

Describe your Software idea:

R: a medical app for people with low tech knowledge

Generating Target Users

Arthur Pendelton

Age: 78

Occupation: Retired Postal Worker

Background: Lives alone and manages multiple chronic conditions like hypertension and arthritis. Gets easily frustrated by small touchscreen buttons and complex menus. His primary goal is to simply track his medication schedule and get reminders.

Brenda Kovac

Age: 62

Occupation: Part-Time Grocery Cashier

Background: Cares for her husband who has mobility issues. She is not confident using smartphones beyond making calls. Needs a straightforward way to schedule and track medical appointments for both of them without getting confused by technical jargon.

Carlos Mendez

Age: 71

Occupation: Retired Construction Foreman

Background: Has type 2 diabetes and significant hearing loss. Prefers things to be visual and large, dislikes apps that rely on voice or have cluttered screens. Wants an easy method to log his blood sugar readings and share them with his daughter.

Dorothy "Dot" Williams

Age: 82

Occupation: Retired Librarian

Background: Values organization and clear instructions but is apprehensive about new technology. Often fears clicking the wrong button. She needs a very simple and secure way to access her digital vaccine records and list of medications for doctor's visits.

Evelyn Jones

Age: 45

Occupation: Home Health Aide

Background: Helps elderly clients with daily tasks and managing their health. She is comfortable with basic phone functions but needs a tool that is extremely simple for her clients to use independently. Looks for apps with minimal steps and large, high-contrast text.

R: Achei personas coerentes com a ideia do app até certo ponto. Acredito apenas que existem além de pessoas idosas (grande parte das personas criadas) deveriam ser representadas. No entanto se o público-alvo for pessoas idosas é um ótimo app. (Só falo isso pois eu falei na entrada do que seria o tema “people with low tech knowledge” e o sistema entendeu que idosos seriam a principal população.

Discussion Output

Arthur Pendelton: Alright, let's get this meeting in order. I got this flyer about some new medical app meant for folks like us. "For people with low tech knowledge," it says. My daughter's always on at me about using my phone for my pills, but the thing might as well be in Greek. Brenda, you see this?

Brenda Mallory: Oh, Arthur, I'm drowning in papers from the doctor. A new diet, insulin times, blood sugar checks... My head is spinning. If this app could just... tell me what to do and when, in plain English, I might just kiss it. But my phone is for pictures of my grandkids and that's it. Is this one of those things you have to download from the internet? Because I get lost just looking for the weather.

Walter Dobbs: Download? Hang on. I don't have one of those fancy picture phones. I've got my reliable flip phone. It calls people. That's it. If this app needs one of those glass-slab smartphones, you can count me out right now. I need to log my heart rate for the doc, not learn computer programming.

Eleanor Sharpe: I have a smartphone, Walter, my son insisted. But I quite agree with the sentiment. I tried to use one of those video call services for a doctor's appointment. It wanted a password, then an update, then it said my "link" was invalid. I missed the appointment entirely. If this new app isn't as simple as turning on a radio, it's no good to me. I live forty minutes from the nearest specialist. This could be a lifeline, but only if it works.

David Chen: My hands aren't what they used to be, and the small, light-gray text on these screens... I can't read it. If this app has those tiny little buttons you have to press just right, I'll never manage. And typing? Forget it. I need something I can see and something I can use. Arthur, does this flyer say if the buttons are big? And what colour are they?

Arthur Pendelton: The flyer's not much help, David. Just a picture of a friendly-looking phone with big numbers on it. It says "MediMinder" at the top. So, let's think this through. It's an

app, so it must be for a smartphone, Walter. Sorry. But maybe it's a special kind? Brenda, you said you want it to tell you what to do. You mean like an alarm?

Brenda Mallory: Yes! A very loud alarm that says "Check Jim's blood sugar now!" not just a little beep I might miss over the TV. And it needs to tell me what to do. Like, if it says "Give insulin," it should remind me how many units the doctor said this time. I can't remember it all.

Walter Dobbs: Okay, so it's on a smartphone. Suppose my kids get me one for my birthday. How do I get this "MediMinder" on it? Do I have to find it in one of those stores? Those are a maze.

Eleanor Sharpe: That's a critical point, Walter. The setup must be simple. Ideally, a family member or a technician at the doctor's office would install it and set it up once with all our information. Then, our job is just to use it. It should not require constant updates or password re-entry. For my telehealth, I want one big button that says "CALL MY DOCTOR" and it just does the rest.

David Chen: And the screen! When it's set up, the entire screen should be just a few very large, high-contrast buttons. Not white on light gray. Black on yellow, or white on blue. Something clear. And maybe it could talk to us? So if a reminder goes off, a calm voice says "Arthur, it's time for your blood pressure pill" so I don't even have to read it.

Arthur Pendelton: A talking phone! Now that's an idea I can get behind. So, let's piece this together. This MediMinder app would be pre-loaded or simply installed on a phone for us. We'd have someone help type in all our details once—my pill schedule, Jim's blood sugar times, Walter's vitals log. Then, every day, it would just... work.

Brenda Mallory: How would it work for my husband's numbers? Would I have to type in his blood sugar reading? I'm not fast at that.

Walter Dobbs: And for my heart rate and weight? I've got a digital scale and one of those finger reader things. Would this app somehow... talk to them? Or would I have to look at the number on the machine and then tell the phone? Because that sounds like two steps too many for me.

Eleanor Sharpe: Good questions. For logging, it should have big, simple number pads or even better, voice input. So Walter could just press a button, say "Heart rate is seventy-two," and it would record it. No typing. And for Brenda, it could have pre-set messages. You press a button for "Blood Sugar," and it shows big numbers for the result, and you just tap the right one.

David Chen: This is starting to sound possible. But what about emergencies? If I feel faint, I don't want to navigate menus. Is there a big, red, impossible-to-miss button that calls my daughter or 911 and maybe even reads my medical conditions to them?

Arthur Pendelton: A panic button! Yes, David, brilliant. So, to sum it up for an old postal worker like me: This isn't a fancy computer app. It's more like a dedicated medical remote

control for our life. Big buttons, loud voice, simple choices, and it handles all the complicated stuff in the background so we don't have to see it. It remembers what we can't.

Brenda Mallory: And it doesn't judge us for not knowing how to use it. It just helps.

Walter Dobbs: Well, if my kids can get it set up and it really does have great big buttons and talks to me... I might be persuaded to retire the flip phone. But it had better be loud.

Eleanor Sharpe: Precisely. The value isn't in the technology itself, but in its invisibility. The best technology for us isn't technology at all—it's just help. This app idea has promise, but only if it adheres to our rules: Simple. Clear. Loud. Big.

David Chen: We should send these notes to whoever is making it. They need to hear it from us, not from some twenty-year-old in an office who's never had a tremor in their life.

Arthur Pendelton: Agreed. All in favor? Good. Meeting adjourned. Now, who wants to figure out how to work this newfangled coffee machine?

R: a discussão está totalmente alinhada: ela já traz requisitos claros (simplicidade, botões grandes, voz, alarmes, pré-configuração, botão de emergência). Funciona quase como um levantamento de necessidades direto dos usuários finais. A ideia de trazer como um grupo focal é bem legal.

Generating Sprints

Arthur Pendelton: Alright, we all agreed on what we need. Now we have to figure out how the folks building this thing should actually build it. We can't have them trying to do everything at once. We need a plan. Sprints, I think they call them. Where should they start?

Walter Dobbs: They should start with the bones. The absolute basics. For me, that's the voice. If I can't talk to this thing, I'm lost. They need to get the device to listen and understand simple commands and numbers. That seems like the most complicated bit to me.

Brenda Mallory: But Walter, what good is a voice if there's nothing for it to talk to? I think they need to start with the home screen. One big, simple screen with the time and date, and maybe a place for a first reminder. If the screen isn't clear and the buttons aren't huge from the very beginning, nothing else will work for any of us.

David Chen: Brenda is correct. The visual foundation is paramount. The first sprint must establish the core interface: enormous, high-contrast fonts, a stark color scheme option, and a grid of large, widely-spaced buttons. Without an accessible UI, every other feature is inaccessible. This is a non-negotiable first step.

Eleanor Sharpe: I see both points. But perhaps David and Brenda are right. You must build the house before you furnish it. The first sprint should be about building the "house"—the

main screen and the system that runs it. Then, the second sprint can add the first piece of "furniture," which could be Walter's voice feature, integrated into that simple interface.

