Survey Pre and Main Study

The questionnaire was translated from the original language.

Informed Consent

Subject of the study

The study deals with the creation of a privacy assistant. Such an assistant is an app that creates a user profile with privacy preferences and thereby supports the user with privacy settings.

Procedure of the study

In the context of this study, a 10–15-minute survey will be conducted by means of a questionnaire. In this questionnaire, the participants are asked to select their preferred functions of a privacy assistant from various options.

Possible benefits of the study

Often, we do not know or understand the options available to help us protect our privacy. Privacy assistants can help users do just that by learning your preferences and acting as a digital proxy for you. For example, by informing you when your privacy is violated or by supporting you in making decisions or even taking them for you. It is therefore important to find out how such assistants can be designed in the interest of the users, what factors the users weigh up and what characterises the users.

Experiences/risks associated with participation

Participants in this study will not be exposed to any risk beyond the risks of everyday life.

Privacy statement

The data processing of this study is carried out in accordance with the data protection regulations of the national and local law (law anonymized for review). The data is used exclusively for the purposes described in the information sheet. The following data will be collected as part of this study:

Answers in the questionnaire

Confidentiality

All data collected as part of this study are of course confidential and will only be used in anonymised form. Demographic data such as age or gender do not allow any clear conclusion to be drawn about your person. At no time during the respective study will we ask you to give your name or any other unique information.

Retention and processing

The data collected with this study will be stored on local (country anonymized for review) servers and deleted after 10 years at the latest. The data will be stored in a form that does not allow any inference to your person, i.e., the data will be anonymised.

Voluntariness & rights of the participants

Your participation in this study is voluntary. You are free to discontinue your participation at any time during this study and thus withdraw this consent (revocation) without incurring any disadvantages. If you discontinue participation, no data about you will be stored and all data about you that has been available to date will be destroyed.

You have the right to obtain information about the personal data concerning you and, if necessary, to demand that it be corrected or deleted. In the event of a dispute, you have the right to complain to the local (country anonymized for review) Data Protection Commissioner (see address below).

If you have any questions, suggestions or complaints, please feel free to contact the study manager:

Study Manager (Contact anonymized for review)

Data Protection Commissioner (Contact anonymized for review)

Consent

- I have read the explanations about the study and agree to participate in the said study. I agree that the data collected within the framework of the study may be analysed for scientific purposes and stored in anonymised form. I am aware that my participation is voluntary and that I can cancel the study at any time without giving reasons.
- I do not consent.

Preliminary questions

On which device are you processing this questionnaire?

Please select the applicable device.

- Laptop
- Standard computer
- Smartphone
- Tablet
- Other

Technology Affinity Scale [1]

How old are you?

- 18-20 years
- 21-30 years
- 31-40 years
- 41-50 years
- 51-60 years
- 61-70 years

Which gender do you classify yourself as?

- Male
- Female
- Diverse

What is the highest level of education you have achieved so far?

- Level of education (anonymized for review)

How often do you use your smartphone?

- Daily
- Several times a week
- Several times a month
- Less than once a month

What is your current professional activity?

If you are a student, please state your course of study. If no longer employed, please state your previous employment.

[open text input]

How would you rate your concerns about protecting your privacy when it comes to smartphone apps?

- Low: I don't care if and how my data is collected. I have nothing to hide.
- Medium: Sensitive data, such as my address or contact details, should not be shared. However, I don't care about unimportant information.
- High: My data should only be passed on if it is absolutely necessary for the functionality of the application. If it is unnecessary or too sensitive, I will not install the application.

How would you rate your motivation to protect your privacy?

- Low
- Medium
- High

How would you rate your knowledge of data protection?

- Beginner: I have basic knowledge or no knowledge about how to protect my privacy.
- Advanced: I have average knowledge about how to protect my privacy.
- Expert: I have above average knowledge about how to protect my privacy.

