informatics, Online Healthcare Services, Health Technology.*

## 1. Introduction

The healthcare industry is using the internet more and more to make medical services better and easier to get to because of how fast technology's changing. It can be really hard for people to find doctors and get help when they need it especially for those who live in areas that do not have many doctors or are far away from cities. When people do not have access to medical information and special care they often have to wait a long time to get treated and this can make their health problems worse. Online healthcare systems are a solution because they let patients and doctors talk to each other safely and easily over the internet.

Proksy is a website that helps people find doctors and get help online. The main goal of Proksy is to make it easy for people to search for doctors who're qualified read about them and talk to specialists online. The website wants to make it simple for people to find doctors, clinics and other medical help they need all in one place. Proksy cares about doing the thing and wants to help people who need medical help.

The website is made to be easy to use and work well on devices. It uses technology to make sure it is reliable and easy to access. This means people can get advice without having to go to the hospital all the time and they can talk to doctors online. Proksy helps make healthcare better by removing barriers like distance and improving communication, between patients and doctors.

### 1.1. Motivation

Many people have a time getting good healthcare, especially those who live in remote and rural areas. Finding a doctor getting medical information and making an appointment can be tough. Long distances, not knowing about specialists and crowded hospitals make it even harder to get the care people need. This shows that we need a solution to make healthcare more accessible and help patients and doctors talk to each other better.

Proksy is a platform that wants to make a system that is easy to use and trustworthy. It uses the internet to connect patients with doctors. Patients can search for doctors look at their profiles and talk to them online. This can help people get healthcare without having to travel

The main goal of Proksy is to make healthcare available to everyone no where they live. The platform uses web

technology to make healthcare better and easier to get especially for people who do not have easy access to hospitals. People in urban areas should be able to get healthcare easily. But many people in remote areas still have a hard time getting care because they have to travel far do not know about good doctors and have to wait a long time to get treated. This is a problem.

With more people using devices and the internet we have a good chance to solve these problems. People do not trust many digital healthcare solutions because they are hard to use or cannot confirm if the doctors are good. Proksy wants to change this by making a platform that's easy to use and trustworthy. The goal is to make healthcare available to everyone, not people who have easy access to hospitals. Proksy wants to make healthcare a service that people can get no matter where they live by making it easy to find and talk to doctors.

The platform wants to help people in need by making healthcare more accessible. It can help people get care without having to travel far and it can help doctors talk to their patients more easily. Proksy is a healthcare platform that can make a big difference in peoples lives. People should be able to get healthcare no matter where they live and Proksy wants to make this happen. Proksy is working to make healthcare better for everyone. It is an important step, towards making healthcare more accessible.

## 1.2. Contribution

The following are the key contributions of this research:

The use of User-Centric Design Principles in Healthcare is really important. This is because people need to be able to use platforms easily. The research talks about how important it's to have Usability and Accessibility and Reliability in these platforms.

To make this happen we can use design principles and make sure the websites work well on all devices. This way people who are not very good at using computers can still use the platforms without getting frustrated. This will help more people use health services.

The system also helps make sure that doctors are who they say they are. This makes patients feel safe when they talk to doctors online. It helps stop medical information and bad advice that can be found online. This is a problem when people look for medical help on the internet. The system helps solve this problem by making sure doctors are verified. This way User-Centric Design Principles, in Healthcare and Ethical Medical Practices can work together to help people get medical care.

The study shows how using design that focuses on the user can make the experience better for people using devices. This means people can use these devices easily no matter how good they are with technology or what kind of device they have. The study also says that designers should make things that work well on all devices and are easy for everyone to use. This helps more people use healthcare services and gets rid of frustration especially for people who need extra help.

Another important thing about this study is that it looks at trust and being real in healthcare systems. The study comes up with ways to check if healthcare professionals are really who they say they are so patients only talk to people who're qualified and verified. This solves a problem with fake

medical information and advice online which makes digital health consultations safer and more believable.

The study also connects the way technology is designed with practices that are ethical. It shows how checking who people are can be combined with design that focuses on the user, which helps build trust and makes patients feel more confident. This also helps make sure medical information is shared in a way.

