

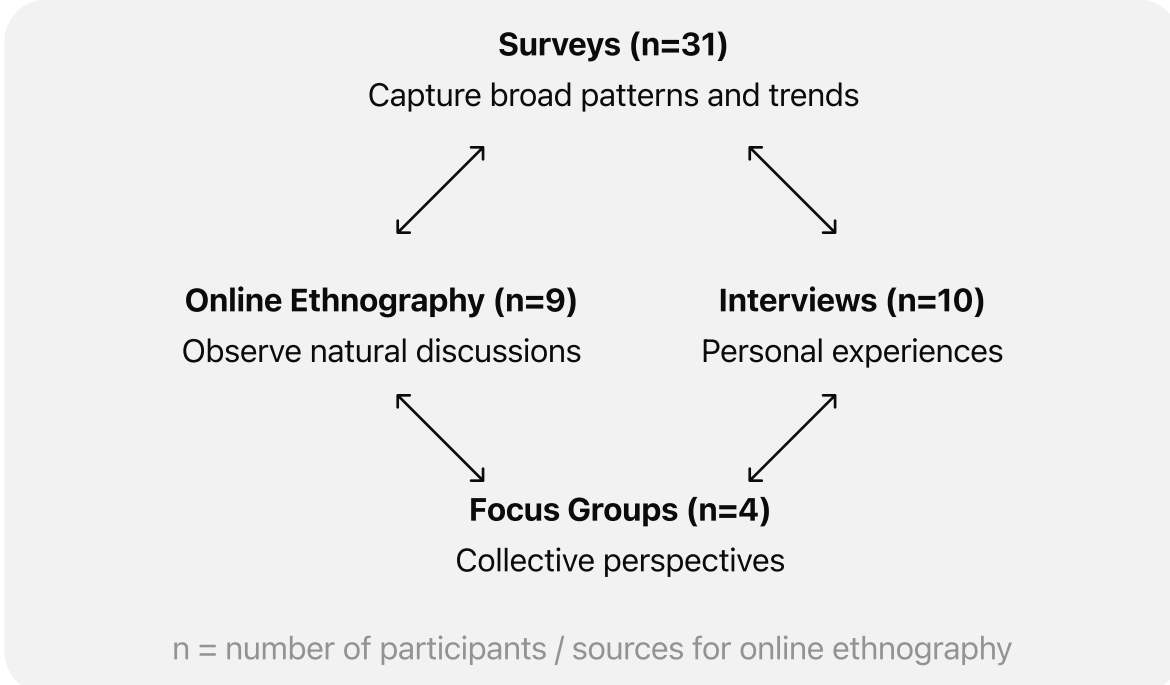
Discover

INITIAL DESK RESEARCH
Our research began through discovering key trends that left gaps and unaddressed needs within the healthcare industry. We initially focused on three key areas of:

- Boredom**
86% of patients had "time on their hands" and 50% were bored (Steele & Linsley, 2015), and with insufficient activities resulted in deconditioning, loss of identity and slower recovery (Guilcher et al., 2021) which risked their wellbeing - experiencing loneliness and risk-taking behaviours (Burns, 2019).
- Autonomy**
Communication technology that helped facilitate nurse-patient discussions increased the patient experience. With this study assumptions were formed whether control was a cause as lack of communication causes boredom and lack of control over the environment causes discomfort.
- Lack of Comfort**
Mundane hospital design (bare walls, harsh machine noise, bland food) contributed to illness and distress (Burns, 2019; BMA Science & Education 2011), whereas natural light and greenery were shown to aid recovery (Steele & Linsley, 2015).

RESEARCH QUESTIONS
These were mapped to validate across the following research questions:
1. How does communication influence patients' sense of autonomy in hospitals?
2. In what ways does a sense of autonomy affect experiences of boredom among adult inpatients?
3. What factors can contribute to a reduced sense of boredom for adult patients in hospitals?
4. What aspects of the hospital room environment either support or hinder patient recovery, and how might these be improved?

RESEARCH PLAN
We developed a research plan triangulating surveys, online ethnography, interviews and focus group to collect data from both patients and nurses to narrow down and justify a problem space.