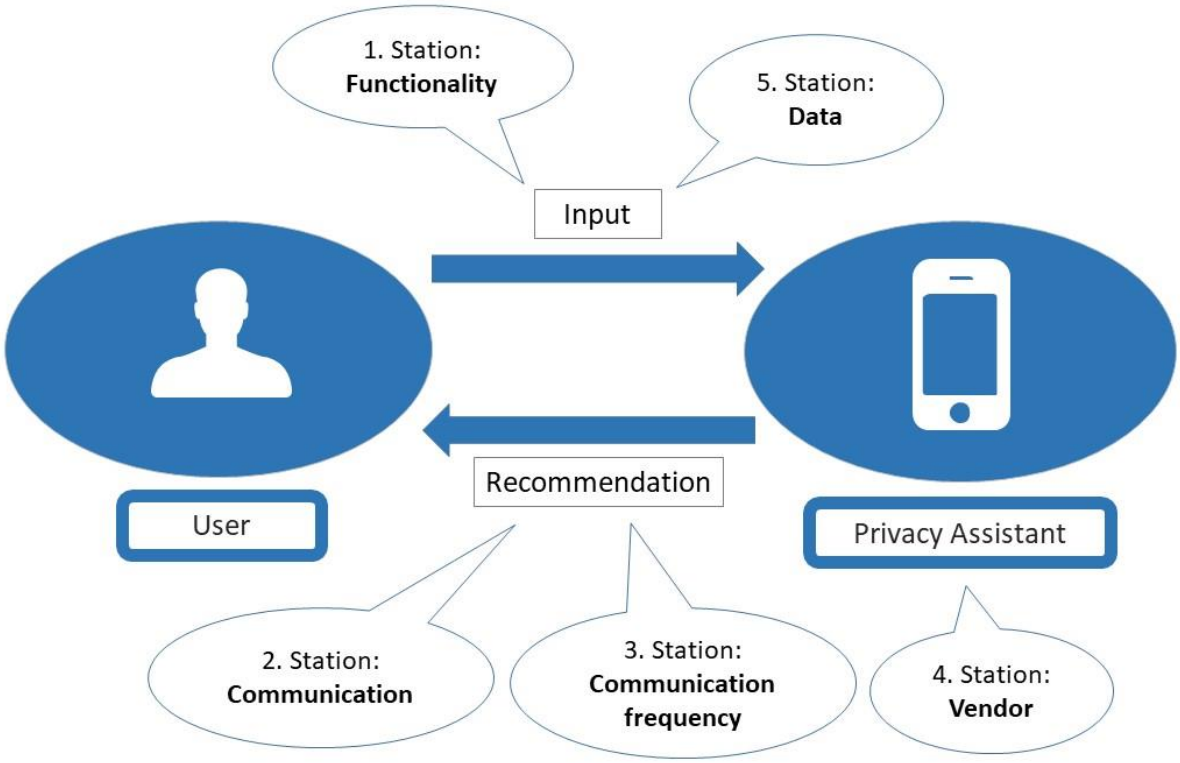
How often do you install apps on your smartphone?

- Daily
- Several times a week
- Several times a month
- Less than once a month

Introduction

Many people use their smartphone every day, on which they have installed many apps that make their everyday life easier or simply give them pleasure - social network apps, flashlight apps, etc. Often, we don't know exactly what else these apps do in the background, what data they collect about us, what happens to this data or what permissions they have. And, who of us, when installing an app, reads through all the terms of use or manually goes into the privacy settings to adjust the settings the way he:she would like. This is where the privacy assistant comes into play. This is also an app on the smartphone. And it knows what is important to you and can then take over settings for you, or alert you when an app is doing something that is not in your best interest, or help you make decisions regarding your privacy. There are many options for how exactly such

a privacy assistant looks like. Your task is to design a privacy assistant that suits your preferences at a total of five stations.



