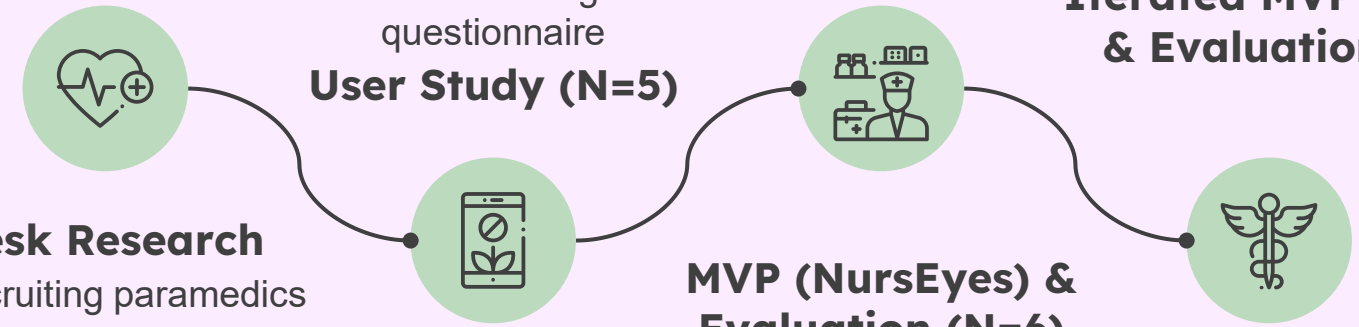
SOLITA

AIDOK
Hands-Free UX to Ease Paramedics' Tasks

Productive Pandas

Project Overview



Desk Research
+ Recruiting paramedics

Semi-structured interviews + background questionnaire
User Study (N=5)

MVP (NursEyes) & Evaluation (N=6)
Semi-structured interviews + post-questionnaire (+ background questionnaire)

Semi-structured interviews + post-questionnaire (+ background questionnaire)
Iterated MVP (AIDOK) & Evaluation (N=5)

Methods Used

role-playing video

post-questionnaires

hypothesis statement

point of view (pov)

stakeholder mapping

future studies

thematic content analysis

desk research

brainstorming

user stories

mvp features

value proposition canvas

customer segmentation

storyboards

”how might we...”

product design

semi-structured interview

affinity diagrams

Recap

Desk Research

25+

Articles Read

- Virve 2.0
- AI & Generative AI
- LLM
- Lifecare
- Merlot Medi
- Vuzix M400 Smart Glasses
- Glass E Smart Glasses
- Speech Based Assistants
- SnapCap System
- Using ChatGPT in Healthcare

User Study

The main challenges paramedics face are related to the following:

- Documentation
- Cognitive Load
- Accessing Data
- Sharing Information
- Bad Ergonomics
- Uncertainty