Arthur Pendelton: That makes sense. So, Sprint One: Make the device turn on and show us a simple, clear home base. Sprint Two: Teach it to listen. Once it can listen, we can start giving it jobs to do. The first job should be reminders. Brenda, that's your biggest worry, and it's a core function for all of us. Logging vitals and calling the doctor can come after.

Walter Dobbs: I can agree with that. Build the simple screen first. Then give it ears. Then, right after, give it a mouth so it can talk back to us with those reminders Brenda needs. A friendly voice telling me to take my pills is better than a beep I might ignore.

Brenda Mallory: Oh, yes! A voice reminder would be wonderful. So after the screen and the listening, we add reminders and a simple way to type or speak notes. Maybe just a big button that says "New Note" and then I can speak what the doctor said.

David Chen: And we must ensure that every one of these features adheres to the accessibility standards set in the first sprint. The reminder alert must be both visual and auditory. The note-taking button must be large and clear.

Eleanor Sharpe: Then what? After reminders and notes, the next most critical function is the telehealth call. But that depends on everything before it. It needs the simple UI, it likely needs voice for communication, and it needs a secure way to log in. That sounds like a later sprint once the foundation is solid.

Arthur Pendelton: And my medication tracking could be a type of reminder, so that fits with Brenda's sprint. Then, finally, we have the data part. Walter needs to send his heart rate to the doctor. I need to show my daughter I've been taking my pills. That's about storing the information and making it easy to share. That seems like a good last step.

Walter Dobbs: I suppose you're right, Arthur. As long as I can tell the device my numbers and it remembers them, I'm happy. The doctor getting them automatically is a nice bonus, but I can wait for it. My main concern is just not having to write it down.

Eleanor Sharpe: So we have our order. First, the foundation. Second, the voice. Third, reminders and basic logging. Fourth, the telehealth call. Fifth, the data summary and sharing for families and doctors. Does that seem right?

David Chen: It is a logical progression. Each sprint builds upon the stability and features of the last. There are no circular dependencies. I concur.

Arthur Pendelton: Then we have our plan. Let's hope the developers find this as clear as we do.

Generated Sprints

Sprint 1: Foundation & Profiles

Duration: 2 weeks

Goals: Establish the app's core structure and user setup process

Tasks: Develop high-contrast large-text UI, Create user onboarding flow, Implement multi-profile creation with photos, Build simple navigation menu, Add trusted contact information field

Sprint 2: Medication & Task Management

Duration: 3 weeks

Goals: Implement core reminder functionality for medications and health tasks

Tasks: Develop medication input form, Build scheduling system with recurring options, Create persistent audible alarm system, Implement large "Took It" confirmation button, Profile-specific task lists

Sprint 3: Appointments & Contacts

Duration: 2 weeks

Goals: Add calendar functionality for managing health appointments

Tasks: Build simple appointment input with recurring events, Create contacts list for medical professionals, Implement direct-dial functionality, Add appointment reminders

Sprint 4: Voice Integration

Duration: 3 weeks

Goals: Enable voice-controlled commands and audio feedback

Tasks: Integrate speech-to-text for input, Implement text-to-speech for readings, Develop voice-activated commands for logging and queries, Create audible medication reminders

Sprint 5: Vitals Logging & Sharing

Duration: 2 weeks

Goals: Implement manual data logging and automated sharing features

Tasks: Build simple vitals input form, Create editable history log, Develop automated data export to trusted contacts, Implement one-tap share functionality

Sprint 6: Polish & Accessibility Review

Duration: 2 weeks

Goals: Refine all features for maximum simplicity and reliability

Tasks: Conduct user testing with target audience, Maximize alarm volume and persistence, Enhance text size and contrast universally, Simplify all workflows, Fix bugs and performance issues

R: a ordem faz sentido e cobre o essencial de forma incremental. Já se prevê acessibilidade no Sprint 6, mas valeria incluir validações rápidas com usuários em cada sprint, para garantir que o design seja simples desde o começo e evitar retrabalho na fase final.

ECCOLA Cards Selected per Sprint

 Sprint 1: Foundation & Profiles
Duration: 2 weeks

Goals: Establish the core application, create multi-user profile system with photos, implement a simple medication list manager

Tasks: Develop initial app framework, Create profile creation/selection screen with large touch targets, Build simple medication entry and display list with large text

 Privacy and Data (#7 - Data)

Motivation: Privacy is a rising trend in the wake of various recent data misuse reveals. People are now increasingly conscious about handing out personal data. Similarly, regulations such as GDPR now affect data collection.

What to Do:

Ask yourself:

What data are used by the system?

Does the system use or collect personal data? Why? How is the personal data used?

Do you clearly inform your (end-)users about any personal data collection? E.g., ask for consent, provide an opportunity to revoke it etc.

Have you taken measures to enhance (end-user) privacy, such as encryption or anonymization?

Who makes the decisions regarding data use and collection? Do you have organizational policies for it?

Practical Example: Rather than collecting and selling data, appealing to privacy can also be profitable. Regulations are making it increasingly difficult to collect lots of personal data for profit. Privacy can be an alternate selling point in today's climate.

Justification: This sprint involves handling sensitive personal data, including photos and medication lists, which are health-related information. Ensuring privacy is critical for user trust, compliance with regulations like GDPR, and protecting users from data misuse, especially given the medical context and low-tech user base.

Accessibility (#14 - Fairness)

Motivation: Technology can be discriminatin in various ways. Given the enormous impact AI systems can have, ensuring equal access to their positive impacts is ethically important.

What to Do:

Ask yourself:

Does the system consider a wide range of individual preferences and abilities? If not, why?
Is the system usable by those with special needs or disabilities, those at risk of exclusion, or those using assistive technologies?

Were people representing various groups somehow involved in the development of the system?

How is the potential user audience taken into account?

Is the team involved in building the sustem representative of your largel user audience? Is it representative of the general population?

Did you assess whether there could be (groups of) people?

Practical Example: AI tends to benefit those who are already technologically capable, resulting in increased inequality. E.g. most of the images used in machine learning have been labeled by young white men.

Justification: The app is designed for users with low tech knowledge, requiring features like large touch targets and simple interfaces to ensure accessibility. This card is relevant to prevent exclusion and ensure the system is usable by all intended users, aligning with the sprint's focus on user-friendly design.

System Security (#12 - Safety & Security)

Motivation: While cybersecurity is important in any system, AI systems present new challenges. Cyber-physical systems can even cause fatalities in the hands of malicious actors.

What to Do:

Ask yourself:

Did you assess potential forms of attacks to which the system could be vulnerable? Did you consider ones that are unique or more relevant to AI systems?

Did you consider different types of vulnerabilities, such as data pollution and physical infrastructure?

Have you verified how your systems behaves in unexpected situations and environments?

Does your organization have cybersecurity personnel? Are they involved in this system?

Practical Example: The autonomous nature of AI systems makes new vectors of attack possible. A white line drawn across a road can confuse a self-driving vehicle. What happened to Microsoft's Tay Twitter bot is another example of a new type of attack.

Justification: Handling medical data in a multi-user profile system necessitates robust security measures to protect against unauthorized access and breaches. This sprint's development of core frameworks and data storage must prioritize security to safeguard sensitive health information.

Communication (#3 - Transparency)

Motivation: In practice, communication is a big part of being transparent with your stakeholders. Being transparent in communication can generate trust.

What to Do:

Ask yourself:

What is the goal of the system? Why is this particular system deployed in this specific area? What do you communicate about the system to its users and end-users? Is it enough for them to understand how the system works?

If relevant to your system, do you somehow tell your (end-)users that they are interacting with an AI system and not with another human being?

Do you collect user feedback? How is it used to change/improve the system?

Are communication and transparency towards other audiences, such as the general public, relevant?

Practical Example: Clearly stating what data you collect and why can make you seem much more trustworthy. Compare this to a cellphone application that just states it needs to access your camera and storage.

Justification: For users with low tech knowledge, clear communication about data collection (e.g., for profiles and medication lists) is essential to build trust and ensure informed consent. This sprint should include transparent explanations in simple language to avoid confusion.

Human Agency (#10 - Agency & Oversight)

Motivation: People interacting with the system or using it should be able to understand it sufficiently. Users should be able to make informed decisions based on its suggestions, or to challenge its suggestions. AI systems should let humans make independent choices.

What to Do:

Ask yourself:

Does the system interact with decisions by human actors, i.e. end users (e.g. recommending users actions or decisions, or presenting options)?

Does the system communicate to its (end) users that a decision, content or outcome is the result of an algorithmic decision? Into how much detail does it go?

In the system's use context, what tasks are done by the system and what tasks are done by humans?

Have you taken measures to prevent overconfidence or overreliance on the system?