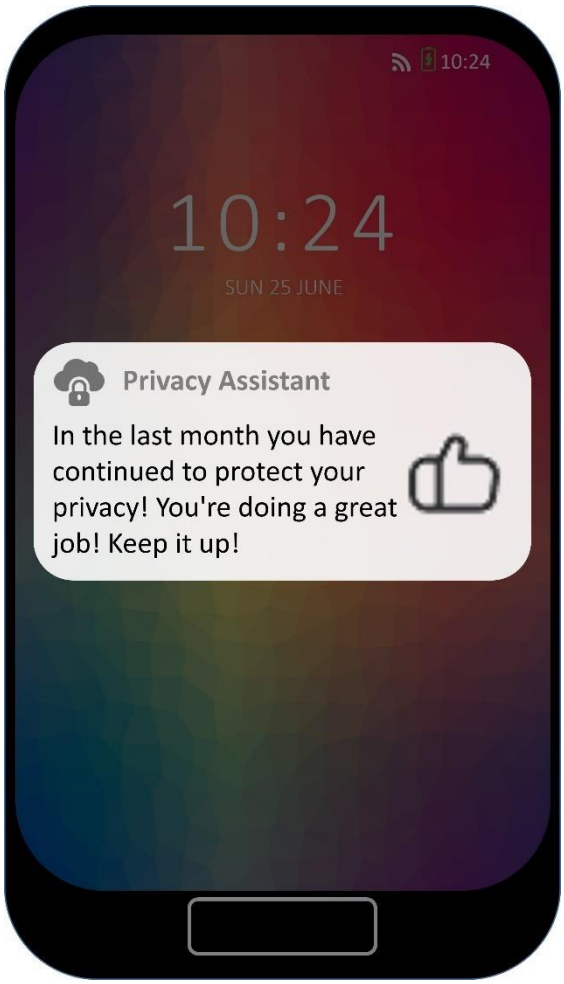
Station 1.1

Which functions should the PPA have?

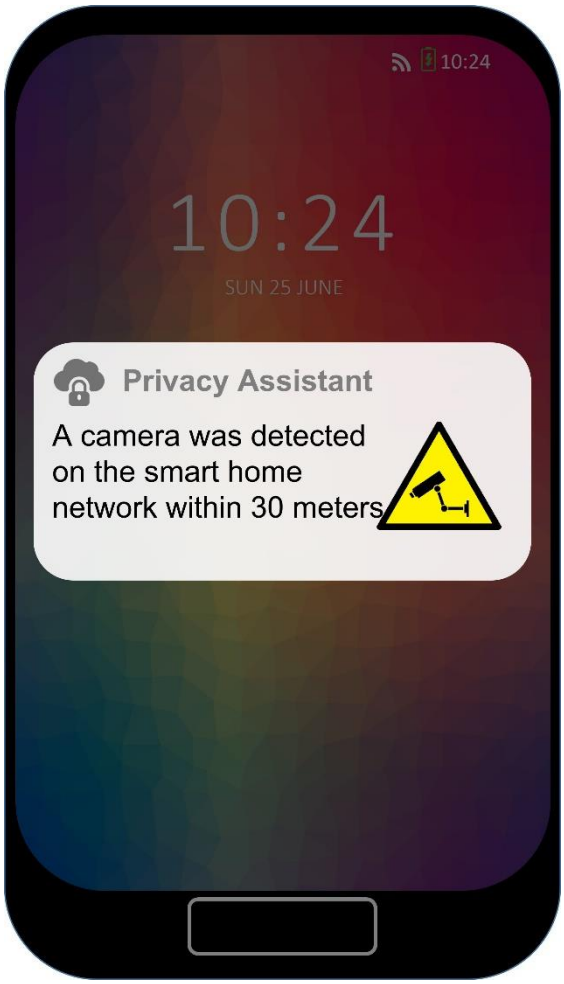
First of all, we want to find out what exactly your PPA should be able to do. There are several ways to do this. Please assign the different options to a category using drag and drop.

[Categories: I would definitely like to have this function; Nice to have; I do not need this function]

Motivate: Statistics about your behaviour regarding security and privacy protection.

