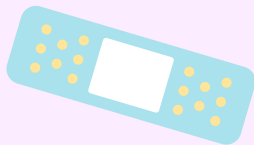


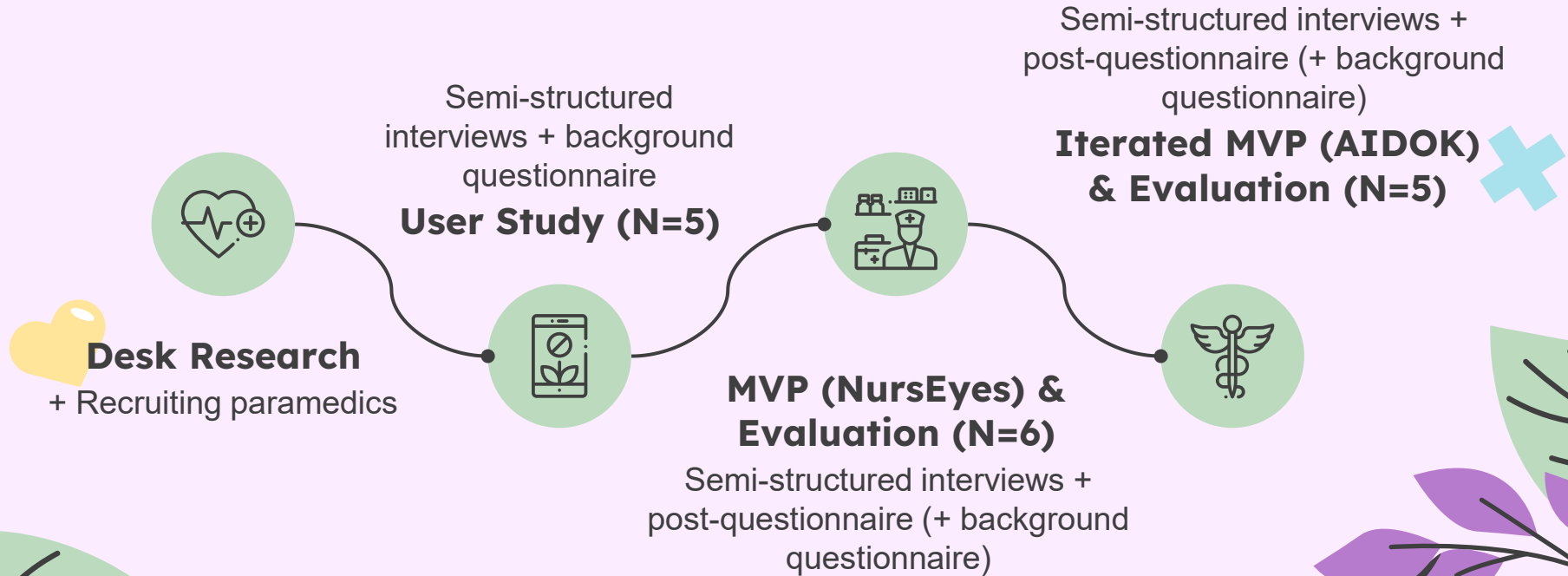


AIDOK Hands-Free UX to Ease Paramedics' Tasks

Productive Pandas



Project Overview



Methods Used

role-playing video

mvp features

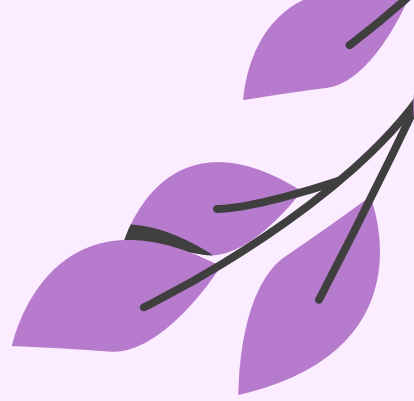
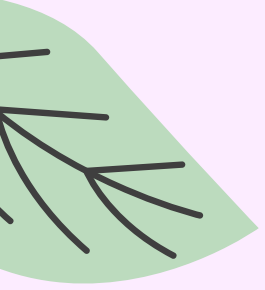
post-questionnaires
hypothesis statement point of view (pov)
stakeholder mapping future studies
thematic content analysis
value proposition canvas
customer segmentation
"how might we..." product design
semi-structured interview affinity diagrams

desk research

brainstorming

user stories

storyboards



Recap



Desk Research

25+

Articles Read

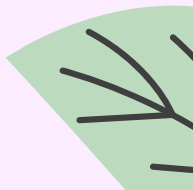
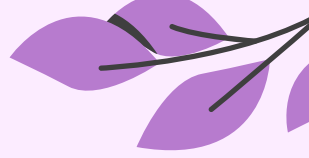
- Virve 2.0
- AI & Generative AI
- LLM
- Lifecare
- Merlot Medi
- Vuzix M400 Smart Glasses
- Glass E Smart Glasses
- Speech Based Assistants
- SnapCap System
- Using ChatGPT in Healthcare

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



General Opinion

Users are interested in the device and its features. They want to know more about it and how it works. They are also interested in the price and the quality of the device. They want to know if it is worth the money.