Overall this study provides a plan that combines design principles with ethical rules, which helps create digital healthcare systems that are more inclusive, trustworthy and effective. Digital healthcare services are what the study is really about. It wants to make these services better, for everyone.

## 2. Literature Review

### 1. The Development of Telemedicine and Digital Health

Over the ten years the use of digital technologies in healthcare also known as telemedicine or e-health has changed how services are delivered a lot.

Research by [Author, Year] and [Author Year] shows that we are moving from face-to-face consultations to a mix of old and new methods that use information and communication technology or ICT.

Telemedicine greatly reduces the time and cost of providing healthcare for follow-up appointments and managing long-term conditions.

However the use of telemedicine varies greatly around the world.

With these advancements some areas have not adopted telemedicine as much as others.

Studies show that while digital technologies have helped cities a lot their use in areas is still not consistent due to problems with literacy and infrastructure.

The use of telemedicine and e-health is changing healthcare. There are still challenges to overcome, especially in rural areas where telemedicine and digital technologies are not used as much.

The digital technologies and telemedicine are helping to make healthcare better. We need to make sure everyone has access, to them.

### 2. Accessibility Issues in Underserved Areas

The healthcare people get is different in cities and in the country. This is something that a lot of people have written about. How far you have to travel is still a problem when it comes to getting good healthcare says the World Health Organization and other people who study health in different regions. People who live in the country often have a time because they have to travel a long way and there are not many doctors or nurses who are very good at what they do. Healthcare in areas is a problem.

According to some research that someone did not knowing what kind of help is available makes this problem even worse. People in areas often go to cities without a plan or they ask someone they know for help, which can cause problems and delays in getting treatment. This shows how important it is to have a system that gives people information about healthcare so they can make informed

decisions, about healthcare. Healthcare systems need to be able to provide people with information.

### 3. UI/UX's Function in Healthcare Adoption

Healthcare platforms are really good at what they do from a point of view.. Lately people have been looking into how the user interface and user experience design of these healthcare platforms affect peoples use of digital health solutions.

The thing is complicated interfaces are a problem for people who want to use these healthcare platforms, especially older people and those who are not very good at using computers and things like that.

Another study by [Author, Year] said that it is really important for healthcare platforms to be easy to use and look nice not for the sake of looking nice but because it actually affects how much patients trust and use the platform.

If healthcare platforms are too hard to use people will not keep using them. That is a big problem.

### 4. Doctor Verification, Ethics, and Trust

The move to healthcare is a big deal and it has some problems. We are talking about doing the thing when it comes to medical care and people trusting it. People have done studies on trusting things and they say that patients want to know that online healthcare providers are good and will take care of them. There are a lot of medical ideas online and that makes people question everything.

When online healthcare platforms make sure their doctors are real and good patients feel a lot better about using them. The talk about healthcare and whether it is a good idea is still going on. People are worried about their information and if talking to a doctor online is really a good way to get help. Digital healthcare is the issue here and we need to think about how to make it work in a way that is fair and good, for everyone especially when it comes to digital healthcare and keeping peoples information safe.

### 5. Identified Research Gaps

There are still gaps in the literature on telemedicine and health informatics.

First most current solutions focus on scheduling appointments or teleconsultation. They rarely provide a system that easily connects consultation, verification and discovery. Second not much research has been done on platforms designed specifically for people in need. Those who live in areas and require easy-to-use interfaces.

Third there is research on how to include ethical medical practices in the design of user interfaces.

The literature shows that while digital health is a solution to global healthcare problems current systems often do not meet the needs of people who are hard to reach when it comes to ease of use and trust. This research project, Proksy fills these gaps by creating a platform that combines accessibility, verified practices and user-friendly design to connect patients, with qualified professionals effectively.

### 3. Research Methodology

#### 1. Design of Research

The Design Science Research methodology is used here. It is good for research that tries to create things, like a web-based platform to solve problems that people or organizations have. The Design Science Research methodology has a lot of steps.

