

Assignment 2

Wednesday, 13 August 2025

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Task 1: Project Management:

Your answers to the questions below should refer to a project/research area of your choice (related to your programme of study). The task answer should be approx. 600 words with supporting visuals/chart/images and citations (approx. 5 sources).

Q1. Project Management & Planning:

- Document the **Project scope** inc. proposed **solution** to your project aim/idea/problem, the **required Technologies/resources** to be used, a **project timeline**, a **schedule & constraints**.

Project Scope: Enhancing Usability of the NHS Wales App

Aim

To improve the usability and accessibility of the NHS Wales App, ensuring it is easy to navigate, inclusive, and effective for all users—particularly patients, carers, and healthcare professionals across Wales.

Proposed Solution

- Conduct user research to identify usability challenges.
- Redesign key features (e.g. appointment booking, prescription ordering, health record access) using user-centred design principles.
- Improve accessibility for users with disabilities and those with limited digital literacy.
- Integrate feedback mechanisms to continuously refine the app experience.

Required Technologies and Resources

User Experience (UX) Tools

To conduct usability testing and interface redesign (e.g. Figma, Adobe XD).

Accessibility Testing Software

To ensure compliance with WCAG 2.1 standards (e.g. Axe, WAVE).

Databases (e.g. EventStore/Cosmos)

To gather evidence-based research on digital health usability.

Survey Platforms

To collect user feedback (e.g. Microsoft Forms) and use this feedback to make improvements.

Development Frameworks

For app updates and feature enhancements (e.g. NHS Login integration).

Stakeholder Engagement

Collaboration with Digital Health and Care Wales, GP practices, and patient groups to gather information on how they design, use and roll out the app to the patients and public in Wales. Stakeholder engagement helps organizations to proactively consider the needs and desires of anyone who has a stake in their organization, which can foster connections, trust, confidence, and buy-in for your organization's key initiatives. [1]

Project Timeline

Month 1

Planning & Research - Literature review, stakeholder interviews, database searches.

Month 2

Pilot Testing - Usability testing with small user group, feedback collection to see how users got on with the app. This is useful to find out what people liked/didn't like about the app.

Months 3–4

Month 4

Design & Development - Interface redesign, accessibility improvements, feature updates based upon the feedback received in the pilot.

Month 5

Evaluation & Refinement - Final testing, further user feedback, adjustments as per development/feedback

Month 6

Rollout & Monitoring

Launch updated app features, monitor usage and satisfaction

Schedule & Constraints

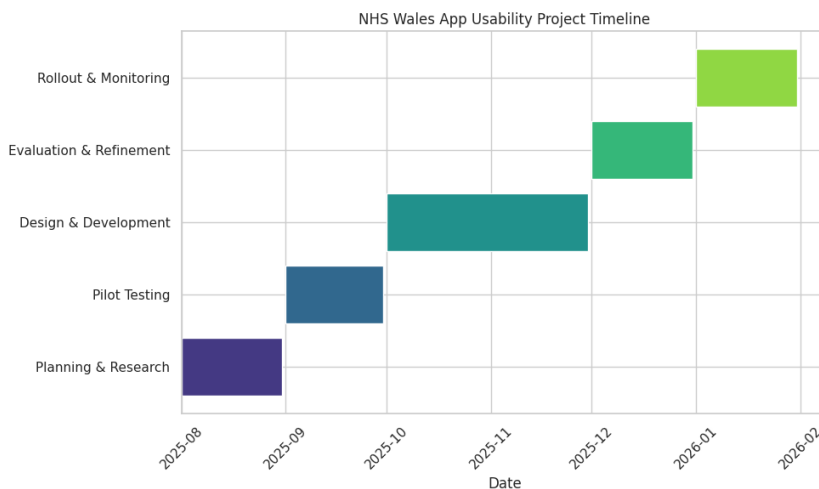
Schedule

- Weekly team meetings to review progress
- Monthly stakeholder updates
- Bi-weekly usability testing sessions

Constraints

- **Technical limitations:** Compatibility with older devices and third-party systems
- **Time:** Tight delivery deadlines aligned with NHS Wales digital strategy goals
- **Budget:** Limited funding for extended testing or external consultancy
- **User diversity:** Ensuring the app meets the needs of users with varying digital skills, languages, and accessibility requirements

- Using a software tool of your choice, create a **Gantt chart** to document your project stages.



- Document a suitable **Development method** to help you plan and complete your project.

Suitable Development Method for NHS Wales App Usability Project

To successfully plan and complete this project, the **Agile development method** is the most appropriate approach. As a staff member who is developing the app, this is the method that we currently use. Agile is a flexible, iterative process that focuses on continuous improvement, user feedback, and collaboration—making it ideal for digital health projects like the NHS Wales App.