Formatting

Should use a clear, simple font. The text should be easy to read. The layout should be clean and professional. The colors should be consistent and not too bright.

Documentation

AI Summary

The device is a smart glasses that can help you with your work. It can translate text, take photos, and record audio. It is a very useful tool for people who work in a foreign language or who need to take notes quickly.

Image Documentation

The device can take photos and videos. It can also take notes and record audio. It is a very useful tool for people who need to document their work.

Editing

The device can edit text and images. It can also edit audio and video. It is a very useful tool for people who need to edit their work.

Concerns

Legal and Privacy Issues

Users are concerned about the privacy of their data. They want to know how their data is stored and who has access to it. They are also concerned about the legal implications of using the device.

Reliability

Users are concerned about the reliability of the device. They want to know if it will work properly and if it will last for a long time.

Knowhow

Users are concerned about their knowledge of the device. They want to know how to use it and what features it has.

Translation

The translator feature is very helpful. It can translate text from one language to another. It is a very useful tool for people who need to communicate with people who speak a different language.

Would like the translator to be able to translate more languages. It would be helpful if it could also translate spoken language.

Would have preferred a different interface. It would be better if it was easier to use.

Patient Data

Visualizing/Fetching Patient Data

The device can visualize and fetch patient data. It can show charts and graphs of patient data. It is a very useful tool for doctors who need to analyze patient data.

Collecting Patient Data

The device can collect patient data. It can take notes and record audio. It is a very useful tool for doctors who need to collect patient data.

Miscellaneous

Use Cases

The device can be used in many ways. It can be used to translate text, take photos, and record audio. It is a very useful tool for people who need to do these things.

Threat Detection System

The device can detect threats. It can detect if someone is trying to steal your data or if someone is trying to hack your system. It is a very useful tool for people who need to protect their data.

Communication & Collaboration

Video Calls

The device can make video calls. It can show the person you are talking to on the screen. It is a very useful tool for people who need to talk to someone who is far away.

Collaboration

The device can help people collaborate. It can share files and documents with other people. It is a very useful tool for people who need to work together.

AI Summary

The device can summarize text. It can take a long document and create a short summary of it. It is a very useful tool for people who need to read a lot of text.

Image Sharing

The device can share images. It can take a photo and send it to someone else. It is a very useful tool for people who need to share photos.

Device Acceptance

Preferred Device

The device is preferred over other devices. It is easier to use and has more features. It is a very useful tool for people who need a device like this.

Device Usability

The device is easy to use. It has a simple interface and clear instructions. It is a very useful tool for people who need a device like this.

Integration with others

The device can integrate with other devices. It can connect to a smartphone or a laptop. It is a very useful tool for people who need a device like this.

Opinions about Glasses

Users have different opinions about the glasses. Some like them and some don't. They want to know what other people think about them. They are also interested in the features of the glasses.

Preferred Device

The device is preferred over other devices. It is easier to use and has more features. It is a very useful tool for people who need a device like this.

Device Usability

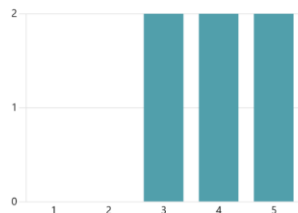
The device is easy to use. It has a simple interface and clear instructions. It is a very useful tool for people who need a device like this.

Integration with others

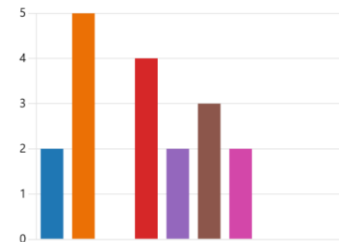
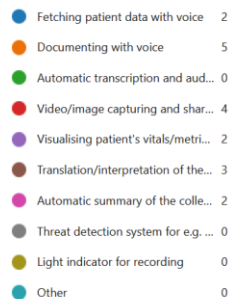
The device can integrate with other devices. It can connect to a smartphone or a laptop. It is a very useful tool for people who need a device like this.