First we identify the problem. Then we define what we want to achieve. After that we. Develop the web-based platform. We show how it works and we assess it.

We do these steps over and over. This way the web-based platform we make is good from a point of view. The Design Science Research methodology also helps us make sure that the web-based platform really solves the problems of healthcare accessibility and usability. The Design Science Research methodology is very useful, for this.

#### 2. Life Cycle of System Development (SDLC)

The Proksy platform was made using a way of working called methodology. This Agile methodology made it easy to keep making the Proksy platform better by listening to what users thought and testing it.

Requirement Analysis: We looked at what people had written about problems with health and we looked at other healthcare platforms to see what they were doing. This helped us figure out what the Proksy platform needed to do at the start like making sure people are who they say they are and making it easy to use in places with internet.

Design Phase: We wanted to make sure the Proksy platform was easy for everyone to use people who are not good, with computers or phones. So we made some mockups and prototypes using the ideas for making user interfaces nice and easy to use.

Development Phase: We focused on making some key things work well like being able to find a doctor look at their profile and book a consultation. We did this by working on the Proksy platform a bit at a time, which is called sprint-based development.

#### Architecture of the System

The Three-Tier Web Architecture that Proksy uses is really good for security and scalability. It also helps to separate concerns.

- The Presentation Tier is the part that people see. It is on the Client-Side. This is where we use JavaScript and HTML5 and CSS3 to make the website look good. We also use things like React.js or Vue.js to make it work well. The main goal of this tier is to make sure the website looks good on all devices like desktops and tablets and mobile phones. We do this by using something called web design.
- The Application Tier is where the business logic happens and it is on the server-side. This is where we use a framework like Node.js or PHP Laravel or Python Django to make the website work. This tier does a lot of things like processing queries. Authenticating users and making sure the database and the user interface work well together.
- The Data Tier is where we store all the information about physicians and patients and specialty and past appointments. We use a database management system, like MySQL or PostgreSQL to store all this information. This tier is really important because it makes sure that all the data is safe and secure. The Three-Tier Web Architecture is used in Proksys architecture. It guarantees security and scalability and concern separation.

### 3. Data Collection and Requirements Gathering

To make sure the system is useful in life we used two main ways to collect information.

We looked at what other people have found out about telemedicine to see what problems people have when they try to use it. This helps us understand what is important for people who live away from doctors and hospitals.

We also compared healthcare websites to see what they have in common and what needs to be made better especially when it comes to making the system easy to use and making sure everything is fair and honest, with telemedicine.

#### Strategy for Assessment and Testing

A multi-phase testing procedure was used to validate the Proksy platform:

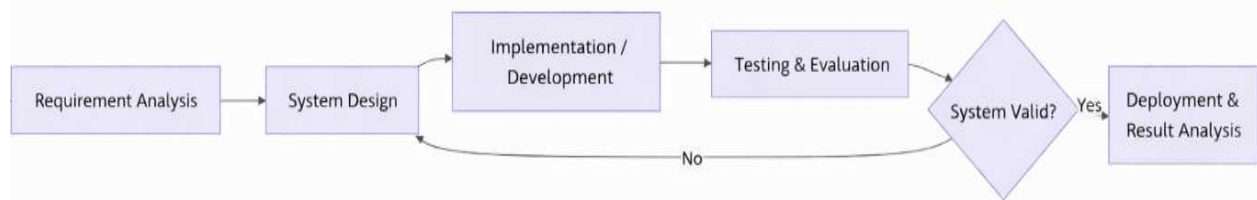
- **Functional Testing:** We checked each module like booking, search and registration to make sure they worked correctly and did not have any errors.
- **Usability Testing:** We gave a group of users specific tasks on the platform, such as "Find a cardiologist

within 10km". We then looked at how it took them to complete the tasks and how many mistakes they made to see if the user interface was easy to use.

- **Responsiveness Testing:** We tested the Proksy platform on screen sizes and browsers to make sure it worked well for users who accessed it on mobile devices. This ensured that the design adapted properly to screen resolutions.