NARROWING DOWN
Upon reviewing our primary data across **6 insights**, reflecting on our initial desk research findings, we found a shift:
"Being bored wasn't my highest priority at the time. I didn't feel like I was kept in the loop"

Boredom proved highly subjective and hard to solve directly, however the consistent root cause was poor communication: patients lacked clear, timely, revisitable information about their care. We thus decided to prioritised and reframe boredom as a symptom and centred the design on closing the communication gap through these selected insights:

- Lack of Autonomy**
Patients want to become an active participant of their care working alongside nurses. When their requests are dismissed or overlooked, patients lack control and creates a sense of neglect, intrusiveness and damages trust.
- Miscommunication**
Patients want to understand and participate their care, but when they lack knowledge or confidence they often stay silent and accept without fully understanding. Nurses, may misinterpret this silence as disinterest, especially when time constrained. Thus, this cycle of miscommunication leaves patients feeling powerless and nurses unable to fully support their emotional needs.
- Lack of Information**
Patients desire continuous, transparent communication. Without this, they feel powerless, anxious and less confident in their care.

Define

PERSONA
Our finalised problem space informed our persona, Kate, who wants to understand what is happening to her, and feel acknowledged for her recovery path so as to be an active participant in her care journey.

Kate Barnes, 40
"I just want to know what's happening and be part of the decisions."

Goals

- Understand what is happening to her and why
- Have her requests acknowledged and acted upon
- Have a sense of control and choice in her care

Motivations

- Feel acknowledged and understand her recovery path
- Clear explanations and reassurance without feeling like a burden
- Continuous updates on her treatment and wait times

Pain Points

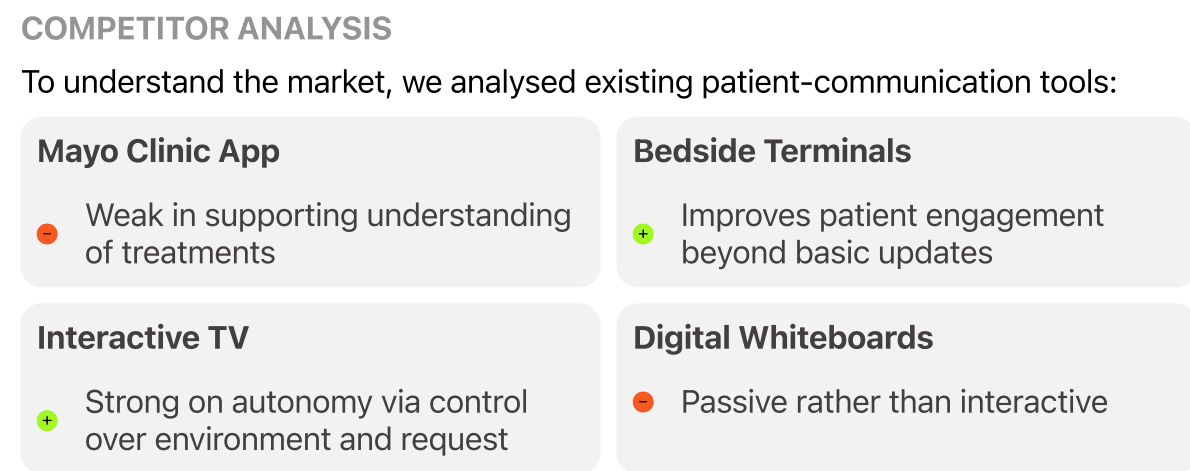
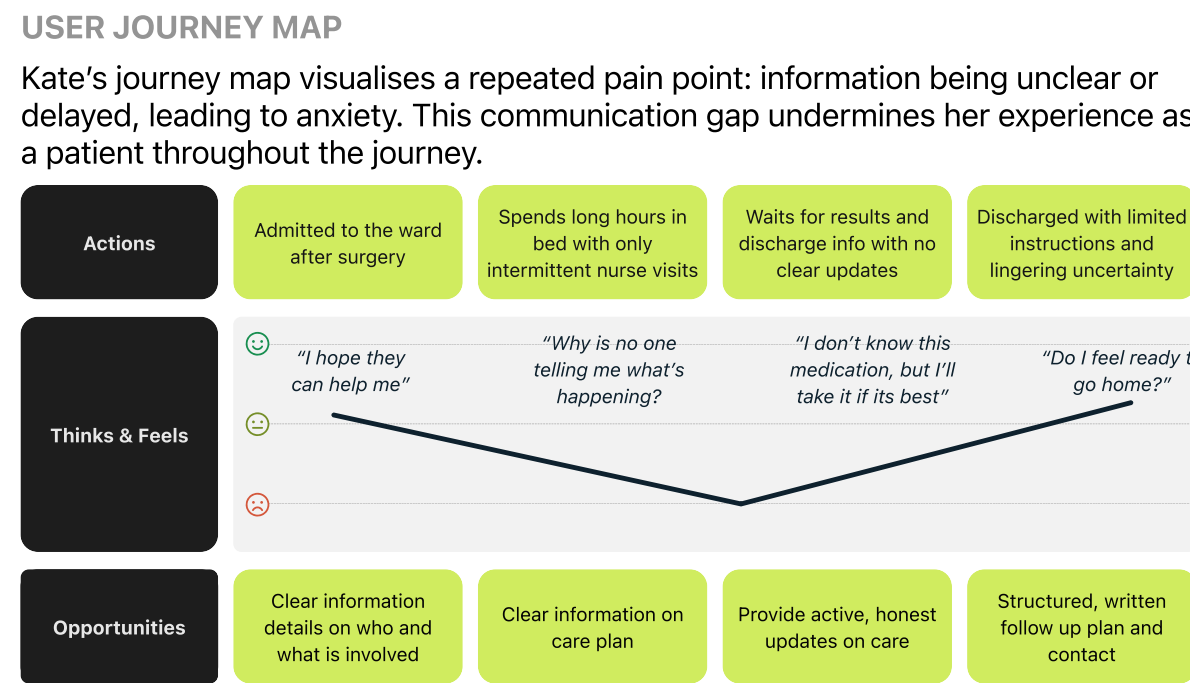
- Lack of transparency in care
- Long periods with no updates
- Accepts nurse's care without understanding