1. How would you rate the concept idea?

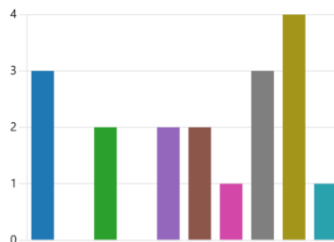
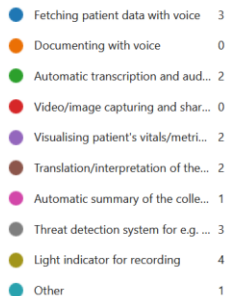
4.00
Average rating



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



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



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

Strongly disagree Disagree Not sure Agree Strongly agree

This product would be useful for me.

I would enjoy using this product.

This product would make my work easier.

This product would make my work more efficient.

The features of the product are exactly right for my goals.

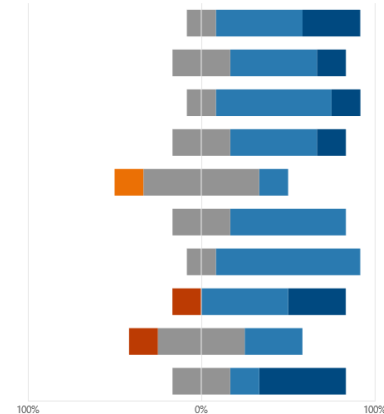
Speech would work as an interaction method as presented.

Using voice commands for this kind of purposes would work.

Smart glasses would be ok for me.

I would use this product on a daily basis.

I would use this product for urgent cases.



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

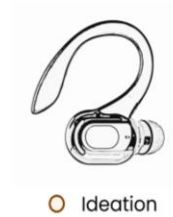
HD camera to record and capture videos using voice commands.

Concept ,
Idea & **Sketch**

AI + Aid + Documentation = aidok

LED Indication

LED indication for recording purpose



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.



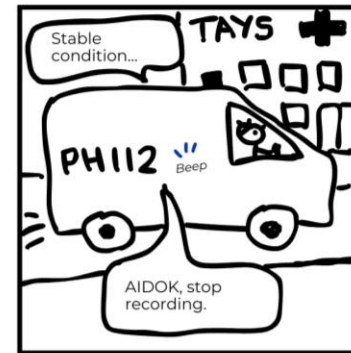
When entering the scene, Petra activates AIDOK and starts to document what she sees. She does all this with her voice. The device informs about the recording with vibration, a blinking light, and a beep.



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



Petra and her partner can both simultaneously 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.



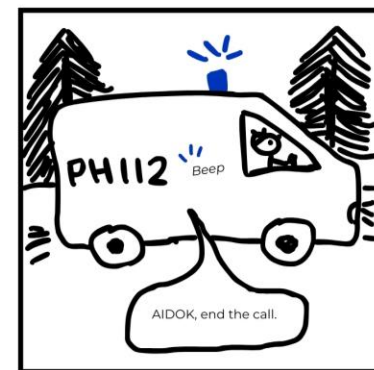
They examine the patient's condition, and Petra understands that there's something strange going on with the patient, and not everything in the patient's condition can be explained by the accident.



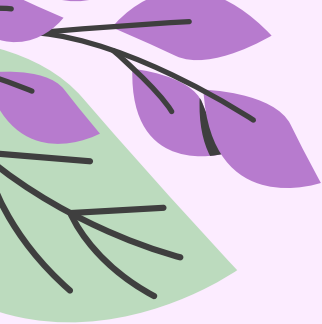
Petra wants to consult a doctor just in case, and starts a call by using her voice only while still taking care of the patient. The call is connected to the doctor via the Virve network.



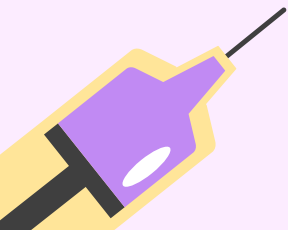
The doctor can see the documentation of the situation, but wants to still see the patient's condition live. Petra starts a video call with her voice, and the doctor can then see what Petra is seeing and assist better in the case.



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.

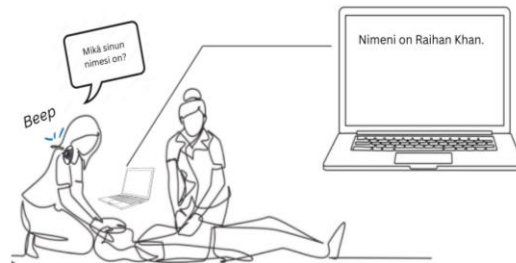


Live Translation



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.