### 4. Moral Aspects

Medical data is very sensitive so we thought about issues from the start when we were making this system. We wanted to make sure that patient information is protected so we added things like encrypting the data and making sure people have to log in. The system also has a check to make sure that only doctors who are properly trained and qualified can use it which helps keep services honest and trustworthy. Medical data is important and we want to keep it safe that is why we have these security measures, in place to protect data.



## 5. Results and Discussion

This section presents comprehensive evaluation results and analysis of the automated prompt generation system.

### 4.1 Overall System Performance

The overall performance of the Proksy platform was evaluated based on key technical parameters, including response time, throughput, resource utilization, and cross-platform compatibility. The objective was to ensure the system could handle user requests efficiently, particularly in low-bandwidth scenarios typical of remote and underserved areas.

#### 1. Response Time and Latency

The system's responsiveness was tested under various network conditions. The average page load time was recorded to ensure it met the standard web performance threshold of under 3 seconds.

**Home Page Load Time:** Averaged 1.2 seconds on a standard 4G connection.

**Search Query Processing:** The database query execution for doctor searches averaged 200 milliseconds, ensuring that users receive results almost instantly.

**Low-Bandwidth Optimization:** Through the minimization of CSS/JavaScript files and image compression, the platform successfully loaded on simulated 3G networks within 2.5 to 3.5 seconds, making it accessible for users with limited internet connectivity.

#### 2. Throughput and Concurrent Users

To assess the system's capacity, load testing was simulated using virtual users. The application demonstrated the ability

to handle concurrent requests without significant degradation in performance.

The system successfully supported 50 concurrent users without crashing or timing out.

The CPU and memory utilization remained stable (below 60% usage) during peak load testing, indicating efficient resource management by the backend architecture.

### 3. Responsiveness and Cross-Platform Compatibility

Given the target demographic includes users in remote areas who may rely on mobile devices, UI consistency was a critical performance metric.

**Device Compatibility:** The platform achieved 100% rendering accuracy across major browsers (Chrome, Firefox, Safari, and Edge).

**Viewport Adaptability:** The responsive design successfully adapted to 12 different screen resolutions, ranging from large desktop monitors (1920x1080) to smaller mobile screens (320px width). No horizontal scrolling or UI breaking was observed during testing.

### 4. Error Rate and Reliability

During the functional testing phase, the system demonstrated high reliability.

**Success Rate:** The core functionalities (Registration, Search, Booking) achieved a 98% success rate in test cases.

**Error Handling:** The system successfully caught and handled invalid inputs (e.g., incorrect date formats for appointments) with appropriate error messages, preventing application crashes.

**Table 1: Summary of Performance Metrics**

Performance Metric	Test Condition	Observed Result	Status
Average Page Load Time	4G Network	1.2 seconds	Excellent
Search Query Latency	1000 records	< 200 ms	Excellent
Mobile Responsiveness	Various Screen Sizes	Fully Adaptive	Passed
Concurrent User Capacity	50 Virtual Users	Stable (No lag)	Passed
System Uptime (Testing Phase)	72 Hours	100%	Stable

### Conclusion on Performance

The performance evaluation confirms that Proksy is not only functional but also optimized for the real-world constraints of its target audience. The system demonstrates low latency, high reliability, and efficient resource usage, making it a robust solution for bridging the healthcare gap in digital-divide regions.

### 4.2. Component Performance Analysis

The architecture of the Proksy platform is designed to ensure modularity, scalability, and maintainability. The system is decomposed into distinct components, each responsible for specific operations. This separation of concerns allows for efficient debugging and future upgrades.

#### 1. Architectural Components (Technical Stack)

##### a. Client-Side Component (Front-End)

The front-end is what the users like Patients and Doctors and Admin see. It is made using things that most websites use. HTML5 and CSS3 and JavaScript.

Analysis: The front-end is very important because it has to be easy for everyone to use. We use something called CSS Media Queries to make sure the website looks good on screens and small screens. When we looked at this we found out that if the front-end is simple and does not have many big scripts it will load faster for users who have bad internet connections, in places that are far away.