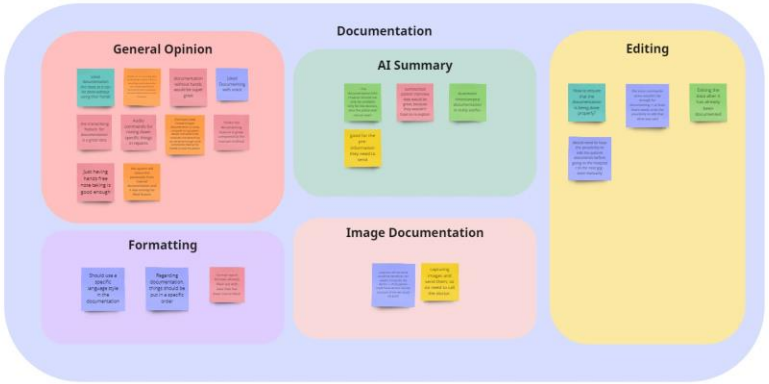
User Study

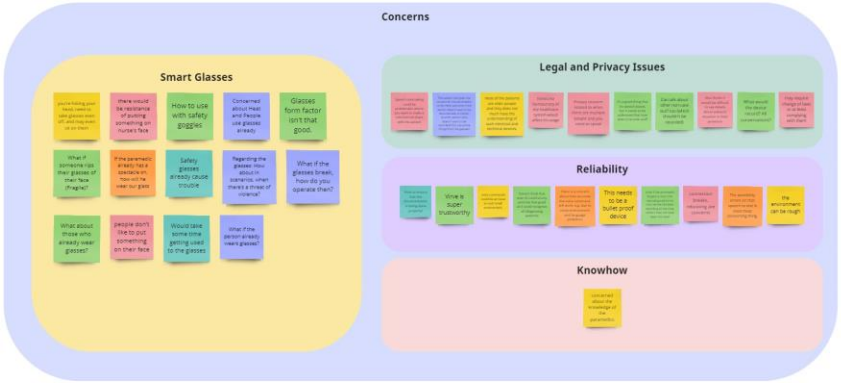
- Different health districts often have different kinds of systems and devices, and therefore a bit different ways of doing things
- Audio-based technology may be limited in noisy environments
- The system must be trustworthy, and privacy issues need to be considered

1st MVP (NursEyes) and Evaluation

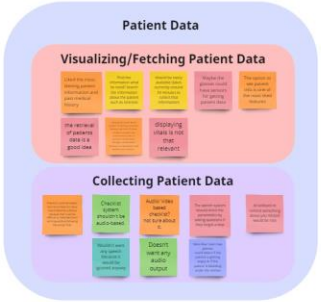
- Smart glasses for documenting and visualizing data and communication
- Form factor disliked
- Should work reliably and collect accurate data
- Live translation would be useful and should be incorporated
- Wouldn’t like lots of audio information
- Visualizing patient data wouldn’t also be handy because they already have screens, some thought might be useful
- Should support collaboration
- Not one solution fits all

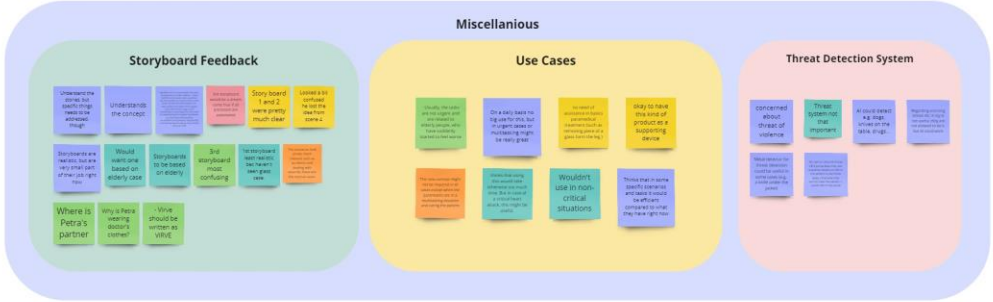
*This image is just a representation,
And not the actual product.

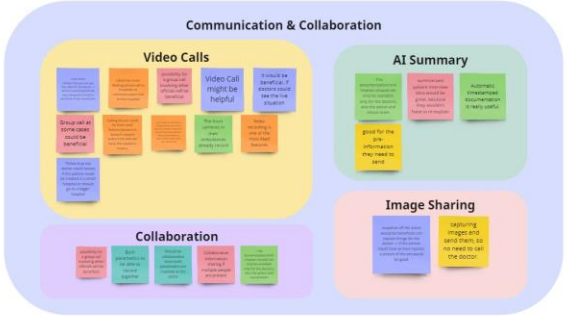

Documentation
General Opinion
AI Summary
Editing
Formatting
Image Documentation

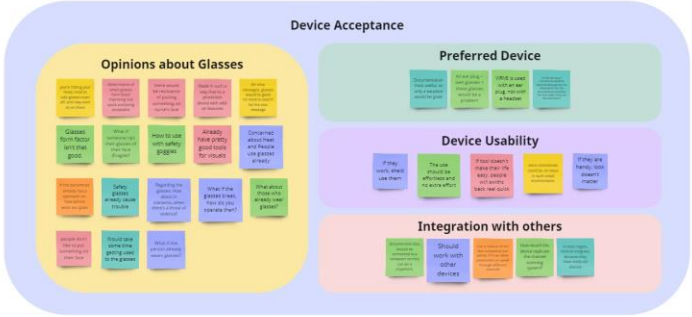

Concerns
Smart Glasses
Legal and Privacy Issues
Reliability
Knowhow


Translation


Patient Data
Visualizing/Fetching Patient Data
Collecting Patient Data

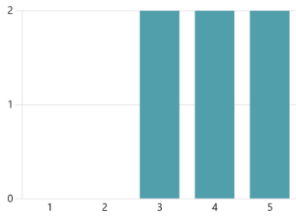

Miscellanious
Storyboard Feedback
Use Cases
Threat Detection System


Communication & Collaboration
Video Calls
AI Summary
Collaboration
Image Sharing


Device Acceptance
Opinions about Glasses
Preferred Device
Device Usability
Integration with others

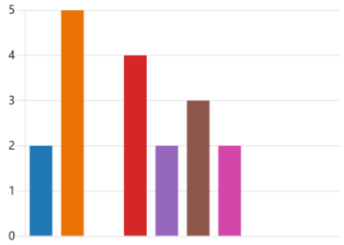
1. How would you rate the concept idea?