NARROWING DOWN
To effectively address the problem space, we reviewed our primary data, which where we noticed a shift:

"Being bored wasn't my highest priority at the time. I didn't feel like I was kept in the loop"

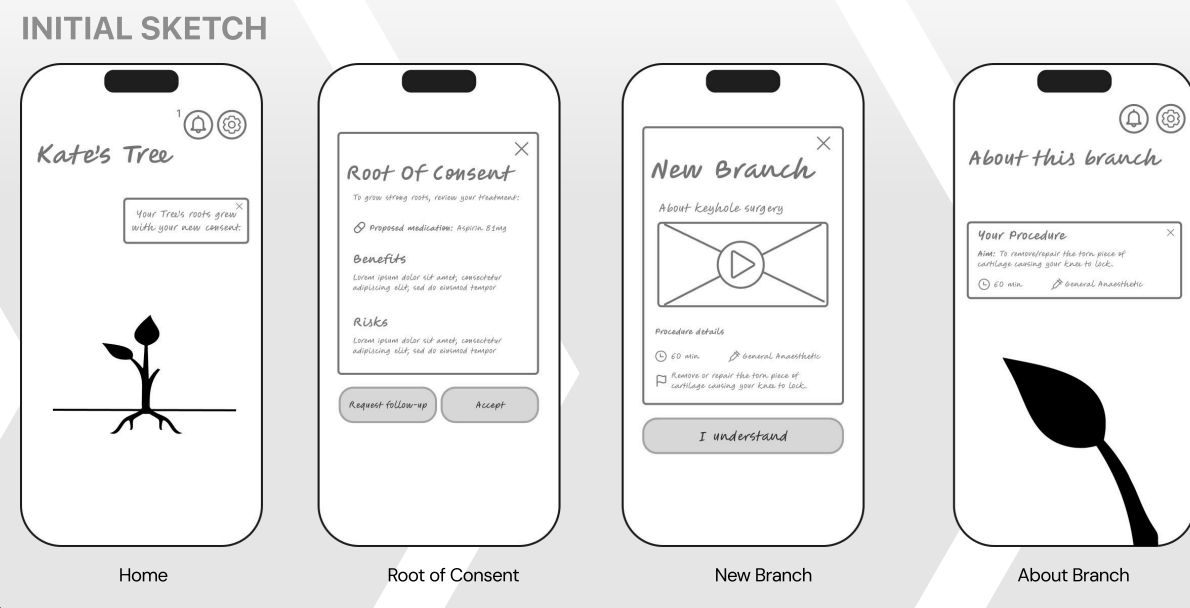
Boredom proved highly subjective and hard to solve directly, however the consistent root cause was poor communication: patients lacked clear, timely, revisitable information about their care. We thus decided to reframe boredom as a symptom and centred the design on closing the communication gap.