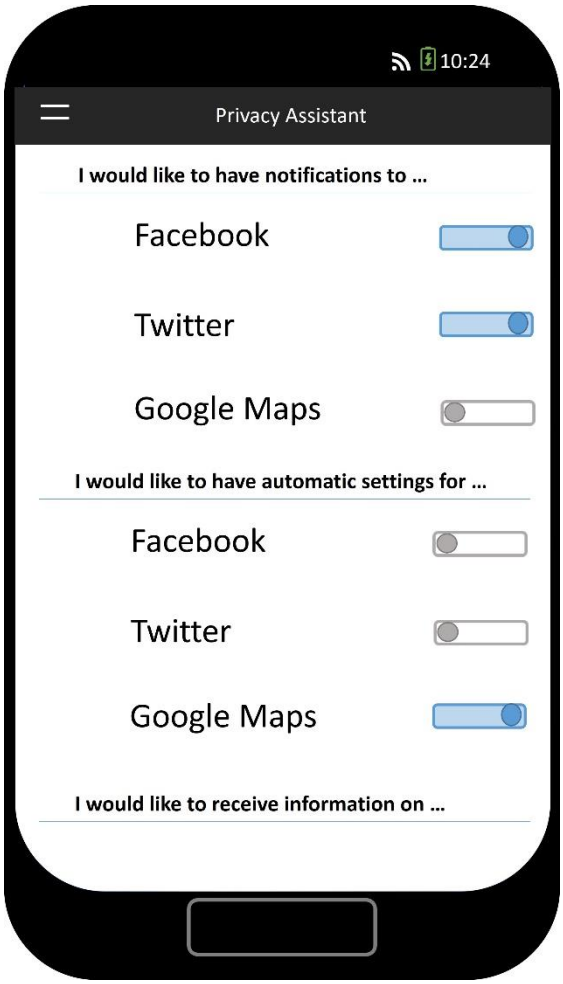


Motivate: Praise for behaviour relevant to your privacy.

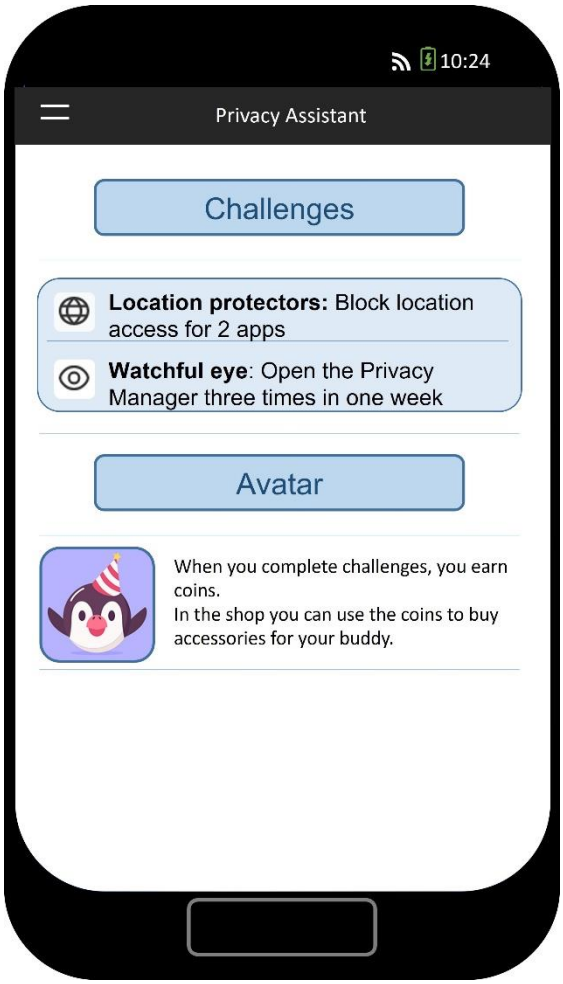


Inform: Information about devices in your environment that could affect your privacy.