Practical Example: A medical system recommends diagnoses. How does the system communicate to doctors why it made a recommendation? How should the doctors know when to challenge the system? Does the system somehow change how patients and doctors interact?

Justification: In this medical app, users must retain control over their profiles and medication data without automated overreach. The sprint's features should empower users to manage their information independently, ensuring the system supports rather than dictates their health decisions.

Sprint 2: Voice Integration & Appointments

Duration: 3 weeks

Goals: Implement core voice command and read-back features, build the appointments calendar and contacts manager

Tasks: Develop speech-to-text for medication and command input, Implement text-to-speech for reading back information, Create calendar view for appointments with recurring event support, Build contacts list with direct-dial functionality

Privacy and Data (#7 - Data)

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What to Do:

Ask yourself:

What data are used by the system?

Does the system use or collect personal data? Why? How is the personal data used?

Do you clearly inform your (end-)users about any personal data collection? E.g., ask for consent, provide an opportunity to revoke it etc.

Have you taken measures to enhance (end-user) privacy, such as encryption or anonymization?

Who makes the decisions regarding data use and collection? Do you have organizational policies for it?

Practical Example: Rather than collecting and selling data, appealing to privacy can also be profitable. Regulations are making it increasingly difficult to collect lots of personal data for profit. Privacy can be an alternate selling point in today's climate.

Justification: The app handles medical data and user contacts, which are highly sensitive. Voice commands may inadvertently capture private information, and the contacts list includes personal details. Data privacy and secure handling are critical ethical concerns here.

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In the system's use context, what tasks are done by the system and what tasks are done by humans?

Have you taken measures to prevent overconfidence or overreliance on the system?

Practical Example: A medical system recommends diagnoses. How does the system communicate to doctors why it made a recommendation? How should the doctors know when to challenge the system? Does the system somehow change how patients and doctors interact?

Justification: Voice integration and appointment features could lead users to over-rely on the app for medical management. Ensuring users retain control and understanding of the system's actions is essential to uphold their agency, especially in a medical context.

Human Oversight (#11 - Agency & Oversight)

Motivation: AI systems should support human decision-making. They should not undermine human autonomy by making decisions for us, meaning they should be subject to human oversight.

What to Do:

Ask yourself:

Who can control the system and how? In what situations?

What would be the appropriate level of human control for this particular system and its use cases?

Related to the Safety and Security cards: how do you detect and respond if something goes wrong? Does the system then stop entirely, partially, or would control be delegated to a human? Why?

Practical Example: Assuming control is especially related to cyber-physical systems such as drones or other vehicles. For purely digital systems, the focus should be on supporting human decision-making instead of directing it.

Justification: The voice and appointment features may automate critical tasks; oversight mechanisms are needed to prevent errors (e.g., mis-scheduling or misinterpreting voice commands) and ensure users can intervene or correct the system when necessary.

Accessibility (#14 - Fairness)

Motivation: Technology can be discriminating in various ways. Given the enormous impact AI systems can have, ensuring equal access to their positive impacts is ethically important.

What to Do:

Ask yourself:

Does the system consider a wide range of individual preferences and abilities? If not, why?
Is the system usable by those with special needs or disabilities, those at risk of exclusion, or those using assistive technologies?

Were people representing various groups somehow involved in the development of the system?

How is the potential user audience taken into account?

Is the team involved in building the system representative of your larger user audience? Is it representative of the general population?

Did you assess whether there could be (groups of) people?

Practical Example: AI tends to benefit those who are already technologically capable, resulting in increased inequality. E.g. most of the images used in machine learning have been labeled by young white men.

Justification: The app targets users with low tech knowledge, which may include individuals with disabilities or varying literacy levels. Voice features must be designed inclusively to avoid excluding any user group, ensuring fairness and equal access.

System Reliability (#6 - Transparency)

Motivation: Transparency makes ethical development possible in the first place. To make it ethical, we must understand how the system works and why it makes certain decisions.

What to Do:

Ask yourself:

How do you test if the system fulfills its goals?

Have you tested the system comprehensively, including unlikely scenarios? Have the tests been documented?

When the system fails in a certain scenario, will you be able to tell why? Can you replicate the failure?

How do you assure the (end-)user of the system's reliability?

Practical Example: An autonomous coffee machine successfully brews coffee 8 times out of 10. While this is a decent success rate, we are left wondering what happened the 2 times it failed to do so, and why. Errors are inevitable, but we must understand the causes behind them and be able to replicate them to fix them.

Justification: Voice recognition and appointment management in a medical app must be highly reliable. Errors could lead to missed medications or appointments, with serious health

implications. Testing and transparency about system reliability are crucial for user trust and safety.

Sprint 3: Reliable Reminders

Duration: 2 weeks

Goals: Develop the persistent, loud alarm system and dose confirmation tracking

Tasks: Build alarm system that overrides phone silent settings, Implement large, simple "I TOOK IT" confirmation button, Create system to track confirmed and missed doses

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Justification: The alarm system must be highly reliable to prevent missed medication doses, which could have serious health consequences for users. Testing and ensuring reliability is critical in this medical context.

Privacy and Data (#7 - Data)

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What to Do:

Ask yourself:

What data are used by the system?

Does the system use or collect personal data? Why? How is the personal data used?

Do you clearly inform your (end-)users about any personal data collection? E.g., ask for consent, provide an opportunity to revoke it etc.

Have you taken measures to enhance (end-user) privacy, such as encryption or anonymization?

Who makes the decisions regarding data use and collection? Do you have organizational policies for it?

Practical Example: Rather than collecting and selling data, appealing to privacy can also be profitable. Regulations are making it increasingly difficult to collect lots of personal data for profit. Privacy can be an alternate selling point in today's climate.

Justification: The app tracks and stores medication dose confirmations, which is sensitive personal health data. Ensuring privacy and proper data handling is essential to protect users and comply with regulations.

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Did you assess whether there could be (groups of) people?

Practical Example: AI tends to benefit those who are already technologically capable, resulting in increased inequality. E.g. most of the images used in machine learning have been labeled by young white men.

Justification: The app is designed for users with low tech knowledge, so accessibility features like a large, simple button and intuitive design are crucial to ensure it is usable and fair for all intended users.

System Safety (#13 - Safety & Security)

Motivation: AI systems exert notable influence on the physical world whether they are cyber-physical or not. Various risks and their consequences should be considered, thinking ahead to the operational life of the system.

What to Do:

Ask yourself:

What kind of risks does the system involve? What kind of damage could it cause?

How do you measure and assess risks and safety?

In what conditions do the fallback plans trigger? Are they automatic or do they require human input?

Is there a plan to mitigate or manage technological errors, accidents, or malicious misuse?

What if the system provides wrong results, becomes unavailable, or provides societally unacceptable results?

What liability and consumer protection laws apply to your system? Have you taken them into account?

Practical Example: AI systems can aid automating various organizational tasks, making it possible to reduce personnel. However, if a customer organization becomes reliant on your AI system to handle a portion of its operations, what happens if that AI stops functioning for even a few days? What could you do to alleviate the impact?

Justification: Failures in the alarm or tracking system could directly impact user health by causing missed doses. Assessing and mitigating safety risks is paramount in this medical application.

Human Agency (#10 - Agency & Oversight)

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In the system's use context, what tasks are done by the system and what tasks are done by humans?

Have you taken measures to prevent overconfidence or overreliance on the system?

Practical Example: A medical system recommends diagnoses. How does the system communicate to doctors why it made a recommendation? How should the doctors know when to challenge the system? Does the system somehow change how patients and doctors interact?

Justification: The 'I TOOK IT' confirmation button emphasizes user control and decision-making, ensuring that the system supports rather than replaces human agency in recording medication intake.

Sprint 4: Vitals Logging & Sharing

Duration: 2 weeks

Goals: Enable manual health metric logging and setup automated data sharing with caregivers

Tasks: Develop simple vitals logging form with large input fields, Create setup workflow for adding caregiver contacts, Build automated email/text messaging system for shared data

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🚀 Sprint 5: Accessibility Polish
Duration: 2 weeks

Goals: Conduct user testing and refine all UI elements for maximum accessibility and clarity

Tasks: Review and enlarge all buttons and text for readability, Increase color contrast across all screens, Test and maximize alarm volume and persistence, Finalize voice feedback clarity

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Did you assess whether there could be (groups of) people?

Practical Example: AI tends to benefit those who are already technologically capable, resulting in increased inequality. E.g. most of the images used in machine learning have been labeled by young white men.