We then developed three insights which encapsulated the problem space, around autonomy, miscommunication and information. This informed our persona, Kate, who wants to understand what is happening to her, and feel acknowledged for her recovery path so as to be an active participant in her care journey.



Gap: Upon mapping competitors onto a decision matrix, two criterion Confidence and Autonomy were most critical where we identified the gap as a balance between control and choice with clear information provided before consenting.

IDEATION
Our initial ideation provided dashboard and modular designs, however we didn't want to limit ourselves with these approaches, so we wanted to provide an innovative solution with a living record of their stay. As they confirm their understanding on new procedures, medications, etc., a new branch will grow. We wanted to create something that felt alive and could grow alongside recovery - whether on patients' TV screen, or in the palm of their hand, every interaction helps patients see themselves healing.



Develop

INITIAL CONCEPT DEVELOPMENT
Our initial concept is MyHealthTree, a digital ecosystem that focuses on ensuring patients are informed of their care, empowering them with clarity and confidence to feel in control through consistent, transparent information. Features include:

- Tree:** A living record of the patient's hospital experience, giving life and meaning to their journey and their records
- Branches:** Updates (consents) are grouped under three themes: "Follow-Ups", "Procedures", and "Medication". The size and visibility of the branch grows with the number of updates inside its group.
- Consents (now, known as Updates):** For each branch, upon reading and understanding the conditions of care, patients can indicate their acceptance. This further grows the tree for its respective category.

Design decisions, such as the tree, moving away from dashboards, personalisation, and awareness—these all contribute to helping patients feel in control.

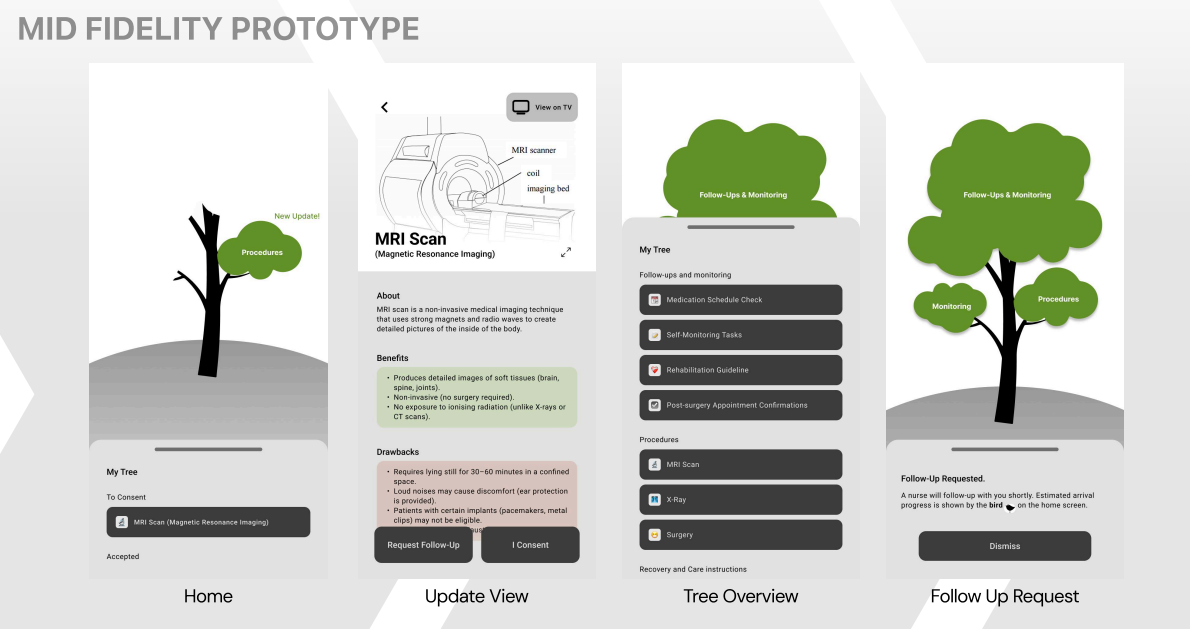
To initiate testing, we developed a testing plan that included a Think Aloud Protocol to test real-world scenarios, a System Usability and Standard Questionnaire to match results with standardised evaluation, and a Post-Interview to gain deeper insight into the experience and gather rich attitudinal and behavioural data on our current solution and concept.