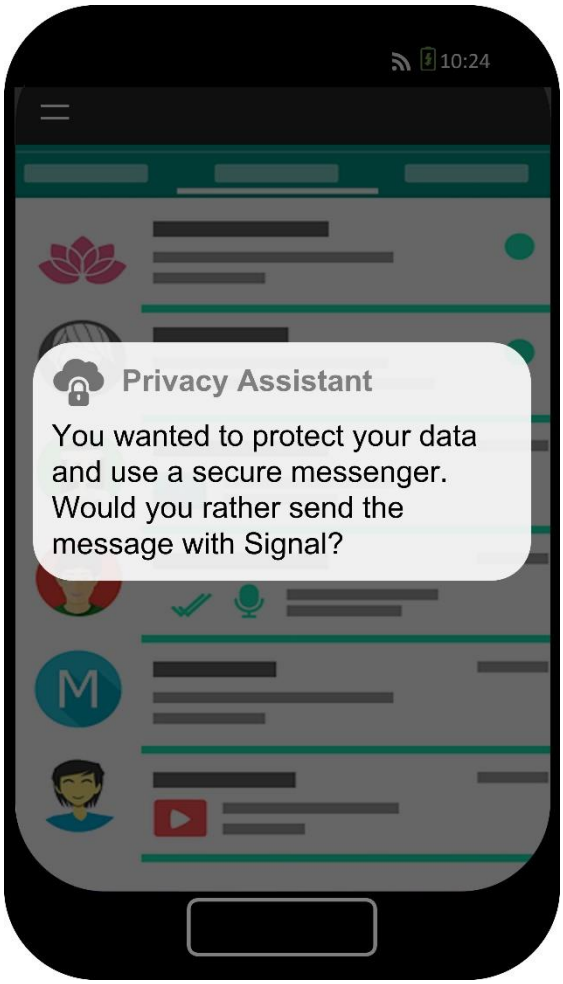
Imparting knowledge: Learning units on security and the protection of privacy.



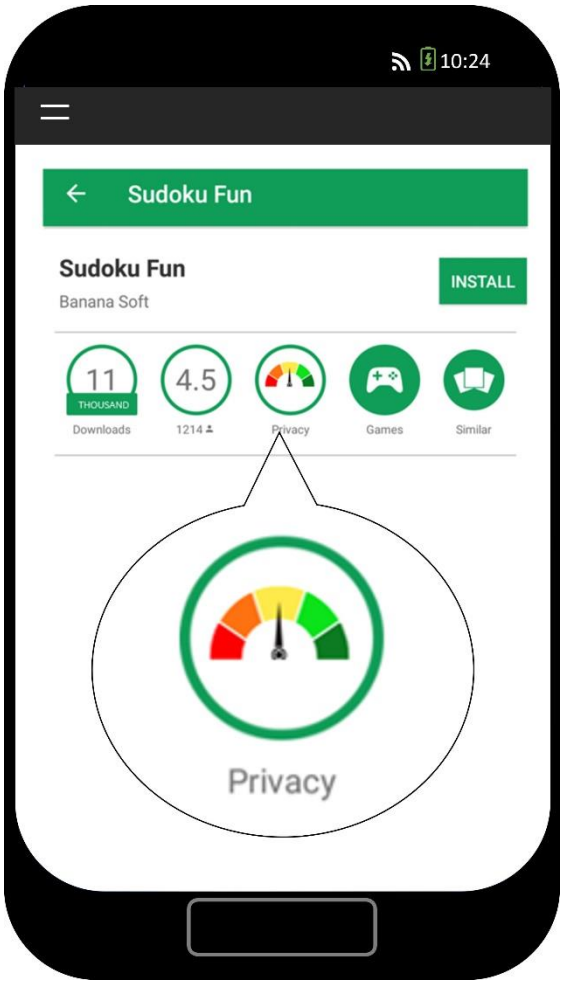
Make settings: Wherever settings are possible that affect your privacy, the Privacy Assistant will set them in your interest. You can change them at any time.



