

Mini Project 4 Proposal

1. Organisation Overview

This is a proposal to build a patient booking system for a GP's office. As a business they are publically funded healthcare for the general public under the NHS. This means that they are accessible to any uk citizen. They provide free doctor appointments, this can involve writing prescriptions, conducting examinations, referring patients to specialists, sending patients for tests etc.

They are looking for an easy to use booking system to manage the booking and processing of patient appointments to reduce stress and ensure a seamless and fast experience for patients and staff. This is important to ensure that people are booking appointments when they actually need them and not treat it as a chore to put off until the problem is a lot bigger. Patients going to the doctor when symptoms aren't unbearable can help catch deadly diseases (eg. cancer) earlier and therefore making it more likely to cure/ treat to a liveable standard.

2. Problem Overview

The problem the gp is currently facing is an inefficient way to book appointments, All patients wanting to book an appointment currently have to call the GP's office and book an appointment over the phone. This can cause many problems for both the Gp's office and patients looking to book appointments.

GP's

- phone lines are being clogged up by patients looking to book appointments at the same time which can prevent important phone calls from reaching the gp in a reasonable time frame. This could cause major disturbance to the Gp office and peoples health.
- Receptionists are being overworked answering the phone causing stress and preventing over important admin tasks from being completed
- With the current system, patients are waiting and putting off going to the doctors which means when they eventually come in conditions are more severe and take longer and more of limited NHS funding to complete treatment

Patients

- The current system is inaccessible to those with hearing difficulties, those who have anxiety (especially with phone calls), those with speaking difficulties etc from being able to book a doctors appointment.
- Patients are choosing to not go to the doctors when they have potentially serious medical concerns that are in need of treatment
- It is hard to get a doctors appointment which means that people may have to wait in pain and makes booking essential medical care a chore to do. This goes back to the last point of people not going to see a doctor until it's too late and catching a serious medical issue until it's too late.

3. User Groups

There are multiple different user groups for a GP's office since they handle people's medical care from birth till death. There are also users other than patients like staff who will be most likely using and checking the system daily.

Splitting the staff and patients into 2 different user groups is important as their experience using the system will be very different to each other.

Staff

- Most Likely using the system daily. Needs to have a good ease of use to prevent frustration but doesn't have to be as easy to use as the patient side as staff will be using the system daily so will learn the ins and outs of it fairly quickly.
- Staff in a doctor's office will most likely have access to computers as there tends to be computers in the reception and each doctor office has one. This means for the staff side of the system will be best off being computer based. This also to ensure that private data is not casually being carried around and potentially left open.

Patients

- patients will need ease of use as there will be a lot of different age groups including the elderly who may not be as digitally literate as other younger users may be.
- Systems need to be accessible for those with limited sight, limited mobility (not being able to click small buttons). Making sure you are following WCAG and legislation for accessibility will ensure that all accessibility requirements are met and are following the regulations in place for accessibility.
- System will need fast loading times to prevent user frustration and accidental bookings. There will also need to still be alternatives like phone calls and in person bookings for people who don't have access to digital technologies or those who can't use them for whatever reason.
- System accessibility is important so people know it exists and can easily access it. To achieve this it would be better to make it mobile first since most people (especially in the UK) have access to a smart phone rather than computers. With a system that will require logging in deploying it as an app rather than a webpage with can mean that people won't have to login repeatedly can help

Vulnerable Patients

- Vulnerable patients like children, disabled people and elderly people may have to have their appointments booked for them and or struggle to do it themselves. This means that another person (eg a parent, carer etc) will be handling their sensitive medical data. This needs to be properly authorised and handled to the law to protect vulnerable patients from medical neglect and abuse.

4. Empathy maps

someone trying to book a doctors appointment for something seemingly minor

says	thinks
I'm not sure if I'm gonna book it because its not that bad I'm gonna be on the phone all afternoon I'm sure its nothing	I don't want to call up because of the waiting times. I don't think I will get an appointment when I can get to it. The way the NHS works is infuriating Is this worth booking an appointment for this?
does	feels
Doesn't book the appointment If they book the appointment, left unhappy with results books a time that doesn't work for them puts off booking the appointment until it becomes more serious	Stressed frustrated anxious tired

Staff having to book all the appointments over phone

says	thinks
Is it urgent? We don't have enough staff to help book all these appointments, its all on me	There are so many people waiting on the phone there aren't enough doctors to keep up with the demand of patients The current system is too complicated, I don't know where anything is. I need to find appropriate times for my patients
does	feels
Snap at patients unable to book all the appointments at a good time	Stressed overworked underpaid exhausted

An autistic patient trying to book a doctors appointment

says	thinks
I don't think its that bad I'm fine Theres nothing wrong with me I'll sort it out later	I can't do this Answering the phone is too much for me to do I think I will be ok without the doctor I want to be independant

does	feels
Doesn't go to the doctors can't mentally answer to the phone can't book a doctors appointment independently	Nervous anxious destressed upset

5. User Stories

As a/an (role)	receptionist
I want (goal)	To allow patients to easily be booked in for a doctors appointment
So that (benefit)	They can get the care they need and less work for me
Acceptance Criteria (conditions of satisfaction)	
<ul style="list-style-type: none"> - users can easily and independently book themselves in for a doctors appointment - receptionist can see when appointments are booked (times) so they can still effectively book people in over the phone - automated systems to tell patients booking what times with each doctor are available to prevent double bookings 	