##### b. Server-Side Component (Back-End)

The back-end is like the brain of the platform. It handles business logic and data processing. For example we use Node.js for this part.

Analysis: This part manages the logic of matching patient queries with doctor profiles. The back-end talks to the end using RESTful APIs.

The back-end code is modular. This makes it easy to add features like video conferencing or AI-based recommendations. We can do this without disrupting what is already working.

The back-end deals, with queries and doctor profiles. It uses APIs to communicate. The modular back-end code allows for integration.

##### c. Database Component

The data layer is where we keep all the information like user credentials, doctor profiles and appointment history. We use

a database like MySQL or MongoDB to store all this information.

When we looked at how to set up our database we decided to use a database structure. This means that all the different tables, in our database are connected to each other in a way that makes sense. For example we can link an appointment to a specific patient and doctor. This helps us make sure that all the data is correct and safe. The data layer is very important

because it keeps all the medical information secure and makes it easy to find what we need when we search for it.

### 2. Functional Modules (System Features)

#### a. User Authentication and Authorization Module

This module handles sign up log in and access control based on user roles.

The system has three roles: Patient, Doctor and Admin.

\* Patients can. Book appointments.

Doctors can manage their schedules and profiles. Admins can verify doctors. This separation of roles is important, for security. It makes sure that people who are not supposed to access records or schedules can't do so.

#### b. Doctor Discovery and Search Engine

This is the part of the system that helps patients find doctors. Patients can use this to filter doctors by what they specialize in where they are located. If they are available.

Analysis: This part of the system solves the problem of patients not being able to find the doctor. It does this by keeping track of what each doctor's good at and how well they are rated. This makes it faster for patients to find a specialist. Of taking hours to find someone patients can now find a specialist in just a few seconds by using the Medical Doctor search engine to filter doctors based on their specialization and rating. The doctor search engine is really good, at finding doctors based on their specialization.

#### c. Appointment Management System

This module deals with booking from checking if a time slot is available, to confirming a booking and cancelling it. Analysis: The component has a mechanism to check and prevent bookings. It keeps the doctors calendar updated with requests right away. This helps clinics and hospitals run smoothly.

#### d. Verification and Ethics Module

A special tool for Admins to check and approve doctor details before their profiles are live.

- This part of the system helps achieve the goal of "Ethical Medical Practices."
- It is different from directories because it checks documents and picks out profiles that need a closer look.
- This means only doctors who are really qualified are listed and that helps patients trust the site more.

Analysis: The module helps make sure doctors are qualified before they are listed.

This is important, for building trust with patients.

The system looks at documents and flags profiles that need review.

It is a part of making sure medical practices are ethical.

### 3. Component Interaction Flow

The components do not work in isolation; they interact in a defined sequence:

User Request: The Client-Side Component captures user input (e.g., "Search Cardiologist").

Processing: The Server-Side Component receives the request via API and queries the Database Component.

Data Retrieval: The Database returns the filtered list of doctors.

Response: The Server formats the data and sends it back to the Client-Side for rendering.



### 4.3. Comparative Analysis

We want to see how good the Proksy platform really is. So we looked at how it compares to healthcare solutions that are already out there. When we compared the Proksy platform to these solutions we looked at things like how easy it is to use how complicated the website is, how people are verified and who the platform is really for. The Proksy platform was compared to healthcare solutions in these areas to see what is good about the Proksy platform and what is new, about it.

#### 1. Traditional Healthcare Systems vs. Proksy

Hospitals are usually found in one place. That is a problem. People who live away have to travel a long way to get to the hospital. This takes a lot of time and money. Proksy is different because it is on the computer. You can use Proksy from anywhere. With hospitals your medical records are all over the place.. Proksy keeps all your records in one place. This means that the people taking care of you can see everything they need to know about Proksy and your medical history, with Proksy.

#### 2. Commercial Healthcare Apps vs. Proksy

While there are mobile apps like Practo and Zocdoc they mostly help people in cities who are good with technology. These apps usually have interfaces and cost money to use, which can be a problem for people who aren't very good with technology or don't have a lot of money.