4.00
Average rating



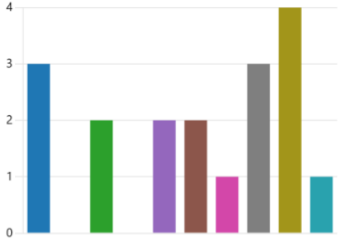
2. Please pick the three (3) features that would be **most** important to you.

Fetching patient data with voice	2
Documenting with voice	5
Automatic transcription and aud...	0
Video/image capturing and shar...	4
Visualising patient's vitals/metri...	2
Translation/interpretation of the...	3
Automatic summary of the colle...	2
Threat detection system for e.g. ...	0
Light indicator for recording	0
Other	0

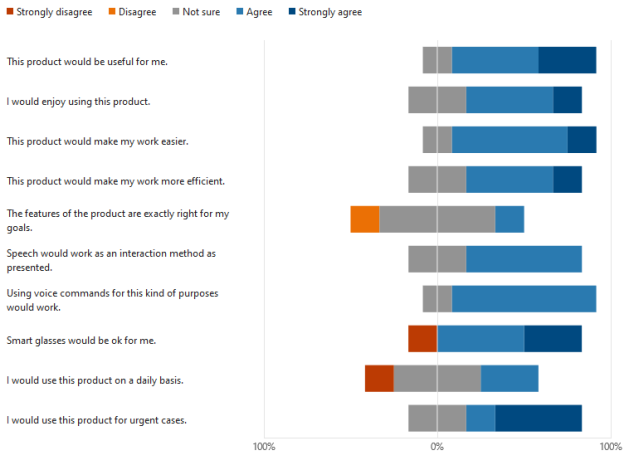


3. Please pick the three (3) features that would be **least** important to you.

Fetching patient data with voice	3
Documenting with voice	0
Automatic transcription and aud...	2
Video/image capturing and shar...	0
Visualising patient's vitals/metri...	2
Translation/interpretation of the...	2
Automatic summary of the colle...	1
Threat detection system for e.g. ...	3
Light indicator for recording	4
Other	1



4. Please answer the following statements (with options "strongly disagree", "disagree", "not sure", "agree", "strongly agree"):



It depends on were everything is being recorded. Is the information presented as augmented reality or does it show up for example on a computer screen or something else. (NOTE! This is a translation. This was originally written in Finnish.)

Device user experience, easiness of use and appropriate is determinant! Paramedics are nurses not it-troubleshooter.

Concept Idea 2.0

AIDOK – Revolutionizing Emergency Medical Services

Light & Durable Design

aidok

Empowering Paramedic Nurses, One Hands-Free Solution at a Time

Introducing our hands-free device for paramedic nurses: a game-changer in emergency care. With features like documentation, recording, communication, and instant translation, it's the ultimate tool for streamlined and efficient patient care

Built-in

Camera

HD camera to record and capture videos using voice commands.

Concept ,

Idea & **Sketch**

AI + Aid + Documentation = aidok

LED

Indication

LED indication for recording purpose

Ideation

Illustration

Product design

Product

Annotations

Smart Audio-Based Documentation

Transcription and generative AI to record and summarize voice-recorded notes and save captured images.

Hands-Free Voice / Video Communication

Communication via different channels & streaming video to share patient's condition.

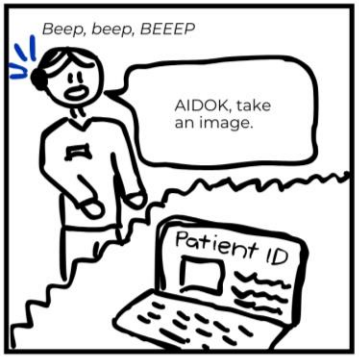
Live Translation / Interpretation

Easing communication with patients without a common language.