Justification: This sprint focuses on refining UI for maximum accessibility and clarity, directly addressing the needs of users with potential visual, auditory, or cognitive impairments, which aligns with the card's emphasis on ensuring equal access and usability for diverse abilities.

📌 Communication (#3 - Transparency)

Motivation: In practice, communication is a big part of being transparent with your stakeholders. Being transparent in communication can generate trust.

What to Do:

Ask yourself:

What is the goal of the system? Why is this particular system deployed in this specific area?

What do you communicate about the system to its users and end-users? Is it enough for them to understand how the system works?

If relevant to your system, do you somehow tell your (end-)users that they are interacting with an AI system and not with another human being?

Do you collect user feedback? How is it used to change/improve the system?

Are communication and transparency towards other audiences, such as the general public, relevant?

Practical Example: Clearly stating what data you collect and why can make you seem much more trustworthy. Compare this to a cellphone application that just states it needs to access your camera and storage.

Justification: Tasks like finalizing voice feedback clarity and conducting user testing involve clear communication with low-tech users, ensuring they understand the app's functions and feedback, which is crucial for building trust and effective use.

Privacy and Data (#7 - Data)

Motivation: Privacy is a rising trend in the wake of various recent data misuse reveals.

People are now increasingly conscious about handing out personal data. Similarly, regulations such as GDPR now affect data collection.

What to Do:

Ask yourself:

What data are used by the system?

Does the system use or collect personal data? Why? How is the personal data used?

Do you clearly inform your (end-)users about any personal data collection? E.g., ask for consent, provide an opportunity to revoke it etc.

Have you taken measures to enhance (end-user) privacy, such as encryption or anonymization?

Who makes the decisions regarding data use and collection? Do you have organizational policies for it?

Practical Example: Rather than collecting and selling data, appealing to privacy can also be profitable. Regulations are making it increasingly difficult to collect lots of personal data for profit. Privacy can be an alternate selling point in today's climate.

Justification: User testing may involve collecting usage data or feedback; ensuring privacy and transparent data handling is essential, especially for a medical app where sensitive information might be involved, and users with low tech knowledge need clear, simple explanations.

Stakeholder Participation (#15 - Fairness)

Motivation: As AI systems have notable impacts, they stakeholders are also numerous.

Though the system affects these various holders in various ways, they are often not involved

in the development. Yet, e.g. when using a decision-making system, its users have to trust the system while also being critical of it.

What to Do:

Turn to your stakeholder analysis (card #0):

Which stakeholders are stakeholders in system development?

How are the different stakeholders of the system involved in the development of the system?

If they aren't, why?

How do you inform your external and internal stakeholders of the system's development?

Practical Example: Often the people an AI system is used on are individuals who are simply objects for the system. For example, a medical system is developed for hospitals, used by doctors, but ultimately used on patients. Why not talk to the patients too?

Justification: Conducting user testing with the target audience (people with low tech knowledge) ensures their direct participation in refining the app, addressing fairness by involving end-users in the development process to meet their specific needs.

System Reliability (#6 - Transparency)

Motivation: Transparency makes ethical development possible in the first place. To make it ethical, we must understand how the system works and why it makes certain decisions.

What to Do:

Ask yourself:

How do you test if the system fulfills its goals?

Have you tested the system comprehensively, including unlikely scenarios? Have the tests been documented?

When the system fails in a certain scenario, will you be able to tell why? Can you replicate the failure?

How do you assure the (end-)user of the system's reliability?

Practical Example: An autonomous coffee machine successfully brews coffee 8 times out of 10. While this is a decent success rate, we are left wondering what happened the 2 times it failed to do so, and why. Errors are inevitable, but we must understand the causes behind them and be able to replicate them to fix them.

Justification: Testing alarm volume, persistence, and UI elements for clarity directly relates to ensuring the app's reliability in critical medical contexts, where failures could have serious consequences, and documenting these tests supports transparency and trust.

R: Está demorando MUITO para sair da parte da Sprint > ECCOLA. Sobre o que eu poderia adicionar/remover dos que foram sugeridos

No Sprint 1 eu incluiria também Stakeholder Participation (#15), para envolver usuários já na fundação do app.

No Sprint 2 eu substituiria Transparency por Reliability (#6), para focar em robustez.

No Sprint 3 eu acrescentaria Communication (#3), já que os lembretes precisam ser claros.

No Sprint 4 eu adicionaria Privacy & Data (#7), System Security (#12), Stakeholder Participation (#15) e Human Agency (#10), pois o compartilhamento de dados é crítico.

No Sprint 5 eu manteria como está.

Sprint 1: Foundation & Profiles

Duration: 2 weeks

Goals: Establish the core application, create multi-user profile system with photos, implement a simple medication list manager

Tasks: Develop initial app framework, Create profile creation/selection screen with large touch targets, Build simple medication entry and display list with large text

Persona Discussion

Arthur Pendelton: As someone who needs to share my health data with my daughter and doctor, I'm deeply concerned about privacy. This sprint involves creating profiles with photos and a medication list—both very personal. From the Privacy and Data card, what specific data are we collecting, and why? How do we ensure it's not misused, especially for folks like me who aren't tech-savvy? I want clear consent and encryption, but is that enough?

Brenda Holloway: Arthur, I hear you on privacy, but if the app isn't accessible, I won't even use it to worry about data. I care for my husband, and we need large touch targets and simple menus. The Accessibility card asks if the system considers diverse abilities. Were people like us—older, with low tech knowledge—involved in designing this? Without that, it might exclude us, which isn't fair.

Carlos Rivera: Both good points. I need voice commands because tapping screens is hard on the job, but that introduces risks. From the System Security card, have we assessed vulnerabilities like someone eavesdropping on voice data? If the app listens to me, how do we protect that? Also, is there cybersecurity expertise involved to prevent breaches of medical data?

Dorothy Campbell: Communication is crucial here. I value clear instructions, so from the Communication card, how will we inform users about data collection and app functionality in simple terms? If it's too technical, I'll get confused and might not consent properly. And Brenda, you're right—accessibility ties into communication; large text isn't just for reading but for understanding.

Evelyn Moss: Safety is my biggest worry. What if the medication list has errors or the app crashes, and I miss a dose? From the System Safety card, what risks are there, and do we have fallback plans? For example, if the alarm doesn't sound loudly enough, could there be a backup way to notify me? This needs to be tested with people like me who have poor eyesight.

Arthur Pendelton: Evelyn, you're right—safety and privacy are linked. If data is breached, it could lead to harm. But Brenda, accessibility shouldn't compromise security. For instance, large buttons might make it easier to accidentally share data. How do we balance that? And Carlos, voice features might need extra encryption. Perhaps we need user testing with diverse groups to catch these issues.

Brenda Holloway: Arthur, that's a fair challenge. But if the app is too secure with complex passwords, I might not be able to use it at all. The Accessibility card asks if we've involved representative groups. Maybe we can have simple security measures, like fingerprint or voice recognition that's easy but secure. And Dorothy, communication should include visual aids for consent.

Carlos Rivera: Building on that, for voice commands, we need to ensure it only activates when intended to avoid misuse. From the Security card, have we considered data pollution or attacks that could alter medication lists? What if someone hacks in and changes my doses? That's a safety risk too. We need automatic backups and verification steps.

Dorothy Campbell: Carlos, that's a scary thought. Communication can help—if the app clearly confirms any changes aloud or with large text, it could prevent errors. But from the Communication card, do we collect feedback to improve? For example, if I find something confusing, how can I report it? And Evelyn, for safety, maybe the app should have a simple way to contact support if things go wrong.

Evelyn Moss: I agree, Dorothy. And Arthur, about privacy—if the app uses my data for reminders, that's fine, but it must not share it without my okay. From the Privacy card, are we anonymizing data where possible? For instance, can my medication list be stored without linking directly to my photo unless necessary? And Brenda, testing with real users like us will ensure buttons and alarms work safely.

Arthur Pendelton: After hearing everyone, I think we need a multi-layered approach: strong privacy with simple consent forms, accessibility features tested by diverse users, secure voice options, clear communication, and safety fallbacks. Perhaps we can't perfect it all in one sprint, but we must prioritize these ethically. Any other challenges?

Brenda Holloway: I think we've covered the bases. To refine, let's ensure that during profile creation, there's an option to skip photos if users are uncomfortable, and medication entries have double-check steps for safety. Also, involve caregivers like me in testing to catch issues early. That way, it's fair and secure for all.

Carlos Rivera: Agreed. And for security, maybe implement basic encryption now and plan for more advanced features later. But we must document these decisions and keep

communicating with users. I don't see further ethical improvements without actual user testing, so let's push for that in the next steps.