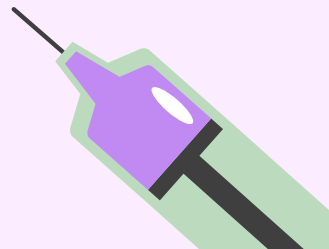
Thanks to AIDOK's translation feature, the paramedics can provide the patient with better treatment and document the case properly and effectively.



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

Comprehensive documentation is needed to ensure that the system is easy to use and maintain. This includes user manuals, technical specifications, and a clear record of all system changes and updates.

Documentation should be accessible to all users and should be updated regularly to reflect any changes in the system. It should also be easy to search and navigate, and should be available in multiple formats (e.g., PDF, HTML) to accommodate different user preferences.

Documentation is a key component of any system, and it is essential to ensure that it is comprehensive, accessible, and up-to-date. This will help to ensure that the system is used effectively and that any issues are resolved quickly and efficiently.

Communication

Audio calls: The system should support audio calls between users, allowing them to communicate in real-time. This feature should be easy to use and should be available to all users.

Video browsing: The system should support video browsing, allowing users to view and interact with video content. This feature should be easy to use and should be available to all users.

Translation

The system should support translation of text and audio content, allowing users to communicate in their preferred language. This feature should be easy to use and should be available to all users.

The system should also support translation of video content, allowing users to view and interact with video content in their preferred language. This feature should be easy to use and should be available to all users.

Additional Ideas/Features

The system should support a wide range of additional features, including:

- Customizable user interfaces
- Integration with other systems
- Support for multiple devices
- Advanced search and filtering capabilities
- Real-time analytics and reporting
- Secure data storage and backup
- Comprehensive security and privacy controls

Personalisation

The system should support personalisation of the user interface, allowing users to customise the look and feel of the system to their preferences. This feature should be easy to use and should be available to all users.

Concerns

Reliability & Accuracy

The system should be reliable and accurate, ensuring that all data is stored and retrieved correctly. This requires robust data storage and retrieval mechanisms, as well as regular testing and validation of the system.

The system should also be able to handle large volumes of data and should be able to scale up as the number of users and the amount of data increases. This requires a scalable architecture and a robust infrastructure.

Safety & Privacy

The system should be safe and secure, ensuring that all data is protected from unauthorized access and that user privacy is maintained. This requires robust security measures, including encryption, access control, and regular security audits.

The system should also be able to handle sensitive data and should be able to comply with relevant regulations and standards. This requires a secure architecture and a robust infrastructure.

Miscellaneous

The system should be able to handle a wide range of miscellaneous tasks, including:

- Integration with other systems
- Support for multiple devices
- Advanced search and filtering capabilities
- Real-time analytics and reporting
- Secure data storage and backup
- Comprehensive security and privacy controls

Wearability

The system should be wearable, allowing users to interact with the system using a variety of wearable devices, such as smartwatches, fitness trackers, and VR headsets. This requires a user interface that is designed specifically for these devices and a robust infrastructure to support them.

Data Management

The system should be able to manage data effectively, ensuring that all data is stored, retrieved, and updated correctly. This requires robust data management mechanisms, including data storage, retrieval, and update operations, as well as regular testing and validation of the system.

Interaction methods

Speech & Activation

The system should support speech and activation, allowing users to interact with the system using voice commands. This requires a robust speech recognition system and a user interface that is designed specifically for voice interaction.

Vibration, Audio & Visuals

The system should support vibration, audio, and visual feedback, allowing users to receive information about the system's state and user actions. This requires a robust feedback system and a user interface that is designed specifically for these types of feedback.

Feedback

Concept

The system should be able to handle a wide range of concepts, including:

- Integration with other systems
- Support for multiple devices
- Advanced search and filtering capabilities
- Real-time analytics and reporting
- Secure data storage and backup
- Comprehensive security and privacy controls

Video

The system should support video content, allowing users to view and interact with video content. This requires a robust video management system and a user interface that is designed specifically for video content.

Interview & Project

The system should support interview and project management, allowing users to create and manage interviews and projects. This requires a robust management system and a user interface that is designed specifically for these types of tasks.

Storyboards

The system should support storyboards, allowing users to create and manage storyboards. This requires a robust storyboard management system and a user interface that is designed specifically for these types of tasks.