Documentation

The paramedics get a call saying an elderly person has fallen and hit her head. While Petra's colleague is driving, Petra connects their AIDOK devices to the case with their laptop, and transcripts (2 pcs), a summary, and the report file will be created.

When entering the scene, Petra activates AIDOK and starts to document what she sees. She does all this with her voice. The device informs about the recording with vibration, a blinking light, and a beep.



For better documentation and information sharing with other parties, Petra also takes an image of the situation. AIDOK informs about this with three beeps, simultanious vibration and light blinking.

Petra and her partner can both simultaniously document information with automatic timestamps without using their hands. Also information from other connected devices gets transferred to the same files automatically.

On their way to the hospital, Petra takes care of the patient and continues documentation as long as needed. Additionally, the doctor can already see the documented information with the timestamps, and is therefore well aware of the situation.

When they hand over the patient, the doctor is really happy about the comprehensive and clearly formulated documentation. Petra also checks that everything is covered, and she could also edit the report e.g. with their laptop, if needed.

Communication

Petra and her partner get an urgent call. While Petra's partner is driving, Petra connects their AIDOK devices to the case with their laptop.

Petra and her partner arrive to the scene and see that there has been an accident, one person is lying on the ground and one is shouting for help.

They examine the patient's condition, and Petra understands that there's something strange going on with the patient, and not everything in the patient's condition can be explained by the accident.

Petra wants to consult a doctor just in case, and starts a call by using her voice only while still taking care of the patient. The call is connected to the doctor via the Virve network.

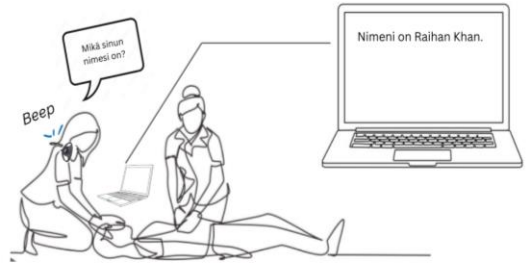
The doctor can see the documentation of the situation, but wants to still see the patient's condition live. Petra starts a video call with her voice, and the doctor can then see what Petra is seeing and assist better in the case.

The doctor can also monitor the patient's condition and assist Petra while Petra's partner is driving the ambulance. The patient gets the best possible help, and when consultation is no more needed, Petra can end the call with her voice.

Live Translation

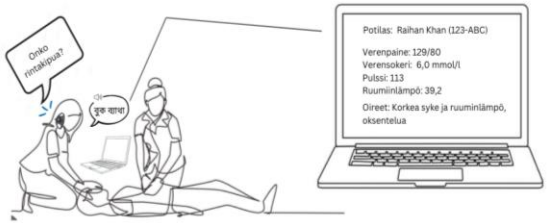
Petra and her partner arrive at the scene to assist a Bangladeshi international student who has collapsed due to overdrinking.

The paramedics wear the AIDOK device assigned to the case, and Petra initiates documentation with a voice command, "AIDOK, start recording (AIDOK, aloita tallennus)".



Petra also activates the translation feature with another voice command, "AIDOK, start translation (AIDOK, aloita kääntäminen/tulkkaus)." The laptop is positioned close to the patient so that its microphone can capture the patient's speech. AIDOK automatically detects the patient's language, enabling the paramedics to view translated speech as text displayed on the screen.

Petra communicates with the patient in Finnish, and her speech is captured through her AIDOK earpiece to the laptop. The patient can hear the translation through the laptop's speaker. AIDOK is capable of distinguishing between different speakers' voices, preventing echoes and loops.



As the translation feature seamlessly transitions between Finnish and Bengali, Petra begins interviewing the patient to gather more information about his condition, allergies, and medical history. When translation is no more needed, Petra ends it with a command “AIDOK, stop translation (AIDOK, lopeta tulkkaus/kääntäminen)”, and AIDOK informs about this with a beep, blink, and a vibration.

Thanks to AIDOK's translation feature, the paramedics can provide the patient with better treatment and document the case properly and effectively.