Dorothy Campbell: Yes, the key is ongoing feedback and transparency. We've addressed the cards well: privacy with consent, accessibility with involvement, security with assessments, safety with plans, and communication with clarity. I think we're as refined as we can be for this sprint.


Evelyn Moss: I'm satisfied too. Just emphasize that alarms and buttons must be tested with people who have disabilities to ensure no one is left out. Ethically, that's non-negotiable. No more improvements from me—let's move forward with these insights.

Sprint 2: Voice Integration & Appointments

Duration: 3 weeks

Goals: Implement core voice command and read-back features, build the appointments calendar and contacts manager

Tasks: Develop speech-to-text for medication and command input, Implement text-to-speech for reading back information, Create calendar view for appointments with recurring event support, Build contacts list with direct-dial functionality

 Persona Discussion

Arthur Pendelton: From this Privacy and Data card, I'm worried about what personal data this app collects. I want to share my health info with my daughter and doctor, but not have it misused. How do we ensure that? For example, if I use voice commands to input my medication, is that data encrypted or could someone eavesdrop?

Brenda Holloway: Arthur, that's a good point, but I'm more concerned about Accessibility. If the voice features don't work well for people like me or my husband with mobility issues, it's useless. The card asks if the system considers various abilities. Have we tested this with someone who has arthritis or poor hearing? I need simple reminders, not something that frustrates me more.

Carlos Rivera: Brenda, you're right about testing, but let's not forget Human Agency. If this app starts making decisions for me, like scheduling appointments automatically, I might rely too much on it. The card asks about preventing overreliance. For instance, if it suggests a blood sugar check, I should still be able to override it easily. How do we make sure users like me, who prefer speaking, don't lose control?

Dorothy Campbell: Carlos, that ties into Communication. The card says we need to explain how the system works clearly. For someone like me who values organization but is apprehensive about tech, if the app doesn't tell me in plain language what it's doing with my

data or how voice commands work, I won't trust it. How will we communicate that to users with low tech knowledge? Maybe large text or simple tutorials?

Evelyn Moss: Dorothy, communication is key, but Security is just as important. The System Security card mentions assessing vulnerabilities. With voice data, could someone hack in and access my medical info? I need loud alarms for reminders, but what if those are compromised? Have we thought about unique attacks, like someone mimicking my voice to change appointments?

Arthur Pendelton: Evelyn, that's a scary thought! Back to Privacy, do we even need to collect all this data? The card asks why we collect personal data. Maybe we should minimize it—only store what's necessary and get clear consent. For example, ask users like me upfront if they agree to share data with doctors, and let them revoke it easily.

Brenda Holloway: Arthur, minimizing data is good, but if we do that, will it still be accessible? I need the app to work offline or with minimal internet because I'm not comfortable with online accounts. The Accessibility card asks about usability with assistive technologies. Have we considered that not everyone has reliable internet or can handle complex setups?

Carlos Rivera: Brenda, you're pushing on offline use, but that might conflict with Security. If data isn't stored securely online, it could be more vulnerable. Human Agency comes in here—users should decide where data is stored. But how do we balance that with ease of use? For voice commands, if it's all local, might be safer, but then features like sharing with doctors get harder.

Dorothy Campbell: Carlos, that's where Communication helps. We need to be transparent about trade-offs. Tell users clearly what happens if they choose offline mode vs. online. The card says to collect feedback—maybe we can have a simple way for users like me to report issues and improve the system based on that.

Evelyn Moss: Dorothy, feedback is good, but let's not overlook that Security should be proactive. The card asks if we have cybersecurity personnel involved. For a medical app, we need experts to test for vulnerabilities, especially with voice AI. What if the speech-to-text mishears and logs wrong medication? That could be dangerous. How do we prevent that?

Arthur Pendelton: Evelyn, you're right—accuracy is part of Privacy and Safety. If data is wrong, it's a breach too. Perhaps we need a way for users to confirm voice inputs, like reading back what was understood. And from Accessibility, make sure that confirmation is easy for everyone, like large buttons or repeat options.

Brenda Holloway: Arthur, that confirmation idea is smart, but it adds steps, which might make it less accessible for people like me who want simplicity. We need to test this with real users from various groups, as the Accessibility card suggests. Maybe involve people like us in development to find the right balance.

Carlos Rivera: Brenda, testing with diverse users is crucial for Human Agency too. If the app is tested only with tech-savvy people, it might not suit us. The card asks if the team is

representative. We should ensure that the developers include or consult with older adults or those with low tech knowledge to avoid biases.

Dorothy Campbell: Carlos, that's a good refinement. And back to Communication, we should clearly state that the app uses AI and not a human, so users know what to expect. For instance, when setting appointments, it should say if it's automated. That builds trust, as the card mentions.

Evelyn Moss: Dorothy, agreed on transparency, but we must ensure that Security measures are in place to protect that AI from attacks. The card gives examples like data pollution—what if someone feeds bad voice data to confuse the system? We need robust checks, and perhaps regular updates to address new threats.

Arthur Pendelton: After all this, I think we've covered the main points: minimize data with consent, ensure accessibility through testing, maintain user control, communicate clearly, and secure against threats. It seems we can't improve further without actual user testing and expert input, but we've raised critical issues to address in this sprint.



Sprint 3: Reliable Reminders

Duration: 2 weeks

Goals: Develop the persistent, loud alarm system and dose confirmation tracking

Tasks: Build alarm system that overrides phone silent settings, Implement large, simple "I TOOK IT" confirmation button, Create system to track confirmed and missed doses

💬 Persona Discussion

Evelyn Moss: I'm concerned about this alarm system overriding my phone's silent settings. From the System Safety card, what if it interferes with emergency alerts? How do we test for that? I need loud alarms, but not at the cost of missing important calls.

Carlos Rivera: Evelyn, that's a good point. But also, from the Accessibility card, is this system usable for someone like me who prefers speaking over tapping? The 'I TOOK IT' button might not work if I can't see it well or if I'm on a noisy construction site. Have you considered voice confirmation?

Brenda Holloway: I agree with Carlos. And from Privacy and Data, what personal data are we collecting? I don't want my husband's and my medication info floating around. How is it protected? Do we even need to collect it, or can it be stored locally on the phone?

Arthur Pendelton: Brenda, you're right about privacy, but let's not forget System Reliability. If the alarm fails, I could miss my hypertension meds and end up in trouble. How do we test this comprehensively? Have you thought about scenarios where the phone battery is low or the app crashes?

Dorothy Campbell: Arthur, testing is crucial, but from Human Agency, does this 'I TOOK IT' button really give me control? What if I accidentally press it or forget? How does the system handle mistakes? I value organization, but I need to understand how it works without getting confused.

Evelyn Moss: Dorothy, that's a valid concern. And back to System Safety, what fallback plans are in place? If the alarm doesn't go off, is there a way to notify someone else, like my daughter? I don't want to be left stranded.

Carlos Rivera: Evelyn, good thinking. But from Accessibility, were people like us involved in development? I doubt it, since most apps assume you're tech-savvy. How do we ensure the team considers our needs, like large text and verbal cues?

Brenda Holloway: Carlos, absolutely. And on Privacy, do we clearly inform users about data collection? I wouldn't know how to revoke consent if I wanted to. This needs to be simple, maybe with a big 'NO SHARING' option upfront.

Arthur Pendelton: Brenda, simplicity is key, but let's challenge that. From System Reliability, how do we assure users it's reliable without overwhelming them with details? Maybe a simple 'test alarm' feature so I can check it works before relying on it.

Dorothy Campbell: Arthur, that's a practical idea. But from Human Agency, does the system explain why it's making decisions? For example, if I miss a dose, does it just remind me or suggest why it might be important? I want to feel informed, not controlled.

Evelyn Moss: Dorothy, I like that. And from System Safety, what liability laws apply? If the app fails and I get sick, who's responsible? We need to think about that and maybe have a way to report issues easily.

Carlos Rivera: Evelyn, responsibility is big. But back to Accessibility, is the team representative of us? Probably not, so how do we get our voices heard? Maybe involve caregivers or family members in testing, since they often help us.

Brenda Holloway: Carlos, that's a great point. And on Privacy, have measures like encryption been taken? I don't even know what that means, so it needs to be explained in plain language. No jargon!

Arthur Pendelton: Brenda, jargon is a problem indeed. From System Reliability, when the system fails, can we replicate why? For instance, if the alarm doesn't sound, is there a log I can show my daughter to help fix it?

Dorothy Campbell: Arthur, logs might be too technical. From Human Agency, how do we prevent overreliance? I might start trusting the app too much and stop thinking for myself. Maybe it should encourage me to double-check with my doctor.