USABILITY TESTING RESULTS
We conducted **8 usability tests**, gathered the results and summarised into the following findings:

- Focus on Understanding**
Participants highlighted that the term "consent" may unintentionally cause confusion around the implied seriousness of the word. These comments revealed the need to use more neutral language, as it was also noted that in hospital settings, patients would likely consenting anyway regardless of the app, which weakened the usefulness of the feature as "consent" and highlighted the need for it to act more as an informational reassurance tool.
"When I say consent, I almost feel like I'm signing something over."
"I didn't understand so well... when I consent, the tree will grow? So this is about what?"
- Information Hierarchy**
User testing revealed valuable insights around the structure and interaction logic of the Tree home page. Despite a brief onboarding, testers did not understand how to navigate the tree, as the prototype used branches to represent categories rather than individual actions. This caused confusion around what each interaction led to.
"For the beginning part, so if I click procedure, this one gonna pop up, right? But that one is kind of hard to understand... I feel that one's kind of confusing."

- Visual Support and Scalability**
Testers also identified usability and visual design gaps that impacted clarity. The identical shading of consent buttons created uncertainty about which option to select, and concerns were raised about the tree's scalability—if too many leaf clusters appeared, it could become visually overwhelming rather than reassuring.
- Clarifying the Tree Metaphor**
Next, testers appreciated the tree metaphor as a calming visual companion, and valued the accessible information it provided. This reveals that the app's potential as an information companion which provides trust and emotional comfort. Despite this, they also noted that the Tree's relationship to patients' progress was not immediately clear, with a desire for a more detailed onboarding.
"I think having this app would honestly make me feel more informed, more in the loop of what's going to happen to me."
"The onboarding now currently have only one page, right? So maybe you can add more notification or prompt to what's next."

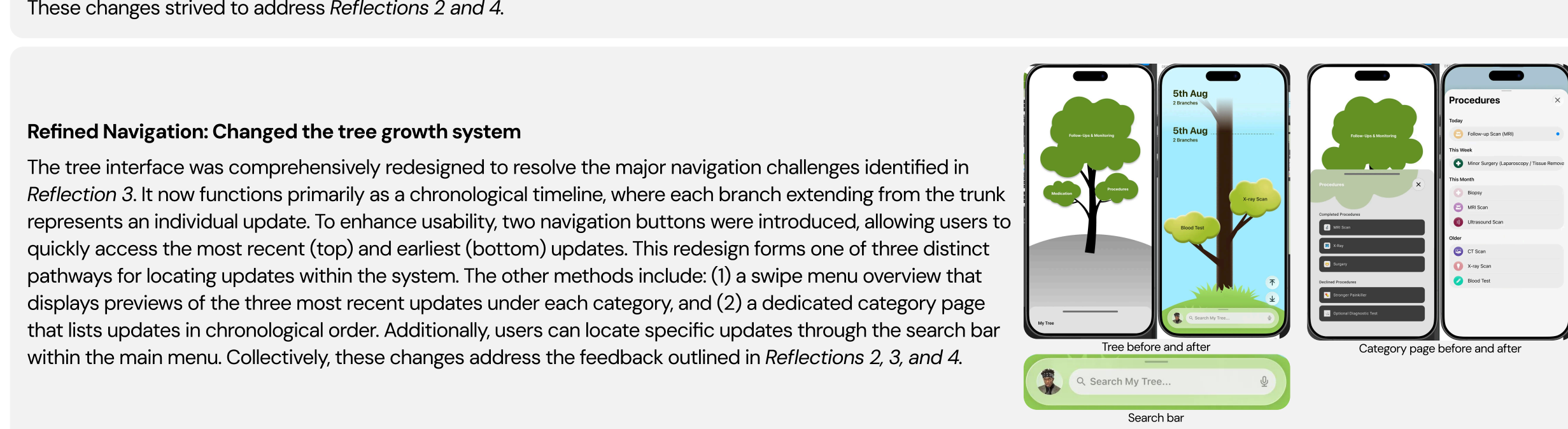
- "The two buttons are the same colours... I don't know which one I'm supposed to do."
- "If the tree gets too full, I'd be a little concerned... at what stage do I go home?"