Why Agile?

The essential benefits of an Agile solution come from a combination of how software development teams work and the

The potential benefits of an Agile solution were first explored by software development teams, who used it to turbocharge their projects and reduce the time between product launches. Now, other companies are opting for Agile to accelerate their workflows and keep up with the fast-paced future of work. [2]

- **User-Centred:** Agile allows for regular input from patients, healthcare staff, and stakeholders to ensure the app meets real-world needs.
- **Iterative Design:** Features are developed and tested in short cycles (called sprints), allowing for quick adjustments based on feedback.
- **Collaborative:** Encourages teamwork between developers, designers, and NHS partners.
- **Scalable:** Supports gradual rollout and integration with existing NHS systems.

Agile in Practice: NHS Wales App Example

In DHCW, the NHS Wales App was developed using Agile principles, including:

- A **Minimum Viable Product (MVP)** to launch core features quickly.
- **Private beta testing** with patients and GP practices to gather feedback.
- **Bilingual content design** to support Welsh and English users.
- **Security integration** with NHS Login and identity verification tools.

Agile Project Phases

Sprint Planning - Define goals and tasks for each sprint (2–4 weeks)

Development - Build and test features in short cycles

User Testing - Collect feedback from real users during each sprint

Review & Retrospective - Evaluate progress and make improvements

Final Deployment - Launch updated app features and monitor performance

Why do we need agile project management?

We need agile project management because it helps us focus on what matters. Becoming more agile through organisations and team's brings flexibility to change and allows us to deliver value often with continuous feedback.

The goal is not to 'be agile' the goal is to improve. With an incremental and iterative approach, we increase predictability and control risk. [3]

Q2. Project Design:

- Document and describe some project 'Design' work. 2 pieces required e.g. requirements specification, sketches/drawings, storyboard, wireframes, flow chart/UML diagram, ERD data structure), network structure diagram, network security architecture/diagram.

Functional Requirements

- **Secure Login:** Users must authenticate using NHS Login with identity verification.
- **Appointment Management:** Users should be able to book, view, and cancel GP appointments.
- **Prescription Requests:** Users must be able to order repeat prescriptions.
- **Health Record Access:** Users should view their medical history and test results.
- **Feedback Submission:** Users must be able to submit feedback securely within the app.

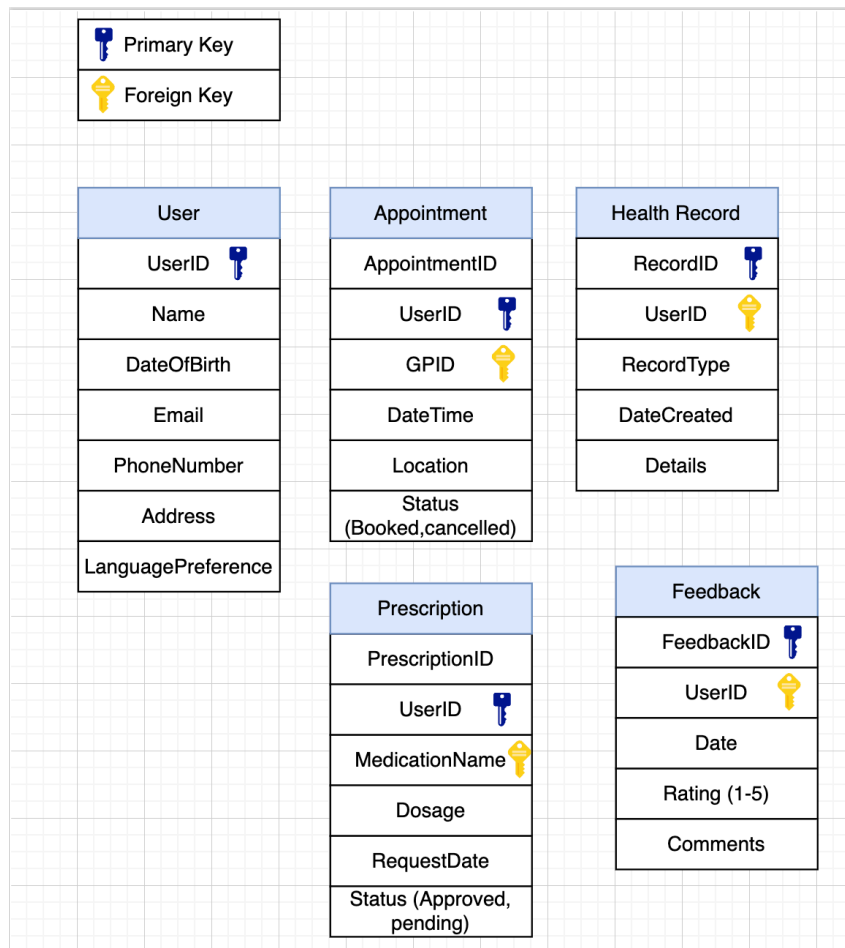
Non-Functional Requirements

- **Accessibility:** Must comply with WCAG 2.1 standards for mobile and web platforms.
- **Performance:** App should load within 3 seconds on standard mobile devices.
- **Security:** All data must be encrypted in transit and at rest; comply with GDPR and NHS Digital standards.
- **Language Support:** App must support both Welsh and English.
- **Device Compatibility:** Must work on iOS 14+ and Android 10+.