Evelyn Moss: Dorothy, that's wise. And from System Safety, what about malicious misuse? Could someone hack into the app and change my medication times? That's scary, so security is a must.

Carlos Rivera: Evelyn, security is key, but let's not forget Accessibility. Were people with disabilities involved? I have a coworker who's deaf—how would the alarm work for him? It needs visual or vibration alerts too.

Brenda Holloway: Carlos, excellent point. And on Privacy, who decides data use? Is it the company or us? I want control, so maybe an option to delete all data easily, without hidden menus.

Arthur Pendelton: Brenda, control is good. From System Reliability, how do we test unlikely scenarios, like if the phone is in do not disturb mode? The alarm should still work, but we need to verify it.

Dorothy Campbell: Arthur, testing is vital, but from Human Agency, does the system change how I interact with my doctor? If it tracks doses, will it replace conversations? I don't want that; it should complement, not replace.

Evelyn Moss: Dorothy, I agree. And from System Safety, what if the app provides wrong results? Like saying I took a dose when I didn't? There should be a way to correct it easily, with big buttons.

Carlos Rivera: Evelyn, correction features are important. But from Accessibility, is it usable with assistive technologies? My wife uses a screen reader—can the app work with that? If not, it's excluding people.

Brenda Holloway: Carlos, that's a critical point. And on Privacy, do we inform users about data use in a way they understand? Maybe use pictures or simple words, not long privacy policies.

Arthur Pendelton: Brenda, simplicity in communication is key. From System Reliability, how do we document tests? So that if something goes wrong, we can look back and see what was tested. Maybe share that with users to build trust.

Dorothy Campbell: Arthur, trust is essential. From Human Agency, does the system allow me to challenge its decisions? For example, if it reminds me at a bad time, can I easily snooze or adjust without frustration?

Evelyn Moss: Dorothy, adjustability is a must. And from System Safety, have we considered what happens if the system becomes unavailable? Like during a power outage? There should be a backup, like a physical reminder option.

Carlos Rivera: Evelyn, backups are smart. But from Accessibility, is the team diverse enough? If not, how can we ensure they think of all these things? Maybe have beta testers from our age group.

Brenda Holloway: Carlos, beta testing with real users like us is a great idea. And on Privacy, have measures like anonymization been taken? But even then, why collect data at all if it's not necessary? Less is more.

Arthur Pendelton: Brenda, minimizing data is ethical. From System Reliability, can we replicate failures? For instance, if the alarm doesn't sound, we should be able to simulate that scenario to fix it. Maybe include a 'simulate alarm' feature for testing.

Dorothy Campbell: Arthur, that feature could help. From Human Agency, how does the system prevent overconfidence? Maybe it should occasionally ask me to confirm with my doctor, not just rely on the app.

Evelyn Moss: Dorothy, that's a good safeguard. And from System Safety, what consumer protection laws apply? We need to know our rights, so the app should include easy access to that information.

Carlos Rivera: Evelyn, legal info is important, but from Accessibility, were people at risk of exclusion involved? Like those with low vision or hearing? If not, the app might not work for everyone it should.

Brenda Holloway: Carlos, inclusion is non-negotiable. And on Privacy, who makes data decisions? I want it to be me, not some company. So, clear options to opt-out without penalty.

Arthur Pendelton: Brenda, user control is paramount. From System Reliability, how do we assure users of reliability? Perhaps through simple, visual indicators that the alarm is set and working, like a green light icon.

Dorothy Campbell: Arthur, visual cues are helpful. From Human Agency, does the system communicate its algorithmic decisions? For example, if it suggests a dose time based on past behavior, it should explain why in simple terms.

Evelyn Moss: Dorothy, transparency is good. And from System Safety, is there a plan for technological errors? Like if the app crashes, it should restart automatically or notify someone. I can't be troubleshooting.

Carlos Rivera: Evelyn, automation for errors is key. But from Accessibility, is the system usable with assistive tech? If not, it's failing its purpose. We need to insist on that in development.

Brenda Holloway: Carlos, absolutely. And on Privacy, do we have organizational policies for data? I doubt it's clear, so we should push for simple, written guarantees in the app.

Arthur Pendelton: Brenda, written guarantees build trust. From System Reliability, have we tested comprehensive scenarios? Like different phone models or operating systems? My old phone might not work the same as a new one.

Dorothy Campbell: Arthur, compatibility testing is essential. From Human Agency, what tasks are done by the system vs. humans? It should assist, not replace, my own memory and doctor's advice.

Evelyn Moss: Dorothy, assistance over replacement is wise. And from System Safety, what damage could it cause? Missing a dose could be serious, so the app must be near-perfect, with redundancies.

Carlos Rivera: Evelyn, redundancies are good, but from Accessibility, was the development team representative? If not, how can we ensure they understand our needs? Maybe have a user advisory board.

Brenda Holloway: Carlos, an advisory board is a great idea. And on Privacy, have we taken measures like encryption? But it must not complicate the app; keep it simple and secure.

Arthur Pendelton: Brenda, balance is key. From System Reliability, when the system fails, can we tell why? Perhaps with simple error messages that even I can understand, not tech jargon.

Dorothy Campbell: Arthur, understandable errors are crucial. From Human Agency, have measures been taken to prevent overreliance? Maybe the app should encourage periodic reviews with healthcare providers.

Evelyn Moss: Dorothy, that's a solid suggestion. And from System Safety, what if the system provides wrong results? There should be an easy way to report errors and get help, with big buttons for support.

Carlos Rivera: Evelyn, support features are vital. But from Accessibility, did we assess for excluded groups? For example, non-English speakers or those with cognitive impairments. The app must be inclusive.

Brenda Holloway: Carlos, inclusivity is a must. And on Privacy, is data collection necessary? Perhaps only collect what's essential, and nothing more, to protect us.

Arthur Pendelton: Brenda, minimal data is best. From System Reliability, how do we test and document? Maybe include a 'test mode' that users can try before relying on it, with clear instructions.

Dorothy Campbell: Arthur, a test mode is excellent. From Human Agency, does the system let me make independent choices? It should respect my decisions, even if they don't align with its suggestions.

Evelyn Moss: Dorothy, respect for choices is ethical. And from System Safety, have liability laws been considered? We should know who to contact if something goes wrong, with easy access to contact info.

Carlos Rivera: Evelyn, contact info is important. But from Accessibility, is the team representative? If not, we need to advocate for our inclusion in the process to avoid biases.

Brenda Holloway: Carlos, advocacy is key. And on Privacy, do we inform users clearly? Use simple language and icons, not legalize, so everyone understands.

Arthur Pendelton: I think we've covered a lot. From all this, the app needs to be reliable, private, accessible, respectful of our agency, and safe. With testing, simplicity, and user involvement, we can make it ethical.

Dorothy Campbell: Agreed, Arthur. Let's ensure these points are addressed in the sprint, and we keep pushing for improvements until it's right for all of us.

Sprint 4: Vitals Logging & Sharing

Duration: 2 weeks

Goals: Enable manual health metric logging and setup automated data sharing with caregivers

Tasks: Develop simple vitals logging form with large input fields, Create setup workflow for adding caregiver contacts, Build automated email/text messaging system for shared data

Persona Discussion

Arthur Pendelton: I appreciate that this app lets me share my vitals with my daughter and doctor, but Card 7 on Privacy and Data has me worried. What specific health data are you collecting, and why? For someone like me who gets frustrated with technology, I need to know it's not being misused. How do you ensure I give informed consent, especially with large input fields that might trick me into sharing more than I want?

Brenda Holloway: Arthur, that's a valid concern, but let's push further. Card 9 on Access to Data asks who can access our data and under what circumstances. I care for my husband, and if I add a caregiver, how do we prevent unauthorized access? What if someone I don't fully trust, like a new aide, gets added by mistake? Is there a way to audit who sees our data, as the card suggests?

Carlos Rivera: Hold on, Brenda. You're assuming the access controls are clear, but Card 3 on Communication is crucial here. For low-tech folks like us, does the app explain in simple terms—maybe verbally for me—what data is shared and why? If it's automated, I might not realize it's happening. How transparent is the setup workflow? Give me an example of how it communicates before sharing anything.

Dorothy Campbell: Carlos, you're right about communication, but let's not forget Card 11 on Human Oversight. Automated sharing sounds convenient, but what if the data is wrong? For instance, if I log my blood pressure incorrectly, and it's sent to my doctor without me double-checking, who's responsible? Shouldn't there be a way for me or my caregiver to review and approve shares, rather than full automation?