02

MVP Evaluation

Qualitative + Quantitative Data

Participant Summary

N=5

Participants in Total

2 participants participated in all, 1 to the user study, 1 to the 1st evaluation, 1 was totally new

60/40

Gender Distribution

60% females (N=3)
40% males (N=2)

32-48

Age Distribution

From a student to professional of around 20 years of experience

4

Wellbeing Services Counties

North Savo, South Ostrobothnia x 2, Pirkanmaa, Western Uusimaa

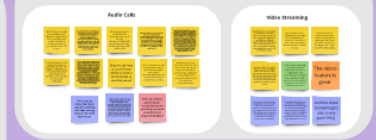
Semi-structured Interviews

Qualitative feedback | In English & Finnish | Online

Features

Documentation

Communication



Translation

Additional Ideas/Features

Personalisation

Concerns

Reliability & Accuracy

Safety & Privacy

Miscellanious

Wearability

Data Management

Feedback

Concept

Video

Interview & Project

Storyboards

Interaction methods

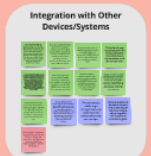
Speech & Activation

Vibration, Audio & Visuals

The device

Form Factor

Integration with Other Devices/Systems



Acceptance

Main Findings

The concept and all of its features were **well liked,** and so were the storyboards and the video.

Focus should be on **reliability, accuracy and safety & privacy** issues.

The **translation / interpretation** feature **may need more iteration.**

Integration with their other main devices/systems **is a must.**

Comments on Features

Documentation

- Faster documentation
- Easier to share information
- Hand-free interaction is liked
- Automatic timestamps would be a great addition.
- The data fetched from measurement devices transferred to the same documentation was considered great
- The documentation should be well-structured (they have a certain way of doing and reporting things)

Communication

- Making communication easier is a great plus, as communication issues are very common
- Real-time video calling to doctors and other authorities is a great feature
- Video streaming feature helpful in wound management and accident cases
- Calling hands-free would be helpful especially when a paramedic is multitasking
- Priority of the calls should be carefully considered so that more important calls don’t block less important one
- Need to be able to choose a specialized doctor, when needed

Translation/Interpretation

- Was seen as one of the most important features, as that is something they are currently missing totally
- Would help them when dealing with non-Finnish patients
- Some would prefer voice translation via AIDOK while others would prefer reading it from the laptop screen to avoid extra information coming to their ear

Additional Features

- Some participants who already participated in the first evaluation of our concept idea, now missed some features we excluded from this
- Some would have still enjoyed the features smart glasses with augmented reality could provide
- One would like it to give gentle reminders of the time already spent and guide in the treatment or alerting
- Fetching patient’s information with voice e.g. from the last 3 months or so and displaying those on the compute would ease decision-making

Personalization

- Hoped that the product could be personalized according to their needs
- Not everyone may like the same kind of features and interaction methods
- Might like to decide e.g. what kind of commands to use and how the device would beep and vibrate

Some Concerns

Reliability & Accuracy

- The biggest concerns were related to these
- Aren’t sure if the device could detect correctly what they or the patients are saying
- How would the device deal with different dialects, noisy environments, etc. while documenting or translating?
- Should be automated and enter correct data so it can be trusted, otherwise it’s useless.

Wearability

- Some were concerned if the product would sit well in their ear, because one size may not fit well for all
- Suggested that it could have some kind of a temple or a string that goes behind their head/neck or to the other ear like in sports glasses
- Should also work with helmets and glasses
- The device shouldn’t be heavy, as it would feel unpleasant and make it harder to stay in place

Safety & Privacy

- External people should be able to be excluded (and that is what we planned to do with AI)
- It would increase paramedics' safety, if the device could, if needed, be activated also without a voice command, like with a button
- Wireless data transfer can be a safety/privacy issue, and it's also unclear if a patient's consent is required before recording
- Addressing these concerns would require help from some legal advisor

Data Management

- One participant was especially worried about the amount of data the device collects and saves, and how that would be managed
- Wouldn’t like it to record unnecessary stuff
- Worried that it would create so much data that she wouldn’t be able to read it and that it would slow down the computer

Miscellaneous

- Integration and pairing with other devices/systems
- Priority of the calls
- Hygiene, if the devices aren’t personal

Other Topics and Feedback

About the Device

- Wireless and small design liked by many
- Elimination of extra devices considered great, would just want one thing to use
- Smart glasses (or more like a screen that could be turned over glasses) or a smartwatch could be useful in some situations for displaying information
- The connectivity with other existing devices and systems such as Virve needs to be considered
- Should be easily pairable (defibrillator & patient information systems) and work with Kejo (which is highly secured)
- Old devices would probably need an upgrade first
- May take some time to get used to it, and should be tested in action to better tell if they'd truly like it or not