The device

Form Factor

The system should support a wide range of form factors, including:

- Smartphones
- Tablets
- Smart TVs
- Wearable devices
- VR headsets

Integration with Other Devices/Systems

The system should be able to integrate with other devices and systems, allowing users to use the system in a variety of contexts. This requires a robust integration system and a user interface that is designed specifically for these types of tasks.

Acceptance

The system should be able to handle a wide range of acceptance tasks, including:

- Integration with other systems
- Support for multiple devices
- Advanced search and filtering capabilities
- Real-time analytics and reporting
- Secure data storage and backup
- Comprehensive security and privacy controls

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.

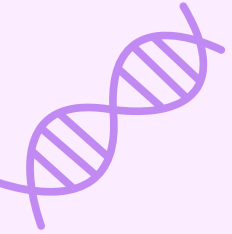
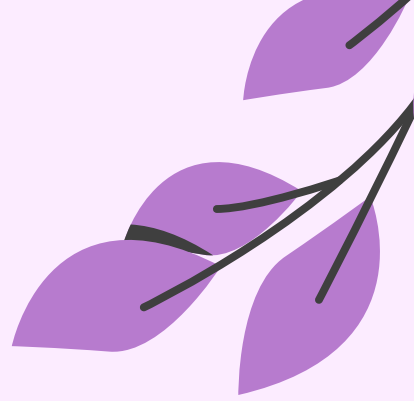
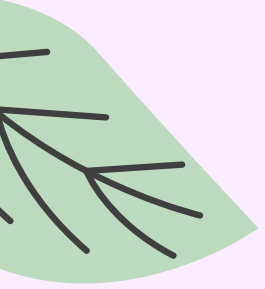


The **translation / interpretation** feature may need more iteration.



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



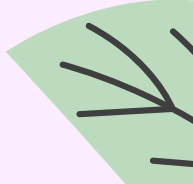
Comments on Features






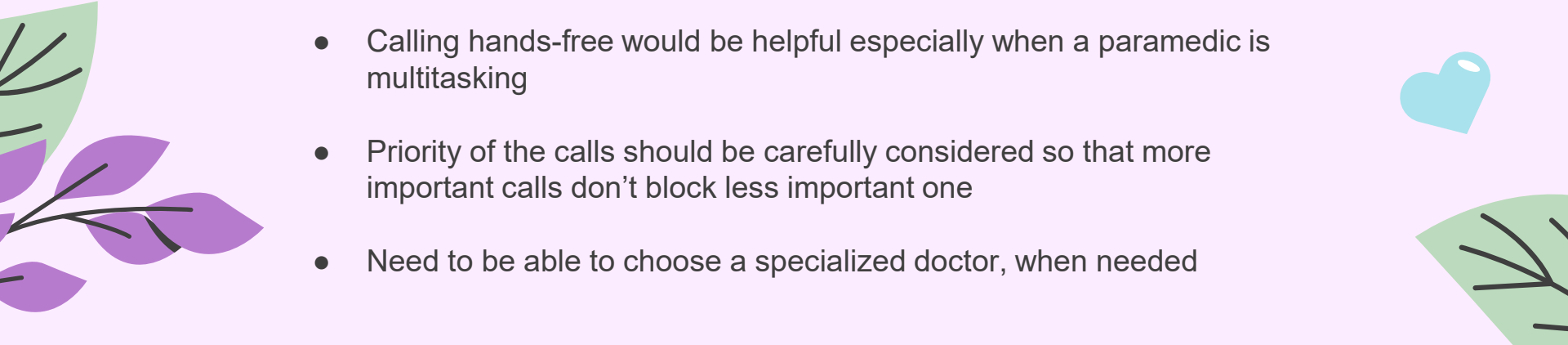
Documentation



- 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



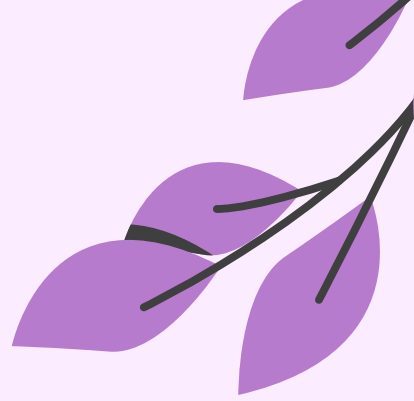
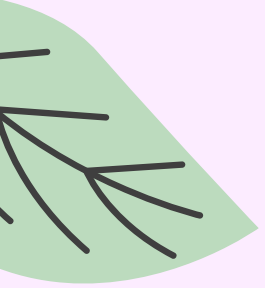
Additional Features