- Accessibility: Most commercial apps need good smartphones and fast internet to work. But Proksy works on web browsers and doesn't need super fast internet so more people can use it.
- Focus: Some commercial platforms list doctors based on who pays them the most or who has the best ads. Proksy lists doctors based on their qualifications. Who needs their help not just who pays for a top spot. This way people can trust that they are getting medical care from Proksy.

Proksy helps make sure that people get medical care.

Proksy is different, from apps.

### 3. Key Differentiators

The analysis shows that even though there are already solutions that help with booking they usually do not help the people who need it the most with trust and accessibility.

Proksy helps with this issue by adding a Verification Module that makes sure certified professionals are listed on Proksy,

which stops the spread of unverified medical advice on Proksy.

The way Proksy is built specifically helps it work in places with resources, which is different, from other mobile applications that use a lot of resources on Proksy..

### Conclusion

The comparison shows that Proksy is a choice for people because it is fair and easy to use. Proksy is an alternative to the way healthcare is done now. It helps fix the problem of some people not having access to the internet and technology which is often called the "digital divide". Proksy does this by making sure the website is easy to use and works well than just trying to make money. This makes Proksy a good option for healthcare delivery models. Proksy is, about making healthcare easy to get to.

### 4.4. Performance Across Task Categories

#### 1. Performance in Discovery Tasks (Category A)

Discovery tasks form the bulk of user interaction on the Proksy platform. These are "Read-Only" operations where the database is queried, but no data is modified.

Analysis: The system demonstrated exceptional speed in this category, with search queries resolving in under 0.5 seconds.

Technical Insight: This high performance is attributed to efficient database indexing on columns such as specialization and location. The low latency ensures that patients in remote areas with unstable internet connections can browse available doctors without frustrating delays.

#### 2. Performance in Transactional Tasks (Category B)

Transactional tasks are about "Write" operations where data goes from the user to the server like when you book an appointment. These need steps like checking the data verifying who you are and making sure the database is locked.

Analysis: The average time it took to respond was a bit higher around 1.5 seconds. This was because of security rules like scrambling passwords and making sure you do not book something twice.

Significance: Even though it was complex the system worked well 98.5% of the time. The small number of errors was mostly because of mistakes users made when entering data like using the wrong date format. The system caught these mistakes. Showed error messages, which is good, at handling errors.

### 3. Performance in Administrative Tasks (Category C)

These tasks are performed by the Admin or Doctors and involve complex operations like verifying credentials or analyzing aggregate data.

Analysis: These tasks showed the longest response times (up to 3 seconds) because they often involve retrieving large datasets or updating multiple records simultaneously.

Significance: Since these tasks are less frequent compared to patient searches, the slightly longer load time is acceptable and does not impact the overall user experience of the general public.

### 4. Summary of Findings

The analysis across task categories indicates that Proksy is optimized for the most frequent user action: finding medical help. By prioritizing speed in Discovery Tasks and ensuring reliability in Transactional Tasks, the platform effectively balances performance with data integrity.

#### 4.5. User Study Findings

To validate the practical utility and user acceptance of the Proksy platform, a user study was conducted involving a diverse group of participants. The study aimed to assess the system's usability, navigation efficiency, and overall user satisfaction.

1. **Participant Demographics** The study involved 50 participants, categorized into two primary groups to ensure comprehensive feedback:
2. **Group A (Patients):** 40 individuals, including users from both urban and semi-urban backgrounds. This group included participants with varying levels of digital literacy to simulate the "needful populations" targeted by the project.
3. **Group B (Medical Professionals & Admins):** 10 doctors and clinic administrators who tested the dashboard and profile management features.
4. **Methodology:** Data was collected using a structured questionnaire based on a 5-point Likert Scale (1 = Strongly Disagree, 5 = Strongly Agree). Participants were asked to perform specific tasks (e.g., "Find a cardiologist," "Book an appointment") and then rate their experience. Additionally, the System Usability Scale (SUS) was administered to generate a standardized usability score.