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Task 2: Enterprise & Innovation:

Your answer to the question below should relate to a project/research area of your choice. The task answer should be approx. 600 words with supporting visuals/images and several citations.

- **T2-Innovation:**
 - **Q1.** Document some key considerations from an example PEST & SWOT analysis for a Tech Company of your choice including some legal & ethical considerations.

PEST Analysis – DHCW

Political

- Support from Welsh Government for digital healthcare transformation
- Alignment with NHS policy and strategic funding priorities
- Influence of UK-wide health regulations and standards
- DHCW receives revenue funding from the Welsh Government, local health boards (LHBs) and NHS trusts to deliver services in line with the duties outlined within its Standing Orders. [4]

Economic

- Budget limitations within the public sector
- Cost-effectiveness of digital tools and long-term savings
- Investment in infrastructure and training for digital services

Social

- Growing public demand for remote and digital healthcare access
- Digital literacy gaps, especially among older and rural populations
- Need for bilingual services (Welsh and English)

Technological

- Rapid advancements in health technologies (AI, EHRs, wearables)
- Importance of system interoperability across NHS platforms
- Challenges with legacy systems and integration

Legal

- Compliance with GDPR and UK Data Protection Act
- Legal responsibility for safeguarding patient data
- Requirements for digital consent and accessibility standards

Environmental

- Reduced carbon footprint through virtual consultations
- Sustainability of digital infrastructure and energy-efficient systems

SWOT Analysis – DHCW

Strengths

- Strong government support and funding
- Centralized digital infrastructure and NHS-wide integration
- Skilled workforce in health informatics and IT

Weaknesses

- Outdated legacy systems and fragmented data
- Resistance to digital change among some staff
- Limited access to digital tools in rural or low-income areas

Opportunities

- Expansion of telehealth and remote monitoring services
- Collaboration with tech companies and academic institutions
- Development of AI-driven tools for diagnostics and triage

Threats

- Cybersecurity risks and potential data breaches
- Legal and ethical concerns around AI and automation
- Risk of digital exclusion for vulnerable populations

Q2. Related to your project idea describe the concepts, methods, practices and tools you would use to develop, deploy, maintain and evolve the practical element of your project if it was implemented within a large organisation.

Development, Deployment, Maintenance & Evolution of the NHS Wales App

Concepts

- **User-Centred Design:** Focuses on designing the app around the needs, behaviours, and feedback of patients and healthcare professionals. The user is questioned and consulted throughout the development, and evidence is gathered through questionnaires, interviews, testing and observations, and the results are used to improve the product. [5]
- **Agile Development:** Uses iterative cycles (known as sprints) to build, test, and refine features quickly and collaboratively.
- **Interoperability:** Ensures the app integrates seamlessly with NHS systems like the Welsh Clinical Portal, GP records, and prescription services.
- **Security by Design:** Embeds data protection and cybersecurity principles from the start, aligned with GDPR and NHS Digital standards.

Methods

- **Requirements Gathering:** Conduct stakeholder interviews, surveys, and workshops to define functional and non-functional requirements.
- **Prototyping and Wireframing:** Create visual layouts of app screens using tools like Figma or Adobe XD.
- **Usability Testing:** Run pilot tests with real users to identify pain points and improve accessibility.
- **Continuous Integration/Continuous Deployment (CI/CD):** Automate testing and deployment to ensure rapid and reliable updates.

Practices

- **DevOps Culture:** Encourage collaboration between development and operations teams to streamline deployment and monitoring.
- **Version Control:** Use Git for tracking changes and managing code across teams.
- **Accessibility Compliance:** Follow WCAG 2.1 standards to ensure the app is usable by people with disabilities.
- **Feedback Loops:** Implement in-app feedback tools and analytics to monitor user satisfaction and app performance.