- 
- 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





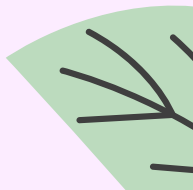
Reliability & Accuracy

- 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
- 
- 
- 



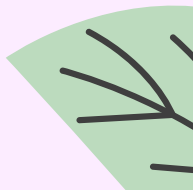
Safety & Privacy

- 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





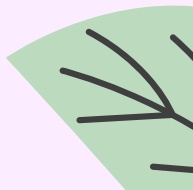
About the Device

- 
- 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





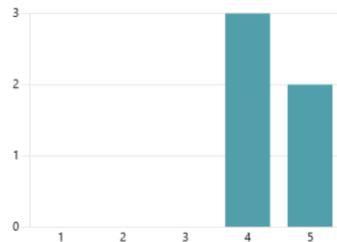
Post- Questionnaire

Quantitative + Qualitative Feedback | Microsoft Forms

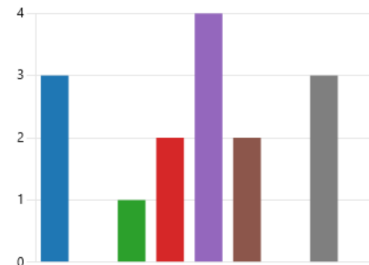
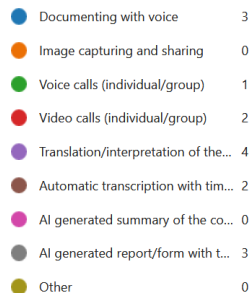
1. How would you rate the concept idea?

4.40

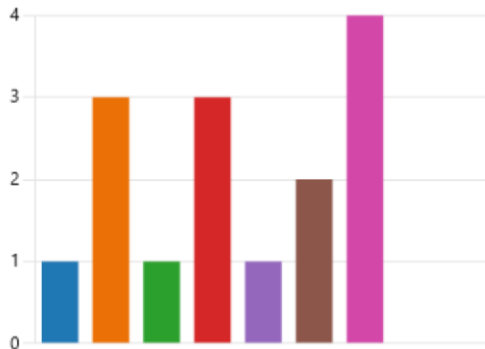
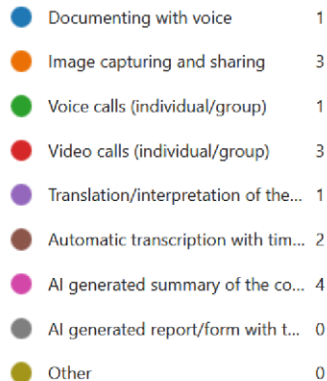
Average rating



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



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



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

Strongly disagree Disagree Not sure Agree Strongly agree

This product would be useful for me.

I would enjoy using this product.

This product would make my work easier.

This product would make my work more efficient.

The features of the product are exactly right for my goals.

Using voice commands for this kind of purposes would work.

Speech would work as an interaction method as presented.

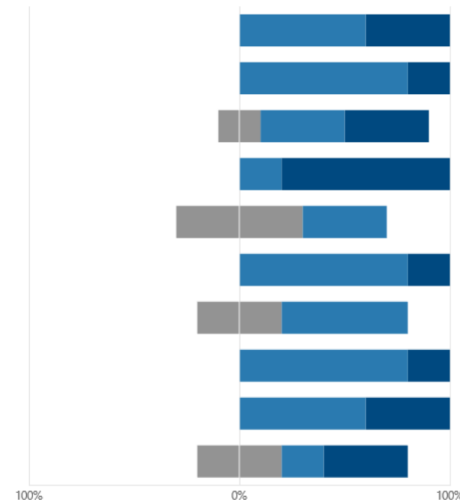
The form of the device would be ok for me.

I would use this product on a daily basis.

I would use this product for urgent cases.

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.



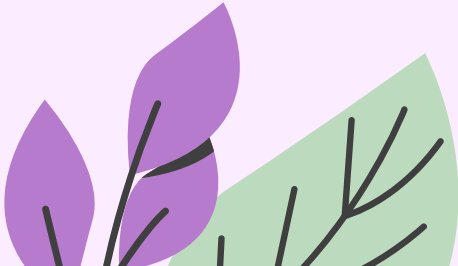


<https://tinyurl.com/solitaxaidok>



Interested in Reading More about the Project?

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



Thanks

Any questions?

Team Members

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