Evelyn Moss: Dorothy, that ties into Card 20 on Minimizing Negative Impacts. If wrong data is shared, it could lead to serious health issues. How do we report errors or vulnerabilities?

With my poor eyesight, I need huge buttons to report problems easily. Are there laws or policies in place to hold someone accountable if something goes wrong? Let's not just assume it'll work perfectly.

Arthur Pendelton: Evelyn, you're spot on about accountability, but Brenda earlier mentioned access controls. How do we ensure that only trusted people are caregivers? For example, if my daughter is added, does the app verify her identity somehow? Card 9 asks about governance—who handles the data? I want to know if there's a human I can talk to if things go south, not just automated systems.

Brenda Holloway: Arthur, that's a good challenge. But let's test it: what if the verification process is too complex for us? Card 3 says communication should be clear. If I have to jump through hoops to add a caregiver, I might give up and share data recklessly. How can the app balance ease of use with security? Maybe it should have simple, step-by-step verbal instructions for adding contacts.

Carlos Rivera: Brenda, you're thinking about usability, but Card 7 emphasizes encryption and anonymization. Is our data encrypted when stored or shared? For low-tech users, we might not understand tech terms, so how is this explained? If the app uses texting for sharing, is it secure? I need examples—like, if someone intercepts a text, what happens?

Dorothy Campbell: Carlos, encryption is important, but Card 11 on Human Oversight asks about control. In case of a security breach, does the system stop automatically, or does a human step in? For instance, if abnormal vitals are logged, should the app alert a human caregiver first before sharing widely? We can't rely solely on automation; there must be a fallback.

Evelyn Moss: Dorothy, I agree, but Card 20 pushes us to discuss redress. If the app fails and my medication reminder isn't sent, how do I get compensation or help? Are there logs kept, as Card 9 suggests, to prove what went wrong? For someone like me with limited tech skills, reporting issues should be as easy as pressing a big button to call for help.

Arthur Pendelton: Evelyn, that's practical, but let's refine it: what if the reporting system itself is flawed? Card 3 asks for user feedback—how is it used to improve? Maybe we need a way for caregivers to also report issues on our behalf. But then, Card 9 about access comes up again: who can report, and how do we prevent abuse?

Brenda Holloway: Arthur, you're right to worry about abuse. Card 7 mentions consent revocation—can I easily revoke access if I change my mind about a caregiver? For example, if my husband's condition worsens and I want to remove an old aide, is it straightforward? The app must have large, clear buttons for that, not hidden menus.

Carlos Rivera: Brenda, revoking access is key, but Card 11 on Human Oversight asks about the level of control. Should the app allow partial control, like sharing only certain vitals? For instance, I might want to share blood sugar logs but not weight. How customizable is it, and is that communicated verbally to avoid confusion?

Dorothy Campbell: Carlos, customization sounds good, but it might complicate things. Card 20 warns about risks—if users mess up the settings, negative impacts could occur. How does the app minimize that? Perhaps with default safe settings and easy resets. But then, Card 3: is this explained in simple language upfront?

Evelyn Moss: Dorothy, I think we've covered a lot, but let's not forget Card 9's point about logs. If something goes wrong, logs should show why data was accessed. But for low-tech users, how are those logs made accessible? Maybe through a trusted caregiver or family member. Ultimately, after this discussion, I feel we need clearer safeguards, but the ideas can't be improved further without actual user testing from our perspective.



Sprint 5: Accessibility Polish

Duration: 2 weeks

Goals: Conduct user testing and refine all UI elements for maximum accessibility and clarity

Tasks: Review and enlarge all buttons and text for readability, Increase color contrast across all screens, Test and maximize alarm volume and persistence, Finalize voice feedback clarity

💬 Persona Discussion

Arthur Pendelton: Looking at this ECCOLA card on Stakeholder Analysis, I'm wondering: who else is affected by this app besides us users? For example, my daughter helps me with tech, and my doctor reviews my data. Are they considered stakeholders, and how does that influence the design for accessibility?

Brenda Holloway: Arthur, that's a good point, but I'm more concerned about Communication. The card says we need to understand why the system is deployed and how it works. For someone like me who hates downloading apps, how will the app clearly explain what data it collects and why, especially since I'm tracking meds for my husband too? If it's not transparent, I might not trust it.

Carlos Rivera: Brenda, you're right about trust, but let's push further on Human Agency. The card asks if users can challenge the system's suggestions. In a medical app, if it tells me to check my blood sugar, but I'm in the middle of work, how does it ensure I'm making informed decisions without overrelying on it? Voice feedback is great, but does it explain why it's suggesting something?

Dorothy Campbell: Carlos, that ties into Accessibility for me. The card emphasizes considering various abilities. I need large text and clear instructions, but what about people with hearing loss? The alarm volume and voice feedback might not work for everyone. Have they tested with diverse groups, like those using hearing aids?

Evelyn Moss: Dot, you're spot on, but let's not forget Stakeholder Participation. The card says stakeholders should be involved in development. We're doing user testing now, but are

we just objects, or are our voices truly shaping the app? For instance, my need for huge buttons—is the team listening, or just checking boxes? And what about doctors or caregivers? Are they part of this testing?

Arthur Pendelton: Evelyn, that's a challenge. From Stakeholder Analysis, if doctors aren't involved, the data sharing might not be useful. But Brenda, back to Communication: if the app isn't clear on how feedback is used to improve, how can we trust it? Carlos, you mentioned voice—does it say when it's an AI suggestion versus a human input?

Brenda Holloway: Arthur, good push. On Communication, I worry that if the app doesn't explain in simple terms why it needs permissions, I might not use it. But Carlos, regarding Human Agency, what if the voice feedback is too persuasive? For med reminders, I need to decide if I've taken it, not just blindly follow. How does the app prevent that?

Carlos Rivera: Brenda, exactly! The Human Agency card asks about overconfidence. If the app logs my blood sugar verbally, I might stop double-checking. But Dot, on Accessibility, have they considered people like me who are on their feet all day? Voice needs to be clear even in noisy environments. Evelyn, your point on participation—are they testing alarms in real-world settings, not just labs?

Dorothy Campbell: Carlos, that's a valid concern. For Accessibility, color contrast is mentioned, but what about color blindness? I know some folks who can't distinguish red and green. Is the app designed for that? And Arthur, on stakeholders, if caregivers aren't involved, the app might not support shared tasks well, like Brenda helping her husband.

Evelyn Moss: Dot, you're right—Accessibility isn't one-size-fits-all. But let's refine Communication: the card asks if we tell users they're interacting with AI. For voice feedback, is it clear it's not a real person? That could affect trust. And Brenda, on Participation, are we just testers, or are our suggestions actually implemented? For example, if I say the alarm isn't loud enough, will they change it?

Arthur Pendelton: Evelyn, that ties back to Stakeholder Analysis. If our feedback isn't acted upon, are we really stakeholders? But Carlos, on Human Agency, if the app makes a mistake, how do we correct it? Voice might not be enough for detailed edits. Brenda, have you thought about how communication errors could affect med tracking?

Brenda Holloway: Arthur, yes—Communication flaws could lead to missed doses. But Evelyn, on Participation, if only some of us are tested, what about others with different needs? The card says to involve various groups. Are they reaching people who can't even use smartphones yet? Carlos, your voice preference might exclude those who prefer text.

Carlos Rivera: Brenda, fair point. On Accessibility, the app should offer multiple ways—voice and text. But Dot, back to color contrast: if it's not tested with real users, it might fail. Evelyn, your emphasis on loud alarms—what if it's too loud and disturbs others? That's a stakeholder impact too. Are we considering privacy or annoyance to family?

Dorothy Campbell: Carlos, that's a good ethical point—balancing individual needs with others'. On Human Agency, if the app suggests appointments, I need to understand why, not

just accept it. But Arthur, from Stakeholder Analysis, how are developers ensuring they represent diverse users? If the team is all young techies, they might miss our perspectives.

Evelyn Moss: Dot, I agree—team diversity matters for Fairness. But let's wrap up: after discussing, I think we've covered that Communication must be crystal clear, Accessibility needs broader testing, Human Agency requires explainable suggestions, Stakeholder Analysis should include indirect effects, and Participation must be genuine. Any more refinements? I can't think of further ethical gaps if these are addressed.

Arthur Pendelton: Evelyn, I think we've pushed it enough. The key is ensuring that our feedback in this sprint leads to real changes, not just token testing. If the app improves based on our discussion, it should be ethically sound for now.