Tools

Tool/Platform

Azure DevOps

React Native

Microsoft Power BI

NHS Login & Identity Verification Service

JIRA

Purpose

Project management, CI/CD pipelines

Cross-platform mobile app development

Data analytics and performance dashboards

Secure user authentication

Agile sprint planning and issue tracking

WAVE & Axe

Accessibility testing tools

Docker & Kubernetes

Containerization and scalable deployment

Microsoft 365 & Teams

Collaboration and documentation

Maintenance & Evolution

- **Monitoring & Analytics:** Use tools like Azure Monitor and Power BI to track app usage, errors, and performance.
- **Regular Updates:** Schedule monthly updates to fix bugs, improve features, and respond to user feedback.
- **Scalability Planning:** Prepare infrastructure to handle increased user demand and new services (e.g. hospital appointments, test results).
- **Stakeholder Engagement:** Maintain regular communication with NHS boards, patient groups, and developers to guide future improvements.

Example from DHCW Strategy

According to DHCW's Organisational Strategy 2024–2030, the app's development roadmap includes:

- Extending secure messaging and prescription features
 - Introducing hospital appointments and waiting list tracking
 - Transitioning to in-house development teams
 - Launching public promotion campaigns
- These align with DHCW's five missions, including digital transformation, innovation, and delivering high-quality services. [6]

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Task 3: Project reflection:

Produce a reflection in which you reflect on a project idea that you could take forward. Your reflection should document the following points below. The answer to this task should be approx. 600 words, with several citations.

- How you intend to use this opportunity to develop new skills?
- How could your project/new skills have a positive impact on and contribute to society?
- Identify some risks/challenges your project could face and document what you can do to reduce/remove them.

Reflective Statement: Enhancing Usability of the NHS Wales App

Embarking on a project to improve the usability of the NHS Wales App presents a valuable opportunity for both personal development and societal contribution. As digital health continues to evolve, this initiative allows me to engage with real-world challenges in healthcare technology while building a skillset that is increasingly in demand across the sector.

Developing New Skills

Through this project, I aim to develop a range of technical and professional skills. These include user-centred design, accessibility testing, agile development, and data privacy compliance. I will also gain experience in using tools such as Figma for wireframing, Azure DevOps for deployment, and NHS Login for secure authentication. According to Health Education England, digital transformation in healthcare requires a workforce that is technically enabled and digitally skilled [7]. By engaging with these tools and methods, I will be better prepared to contribute to future digital health initiatives.

Additionally, I plan to enhance my research and evaluation skills by conducting usability testing and analysing feedback from diverse user groups. This aligns with the experiential learning cycle described by Kolb (1984), which emphasises learning through reflection, observation, and experimentation. [8]

Societal Impact

Improving the usability of the NHS Wales App has the potential to positively impact society in several ways. First, it can increase accessibility to healthcare services, especially for patients in remote or underserved areas. Digital health apps have been shown to empower patients, improve outcomes, and increase accessibility to care [9]. By making the app easier to use, particularly for older adults and those with limited digital literacy, we can help reduce health inequalities and promote more inclusive access to NHS services.

Second, the project supports the Welsh Government's digital health strategy, which aims to create a "digital front door" for health and social care [10]. A more intuitive and accessible app can reduce pressure on frontline services by enabling patients to manage appointments, prescriptions, and health records independently. This contributes to a more efficient and patient-centred healthcare system.

Finally, the project encourages ethical design practices, such as ensuring compliance with GDPR and promoting transparency in data usage. Ethical considerations are essential in digital health, where apps often collect sensitive personal data [8].

Risks and Challenges

Despite its potential, the project faces several risks and challenges. One major concern is **data security and privacy**. Digital health apps are vulnerable to breaches, and protecting patient data is a legal and ethical priority [11]. To mitigate this, I will ensure that all data is encrypted, access is restricted, and compliance with NHS Digital and GDPR standards is maintained.

Another challenge is **user adoption**. If the app redesign is too complex or unfamiliar, users may resist change. To address this, I will apply user-centred design principles and conduct iterative testing with real users to ensure the interface is intuitive and accessible.

Scalability is also a concern. The app must function reliably across different devices and operating systems. I will use responsive design techniques and test the app on various platforms to ensure consistency.

Finally, **resource constraints**—such as limited time, budget, or technical support—could impact project delivery. To manage this, I will adopt an agile development approach, breaking the project into manageable sprints and prioritising core features first.

- Conclusion (No more than half a page).

Improving the NHS Wales app isn't just about better tech—it's about giving patients faster, easier access to care. A smarter, more intuitive app means fewer barriers, more trust, and a stronger connection between people and the services they rely on. The future of healthcare is digital, and it starts with getting this right.

- Reference list (IEEE format)

Bibliography

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- [7] "Hee.Nhs," 2023. [Online]. Available: <https://www.hee.nhs.uk/our-work/innovation-digital-transformation>. [Accessed 2025].
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Appendices: Supplementary information

An appendix page/section can be used to include relevant supplementary information, such as supporting information to task answers and/or tutorial activity answers (e.g. Example Tech Company Business Strategy, PEST & SWOT analysis).