About Interaction Methods

- Speech as an interaction method is a good thing, but some would prefer less intrusive commands and a more natural way of speaking
- Should have a button to activate the documentation with hands (wasn’t visible in the product description or the storyboard)
- The way the translation feature works may need some iteration
- In general, vibration, beep signals, and light indicators were seen as useful to indicate that the device is on and that it could detect the commands
- The device should somehow, preferably with vibrations and light, indicate in certain intervals, that it’s recording, so that they won’t forget that
- The beeps and vibrations shouldn’t be too frequent, loud, or intensive, because that would feel uncomfortable, disturbing, and distracting

Overall Feedback

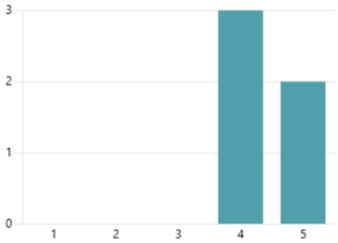
- We succeeded in explaining the concept idea well, and all liked it and found it useful
- The storyboards were now more realistic and simpler but comprehensive enough to get the idea
- The video explained the concept nicely even though the participants could see that we are not healthcare professionals
- The current MVP idea provided enough value to the users compared to the initial concept idea and was warmly welcomed
- The ones who also participated in the first evaluation (NursEyes) said that AIDOK felt like a more understandable, simpler, and logical solution
- Should/could some kind of smart glasses still be designed and developed?
- Hard to fill everyone’s needs, and it’s good to start with a minimal and robust device

Post-Questionnaire

Quantitative + Qualitative Feedback | Microsoft Forms

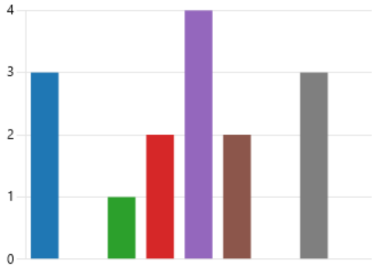
1. How would you rate the concept idea?

4.40
Average rating



2. Please pick the three (3) features that would be **most** important to you.

Documenting with voice	3
Image capturing and sharing	0
Voice calls (individual/group)	1
Video calls (individual/group)	2
Translation/interpretation of the...	4
Automatic transcription with tim...	2
AI generated summary of the co...	0
AI generated report/form with t...	3
Other	0