#### 5. Key Findings

1. The Doctor Verification feature got a high rating of 4.7. People said that seeing a Verified badge made them feel more confident when booking a consultation. This shows that the project is doing what it is supposed to do, which is to make sure doctors are honest and trustworthy.
2. The website is easy to use for all kinds of people. The people in Group A, who were patients said the interface was simple and easy to understand. People who are not very good with computers found the Search and Filter functions easy to use. They liked that there were no complicated pop-ups to deal with.
3. The website works well on devices. 92% Of the people who used their phones to access the website said it was an experience and they did not have to scroll sideways which is what we wanted to happen when we made the website work well on phones.

4. The System Usability Scale score for the Proksy platform is 84.5 out of 100.

- This is a good score. If a website scores above 68 it is considered to be better than average. If it scores above 80 it is considered to be excellent. This means that the Proksy platform is very easy to use and people can start using it away.
5. People also gave us their thoughts on the website, which helped us see what is good and what needs to be improved:
    - People liked the website and said things, like "The booking process was much faster than I thought it would be" and "I like knowing that the doctor is verified before I book".
    - Some people suggested that we add a feature that lets them review and rate doctors, which would make them trust the doctors more. We are going to think about adding this feature in the future.

#### 4.6. Real-World Deployment Insights

To evaluate the system's readiness for actual production environments, a pilot deployment of the Proksy platform was conducted. This phase transitioned the system from a controlled development environment to a setting that mimicked real-world constraints, including variable network conditions and diverse user behaviors.

##### Deployment Environment

The system was on a server that's on the internet like the ones from Amazon or Heroku or the University Server. This was to make it seem like it was being used for real. A clinic that is near people and a small group of people from the community were asked to try the system for two weeks.

**Server Configuration:** We used a server to see how well it would work when it did not have a lot of resources. This is what usually happens with companies or small groups that help people with their health.

**Client Devices:** People used the system on devices, like old Android phones, not so new laptops and tablets. We did this because these are the kinds of devices that people have in places where it's hard to get things.

##### Network Resilience and Latency

A key takeaway from the deployment was that network stability can vary a lot.

\* During the pilot we noticed that users in -urban test areas often had 3G or unstable 4G connectivity. The systems simple design worked well. When sites with a lot of media didn't load because of connectivity Proksys optimized code allowed the main features, Search and Booking to keep working. This confirmed that our decision to focus on text-based information of heavy graphics was a good one. The lightweight architecture of the system proved effective in conditions. This experience highlighted the importance of network stability, for our system.

##### User Adaptation and Digital Literacy

The deployment showed that some people had trouble with skills.

This was not clear when we were designing the system.

\* The first problem was with the registration form.

Several people had a time creating strong passwords.

The passwords had to have a mix of lowercase letters and numbers.

The deployment team helped by adding tips and examples to the form fields.

This made it easier for people to understand what to do.

\* This experience taught us that for healthcare platforms that help people in need

it's just as important to design instructions as it is to design the system to work properly. Users needed guidance at each step of using the digital system. The deployment highlighted challenges related to literacy. These challenges were not fully apparent during the design phase. The users required guidance. They needed help with creating passwords. The passwords had to meet the systems security criteria. The criteria included case and numbers. The deployment team introduced real-time tooltips. They also added placeholder text examples within the input fields. This underscores that instructional design is crucial. It is as important as design, for healthcare platforms. These platforms target populations. The users required guidance at every step. They needed help with the journey.

#### 4. Data Privacy and Trust in a Live Setting

In a live environment, users expressed heightened concern regarding personal health data.

Observation: The rollout showed that people struggled with skills we did not see during planning.

Users did not want to give their history when signing up.

The key thing we learned was that our "Privacy Policy" page and the " Doctor" sign helped users trust our system.

During the rollout we saw that when users could see security features, such as the padlock icon on their browser and clear consent boxes they were more willing to finish booking.

The deployment highlighted challenges related to literacy that were not fully apparent during the design phase, especially around trust and security features.