As a/an (role)	patient
I want (goal)	To be able to book a doctors appointment hassle free
So that (benefit)	I can go to the doctor when I am ill and receive treatment
Acceptance Criteria (conditions of satisfaction)	
<ul style="list-style-type: none"> - interface is easy to use and understand so appointments can be easily booked - see and be reminded when I have doctors appointments so I don't forget 	

As a/an (role)	Disabled patient
I want (goal)	To be able to book a doctors appointment indepently

So that (benefit)	Can do more things myself and get the care I need
Acceptance Criteria (conditions of satisfaction)	
- booking system adheres to WCAG guidelines so that the booking system is accessible to me and others - to be able to do things independently and manage the entire booking process without phone calls or methods of communication that I cannot complete independently (answering the phone, texts etc)	

6. Law/ Guidance/ Legislation

Like every other business, GP's have to follow legislation to the T. Especially since they are handling sensitive medical data and need to hold onto a lot of data to ensure that they don't cause any medical emergencies. Eg giving a patient medication they are allergic too. This means that doctors offices especially need to have strict and secure servers with good security as they would be more vulnerable to attacks trying to steal data as they are known to have a lot of sensitive data that could be used for malicious purposes eg blackmail.

Patients have the right of timely access so they need to be able to quickly have access to nhs resources which a new and better system can allow to happen. This is to ensure that patients aren't dying or having severe damage from not having access to medical care.

Equality act 2010. GP Offices needs to be accessible to patients with protected characteristics eg disability. These is not just ensuring that they have ramps, big hallways, railings etc. This stretches to the website and other booking methods so that people who use digital technologies differently, eg screen readers, eye tracking for a mouse, subtitles, colour screens/ accessibility for colour-blindness etc.

Freedom of information act means that a patient has a right to see the data on them or someone they are caring for (eg a child, disabled person etc). This is important for data protection and to ensure that all data is up to date and relevant.

7. Alternative Systems

There are multiple different systems already available on the market for doctor appointment management systems.

jotform	
What does the system do well?	Allows an easy implement system with: <ul style="list-style-type: none"> - Two-Way Calendar Sync - Payment + appointment system in one form - Automated Workflows -Multiple forms, one calendar

What does the system fail to do?	- It is only really integrated and promoted to the USA when they could promote and make it work for other countries too.
What things will you take forward to your design and why	- The simple and easy to use user interface to make it easy for users. - calendar system because its easy to use and recognise.

SimplyBook.me	
What does the system do well?	- easy to use admin side - accepts online bookings 24/7 - Marketing & sales - integrations to multiple devices - analytics
What does the system fail to do?	- have a simple, secure form - customisable interface
What things will you take forward to your design and why	- accepting bookings 24/7 - easy to use admin side

eConsult	
What does the system do well?	- nhs regulated and offers different types of booking for different appointments - used in a range of GP practices - be customisable to a gp's needs
What does the system fail to do?	- lengthy, annoying form - lack of marketing - hard to access
What things will you take forward to your design and why	- customisable to fit the needs of a gp.

8. Risks

There are many types of risks that can effect the system and that could potentially cause harm to patients.

The booking system would be handling very sensitive private data about patients and sending them into a database. It's important that when a system is built, that it is built with the proper security measures to ensure that patient data can be protected.

A malicious attack can occur from many different ways, including things like an sql injection and inserting code to access a database.

Things like that can be prevented by insuring code has proper, limited connections so that if they manage to break into the system, they can't really do anything with it as they don't have the permissions to do that, validating and or sanitising inputs to check for any malicious pieces of code or certain characters that are associated with it.

Another risk, is a change in legislation. If this occurs during the development and the system being built isn't in compliance, then this could cause problems with the development if not properly planned for.

If the plan isn't flexible then the entire system may need to rebuilt from scratch or may not feasible to continue the development of which is wasting the nhs resources taken to have the system built, and wastes the time of the developers spent making the system.

This makes the whole thing useless and doesn't solve any of the problems that the system was aiming to fix which will mean that people will continue to have these problems with the nhs, which can lead to at best people neglecting their health.

9. Decomposition

10. User Acceptance Criteria

A user will require lots of different things depending on the patient. Since this will be an NHS system, a lot of different type of people will be using it. From a basic check-up to referrals for serious medical conditions. The system will need a notable amount of different features to meet everyone's needs. A few general ones are:

- a clear nav bar and simple interface
- accessible software so that everyone can use and understand it.
- A clear and easy to use system to reduce stress
- easy access to the system so they can book the appointments
- fast loading speed to reduce frustration from user

11. Functional and Non-Functional Requirements

Functional Requirements (business needs)	Non-Functional Requirements (how the system should do things)
<ul style="list-style-type: none">- allows patients to register under the system- allow advanced booking- be able to see when bookings are	<ul style="list-style-type: none">- hash passwords using sha256- proper encryption when moving data- each page loads in 2-5 seconds at most.

- easily book appointments	Should ideally be don't in milliseconds.
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12. Key Performance Indicators

To measure the performance of the system, there are multiple ways to check the performance of the system. You could check user experience via surveys, rating systems etc. This allows users to express their opinions on the system so that it can be upgraded later on.

You could also track how long a user spends on each page and if they actually completes the form or backs out. This can help indicate how easy the form is to complete.

13. Description of Proposed Solution

For the preposed solution, I will build a system that allows a user to sign up and login to the main booking system, this will allow security because it will ensure that people can only book appointments if they have an account since they will not have access to the appointment booking system. This will reduce abuse to the system since the user details of each booked appointment will be logged with an account. This will also mean if theres a consistent amount of missed appointments then they can see which user it was.

For the booking system itself, I will build a system that will allow users to select a member of staff to see