3. Please pick the three (3) features that would be **least** important to you.

Documenting with voice	1
Image capturing and sharing	3
Voice calls (individual/group)	1
Video calls (individual/group)	3
Translation/interpretation of the...	1
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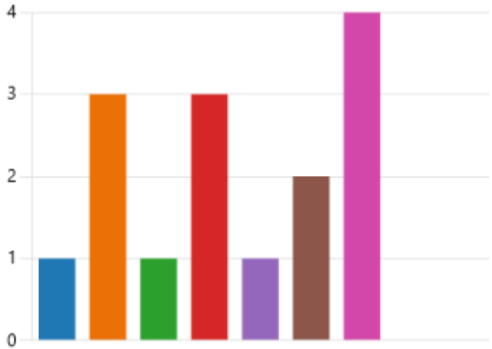
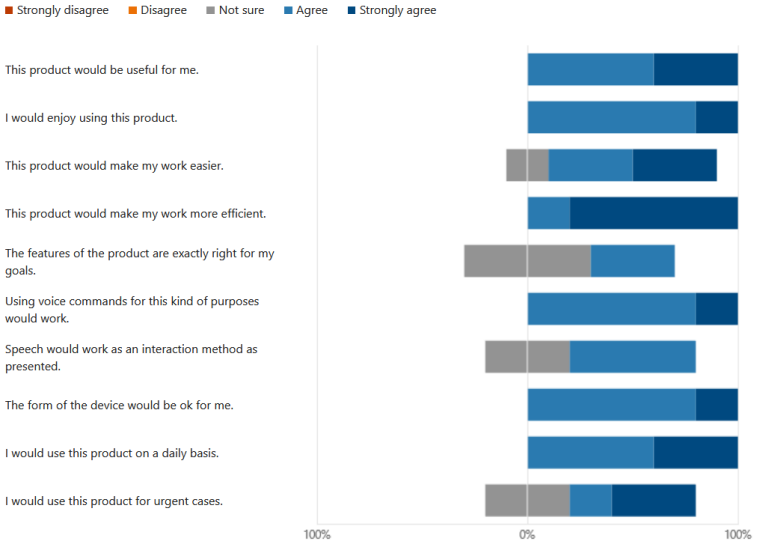
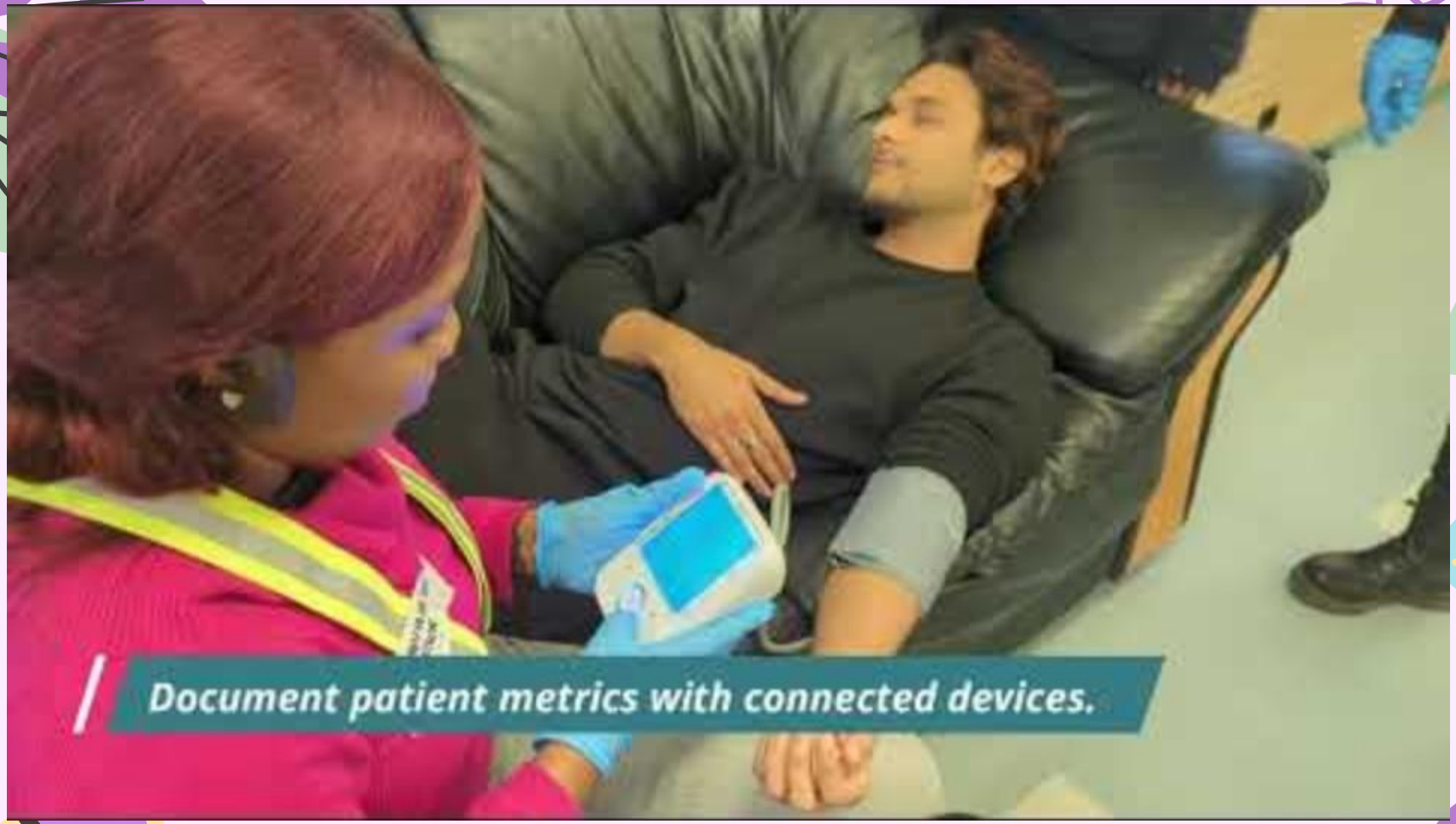


anonymous	I think this is great idea! Especially the hands free calls, translation and video calls. The video and storyboards were simple, but informative and they gave clear image of the product and how to use it.

4. Please answer the following statements (with options "strongly disagree", "disagree", "not sure", "agree", "strongly agree"):





https://tinyurl.com/solitaxaidok

Interested in Reading More about the Project?

https://tinyurl.com/productive-pandas-blog

Thanks

Any questions?

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