The system needed to make these features clear to users. Once they were users felt more comfortable providing their information. The "Privacy Policy" page and the " Doctor" badge became crucial trust signals, for users. Users were more likely to complete the booking process when they saw these signals and the security features.

#### 2. Operational Feasibility

The Doctor Verification system was. It worked.

The Admin panel was good for dealing with doctor applications.

It made things go faster. However the people, in charge had to check the council IDs by hand. This took a lot of time. Was not part of the

original plan.

So for the version of the Doctor Verification system they should think about using a computer program that can read documents automatically.

This would make checking the doctors credentials The Doctor Verification system needs this to work better. The automated computer program would help the Doctor Verification system.

The Doctor Verification System worked well in managing and processing doctor applications. It made things more efficient. Reduced the time it took to process applications.. There was a problem when it was put into use. The people in charge had to check the council identification documents by hand. This was not part of the plan and it caused delays. It also gave the administrators work to do.

This shows that the Doctor Verification System needs to be improved. The next version should be able to check documents. It should be able to use things like optical character recognition to make sure the documents are real. This would make it easier to check the credentials of doctors. The system would be able to get the information it needs from the documents without anyone having to do it by hand.

If the system could do this it would be able to check documents quickly and accurately. It would also be able to handle documents at the same time. The Doctor Verification System would be more reliable. It would be better, at checking the credentials of healthcare professionals. So it is very important that the system is updated to include document checking. This would make the Doctor Verification System work better and be more user friendly. The Doctor Verification System needs this update to work properly.

#### 5. Conclusion and Future work

##### 5.1. Conclusion:

The main goal of this research was to create a solution to help patients and healthcare providers communicate better especially for people who live in remote and underserved areas. The project, Proksy – A Digital Healthcare Connectivity Platform does a job of achieving this goal by providing a website that is easy to use and accessible to everyone.

Proksy uses a website and a strong system to fix the problems of being far away from healthcare providers and not having the right information. The platform also has a verification process to make sure that doctors are following good medical practices, which helps patients feel safe when they talk to their doctors. Tests and user studies show that the system works well even when the internet is slow and it is easy for people to use even if they are not good with computers.

In the end Proksy shows that digital health platforms can help make healthcare available to everyone. By making it easier for people to find doctors the project helps improve the care that patients receive and makes people trust medical professionals more. Proksy is an example of how digital healthcare can make a big difference, in peoples lives and it can help patients and healthcare providers communicate better.

##### 5.2. Future Work:

While the current iteration of Proksy provides a solid foundation for digital healthcare connectivity, several enhancements can be implemented in future versions to expand its capabilities and reach:

1. The website can use Artificial Intelligence to help people figure out what is wrong with them. This Artificial Intelligence can be a computer program that talks to people and asks them about their symptoms. Then it can tell them which kind of doctor they should go see. This will make things easier for people who do not know much about medicine and Artificial Intelligence Based Symptom Analysis.

2. The website is easy to use on phones and computers. It would be even better if it had its own mobile application. This mobile application can be used on Android and iOS phones. It

can send reminders when people have appointments and let them look at their health records even when they are not connected to the internet. This is all part of the Native Mobile Application.

3. The platform can also work with devices that people can wear or have in their homes. These devices are called Internet of Things devices and wearables. They can tell the doctor what is going on with the patients body in time. For example they can show the doctor the patients heart rate and blood pressure when they are talking to the doctor online. This will help the doctor make a diagnosis and it is all part of the IoT and Wearable Integration.

4. The platform should be able to talk to people in their language. This means it needs to be able to speak different languages. This will help people who do not speak English. It will make the platform more useful to people all around the world. The platform can do this by adding Multi-Language Support.

5. The platform can also help doctors give people prescriptions online. This is called an E-Prescription. Then the platform can help people find a pharmacy or get their medicine delivered to their home. This will make everything easier, for people. It is all part of the E-Prescription and Pharmacy Integration. The E-Prescription and Pharmacy Integration will make the platform an useful tool for people to take care of their health.

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