Deliver

FINALISING
This stage involved several iterations of applying feedback to ensure of a user centred design. The major changes to our design include:

- Update page redesign**
1. The positioning and presentation of the "Request Follow-Up" and "I Consent (Understand)" buttons initially elicited polarised responses from users, who likened the pairing to a binary Yes/No choice. This framing was perceived as intimidating and potentially coercive. To address these concerns, the buttons were restructured into a vertical stack, their colours were softened to reduce visual dominance, and their placement was changed from a fixed position to an inline configuration within the content. This allows users to make an informed decision after reviewing the provided information, rather than making a premature one.
2. In development, the initial headings "Benefits" and "Drawbacks" were deemed potentially unsuitable in a medical context. Since then, they have been superseded by the medically relevant headings "Important facts" and "Risks".
3. To ensure consistency, the rounded container for the text body was removed. In the new design language, rounded objects indicate an interaction. Additionally, changes have been made to improve text readability and hierarchy.



- Changed request follow-up status tracking**
The nurse follow-up tracking system was redesigned to improve accessibility and familiarity for new users. While the initial iteration featured a creative bird-based status indicator, it demanded additional cognitive effort to interpret. This concept has since been replaced with a more conventional system that aligns with familiar design patterns, reducing the need for users to read and decipher its meaning and addressing *Reflection 2*.
- Nurse annotations**
In the initial version, users had difficulty identifying that annotations were viewable, as this functionality was only mentioned in the disclaimer. To address this issue and respond to *Reflection 2*, the feature was redesigned to include a toggle button that controls the visibility of all annotations, thereby improving discoverability and user awareness.

- Branch visual modification**
Feedback gathered through both formal and informal testing indicated that the branches were not perceived as interactive elements. If left unaddressed, this limitation would significantly diminish the effectiveness of the feature, particularly after the navigation system is refined. To address this, the branches were redesigned to appear visually tappable, directly responding to insights identified in *Reflection 2* from user testing. The refinement process was developed in collaboration with stakeholders who initially identified the issue.
- Not so fast!**
New confirmation action sheets were introduced to enhance clarity and prevent accidental actions. These include "Mark as Understood?", "Request a Follow-Up?", and "Abort Request", each framed as a question to prompt deliberate user decisions. A "Replay Onboarding" button was also added, allowing users to revisit the introductory walkthrough at any time. These updates address *Reflection 2*.

- Repositioning the App as an Informational Tool**
A user revealed that the word choice "Consent", used throughout our initial prototype, carries significant weight in both a legal and connotative context. They argued that its authoritative tone can feel intimidating, which contradicts our solution's intent to empower user agency. Furthermore, using the term 'consent' imposes a significant legal burden. The app's documentation must be exhaustive to mitigate liability and prevent legal challenges based on insufficient disclosure.
Since then, the term "Understand" has superseded "Consent", to address *Reflections 1 and 4*.

Accessibility Considerations
We have made a comprehensive effort to ensure that our solution remains accessible to all users. This occurred across two key stages: during interface development and post-interface development.

During development, several inclusive design principles were integrated from the outset. Colour-blindness was a central consideration, informed by one team member's lived experience with colour vision deficiency. This perspective emphasised the importance of ensuring that no element of the interface relied solely on colour to convey information and that sufficient contrast was maintained throughout. Interface layouts were also structured to support screen reader compatibility, adopting a navigation hierarchy consistent with other accessible applications to promote familiarity and ease of use. Additionally, voice input modes were implemented where feasible to accommodate users with limited mobility or visual impairments.

Post-development, further enhancements were introduced to strengthen accessibility. These included the addition of a high-contrast mode and a dark mode to improve legibility across varying light conditions. Consideration was also given to users with dyslexia, with typefaces such as Comic Sans evaluated alongside the system's default SF Pro font, which is derived from Helvetica and inherently legible. Finally, multi-language support was integrated as a supplementary accessibility feature. Although not initially included, it was later implemented by aligning the app's display language with the user's system settings, thereby reducing setup friction and improving inclusivity for non-English speakers.