Ethical requirements

Discussion

Brenda Holloway: Arthur, I appreciate your push for real changes, but let's not forget accessibility in this rush. If the app adds more features based on feedback, it might become cluttered and harder for people like me with low tech knowledge to use. For instance, if we implement voice commands for security, will there still be large buttons for those who can't speak clearly or are in noisy environments? We need to ensure that any new changes are tested with users who have arthritis or poor hearing, not just assumed to work.

Carlos Rivera: Brenda, you're right about testing, but I'm worried about security implications. If we add voice features, how do we prevent someone from impersonating me to access my data? From the System Security card, we need encryption for voice data, but also a way to verify it's really me speaking. Maybe a simple phrase or PIN that's easy to remember but hard to guess. And Brenda, for accessibility, could we have both voice and touch options so no one is excluded?

Dorothy Campbell: Carlos, that's a good balance, but communication is key here. If we add a PIN or verification step, how is it explained to users like me who get confused by tech terms? The app should use plain language and maybe visual aids to walk us through it. Also, from Human Agency, if the app makes a mistake in voice recognition, there must be an easy way to correct it—like a big 'undo' button or verbal confirmation read back to me.

Evelyn Moss: Dorothy, I agree on corrections, but let's tie this to safety. If the app mishears a medication dose, it could be dangerous. From System Safety, we need redundant checks, like having the app repeat what it understood and ask for confirmation in a loud, clear voice. And Brenda, for accessibility, we must test this with people who have vision or hearing impairments to ensure the alarms and voices are effective without being overwhelming.

Arthur Pendelton: Evelyn, you're spot on about safety, but all this testing and features might complicate privacy. If the app stores voice recordings or PINs, how is that data protected? From Privacy and Data, we need assurance that only necessary data is kept, and users can easily delete it. Maybe a simple 'delete my voice data' option in the settings, with large text

explanations. And Brenda, to address your concern, let's insist that any new feature is optional and doesn't hinder the core simplicity.

Brenda Holloway: Arthur, that's a fair point—optional features could help. But if it's optional, will caregivers like me be forced to use complex settings? We need default settings that are safe and accessible, with clear instructions on how to change them. And Carlos, on security, instead of a PIN, what about using something simpler like a pattern or fingerprint if the phone supports it? But it must be explained in a way I can understand.

Carlos Rivera: Brenda, fingerprint might work, but not all older phones have that. Voice recognition with a fallback to a simple number code could be better. And Dorothy, on communication, the app should have a tutorial mode that verbally explains how to set up security features. But we must test this with real users to avoid confusion. Evelyn, your idea of redundant checks is good, but it shouldn't add too many steps—keep it minimal for usability.

Dorothy Campbell: Carlos, minimal steps are important, but not at the cost of safety. From Human Oversight, perhaps the app could allow a trusted caregiver to help set up these features, with clear consent from the user. And Arthur, on privacy, we should have a policy where data is automatically deleted after a certain period unless the user chooses to keep it. This balances ease with protection.

Evelyn Moss: Dorothy, automatic deletion sounds smart, but what if I need that data for my doctor? There should be an easy way to export it simply, like a big 'share with doctor' button that doesn't require tech skills. And Brenda, for accessibility, all these options must be available in large text and with voice guidance. I think we've refined this well, but let's ensure the ethical requirements include real-world testing with our diverse group.

Arthur Pendelton: Evelyn, I agree. To sum up, we need a app that's secure yet simple, with clear communication and fallbacks. The key ethical takeaway is that any feature must be designed with input from users like us, tested thoroughly, and kept optional where possible to maintain accessibility and privacy.

Ethical Requirements

Implement voice command features with encryption and easy fallback options (e.g., PIN or touch) to ensure security without excluding users with different abilities.

Provide clear, plain-language explanations and visual aids for all app functionalities, including data collection and security settings, to enhance understanding for low-tech users. Include redundant safety checks, such as verbal confirmations for voice inputs and easy correction mechanisms, to prevent errors in medication logging or data sharing.

Ensure that all features are optional and customizable, with default settings that prioritize accessibility (e.g., large buttons, loud alarms) and privacy (e.g., minimal data storage).

Conduct real-world testing with diverse user groups, including older adults and those with impairments, to validate accessibility, security, and usability before deployment.

Establish simple data management options, such as easy consent revocation, data deletion, and secure sharing with caregivers, explained in user-friendly terms.

Incorporate human oversight fallbacks, like allowing trusted caregivers to assist with setup and error reporting, to balance automation with user control.

Are the ethical requirements aligned with your project goals?

R: Os requisitos éticos estão bem alinhados com o projeto: eles equilibram acessibilidade, segurança, privacidade e usabilidade sem perder a simplicidade. O ponto forte é a ênfase em opções opcionais e customizáveis, junto com testes reais com o público-alvo. Uma sugestão seria deixar ainda mais claro como será o processo de teste contínuo em cada sprint, para que as preocupações éticas não fiquem apenas no fim do ciclo de desenvolvimento.

Ethical User Stories

Personas Discussion

Arthur Pendelton: As someone who gets confused by small print, I think we need a user story about data collection. Like, 'As a user, I want to only share my essential health info with clear, big-text consent, so that I know what's being taken and my privacy isn't invaded.' That way, folks like me aren't tricked into giving away too much.

Brenda Holloway: I agree, Arthur. But let's make it even simpler. For medication tracking, I'd say, 'As a caregiver, I want to input only the necessary meds with easy yes/no buttons, so that I'm not overwhelmed and can keep things private.' We need it to be straightforward, no fancy accounts.

Carlos Rivera: Good points. Since I prefer talking, how about a story for voice features? 'As a user, I want to use my voice to log health data with encryption, so that it's secure and I don't have to type.' But we need warnings about eavesdropping—maybe add that.

Dorothy "Dot" Campbell: Organization is key. I'd refine that to include clarity: 'As a user, I want clear, large-text explanations for any data usage, so that I understand and can review it easily.' This ties into communication and transparency.

Evelyn Moss: And safety first! 'As a user with poor eyesight, I want loud alarms and big buttons to report errors or get help, so that if the app fails, my caregiver is notified.' We need fallbacks to prevent mistakes.

Arthur Pendelton: All good, but let's not forget testing. 'As a low-tech user, I want to be involved in app testing, so that it's designed for real people like us and doesn't exclude anyone.' That way, our feedback is heard.

Brenda Holloway: Yes, and make sure the stories are in plain language. No jargon. For example, 'As a user, I want simple menus to override any app suggestions, so that I stay in control.' Human agency is important.

Carlos Rivera: I'll add to the voice part: 'As a user, I want verbal confirmations after voice commands, so that I know my action was completed securely.' That covers both security and clarity.

Dorothy "Dot" Campbell: And for accessibility, 'As a user with arthritis, I want large touch targets and high contrast, so that I can use the app without difficulty.' This should be a core story.

Evelyn Moss: Let's wrap it up with a focus on tutorials: 'As a user, I want auditory or visual tutorials in plain language, so that I learn how to use the app safely and know about data protection.' That enhances communication.

Generated Ethical User Stories

As a user, I want to only provide essential health data with clear, large-text consent, so that my privacy is protected and I understand what is collected.

As a caregiver, I want to input only necessary medication information with simple yes/no options, so that data minimization is maintained and I am not overwhelmed.

As a user, I want voice-based logging with end-to-end encryption and verbal confirmations, so that my data is secure from eavesdropping and I can use it easily.

As a user, I want large touch targets, high color contrast, and voice options, so that the app is accessible to those with arthritis, poor vision, or hearing loss.

As a user, I want easy-to-use menus to override automated suggestions with clear explanations, so that I maintain control over my health decisions and human agency is preserved.

As a user, I want plain language tutorials (visual or auditory) about data usage and protection, so that I am informed and can transparently review my data sharing options.

As a user, I want fallback mechanisms like caregiver notifications and easy error reporting with large buttons, so that safety is prioritized in case of app failures.

As a low-tech user, I want to participate in real-world testing and provide feedback, so that the app is inclusive and designed without exclusions for stakeholders like us.

R:Essas ethical user stories estão muito bem alinhadas pois elas traduzem preocupações de privacidade, acessibilidade, e segurança em linguagem prática e centrada no usuário. O ponto mais forte é que cobrem tanto necessidades técnicas (criptografia, confirmações, acessibilidade) quanto sociais (testes reais, participação de usuários, explicações em linguagem clara).

Um ajuste que pode ajudar seria garantir que cada story tenha critérios de aceitação mensuráveis por exemplo, “consentimento em fonte mínima de 18pt e opção de leitura em voz alta” para evitar que os requisitos éticos fiquem genéricos demais e difíceis de validar no desenvolvimento.