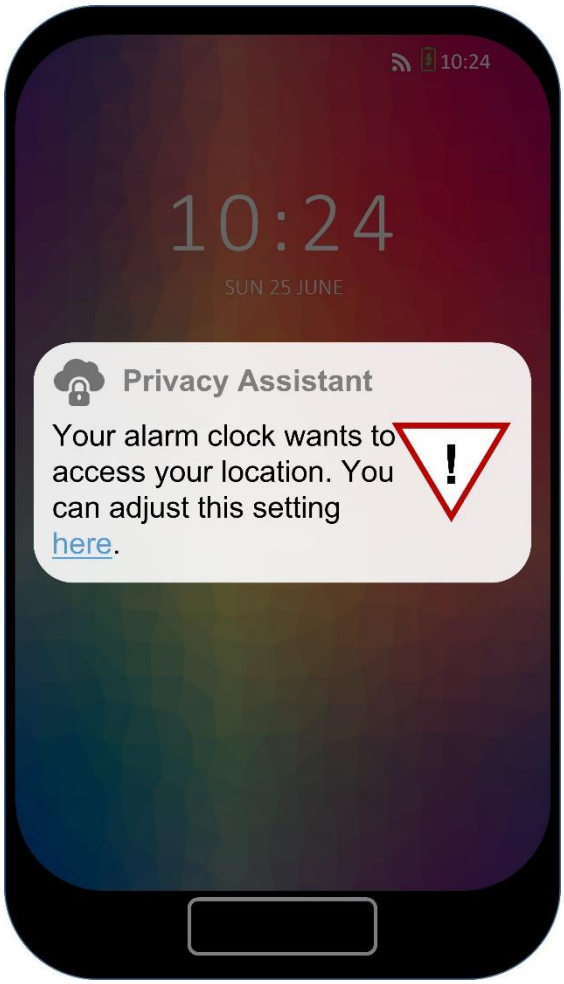
Motivate: Challenges and rewards in the form of gamification elements (e.g., an avatar).



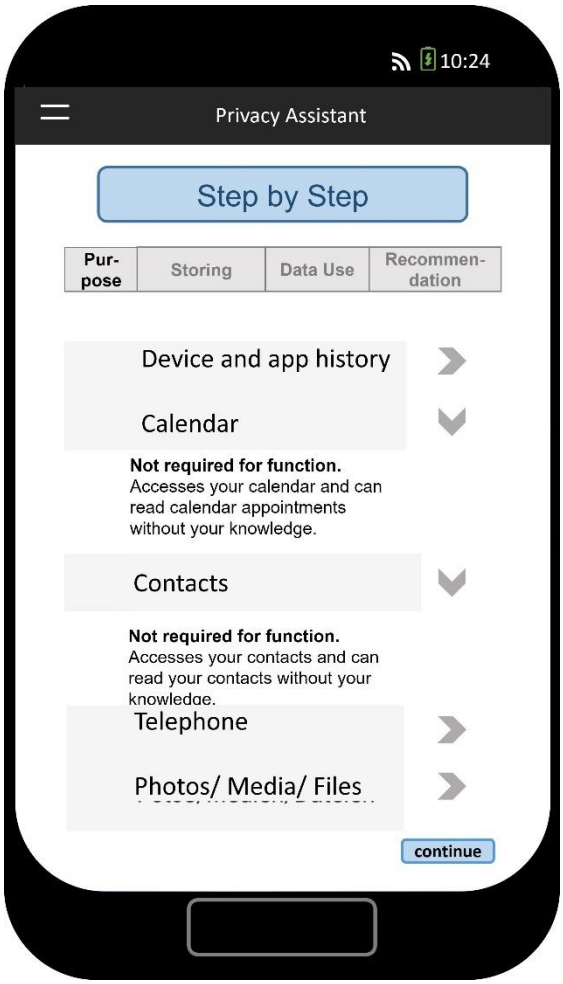
Support with decisions: Reminders of personal preferences.



Support with decisions: Appstore/Google Playstore security and privacy indicator.



Inform: Notifications when applications want to access privacy-threatening information.



Support with decisions: Support through step-by-step guide to privacy settings when installing apps.

Station 1.2

Which function is most important to you?

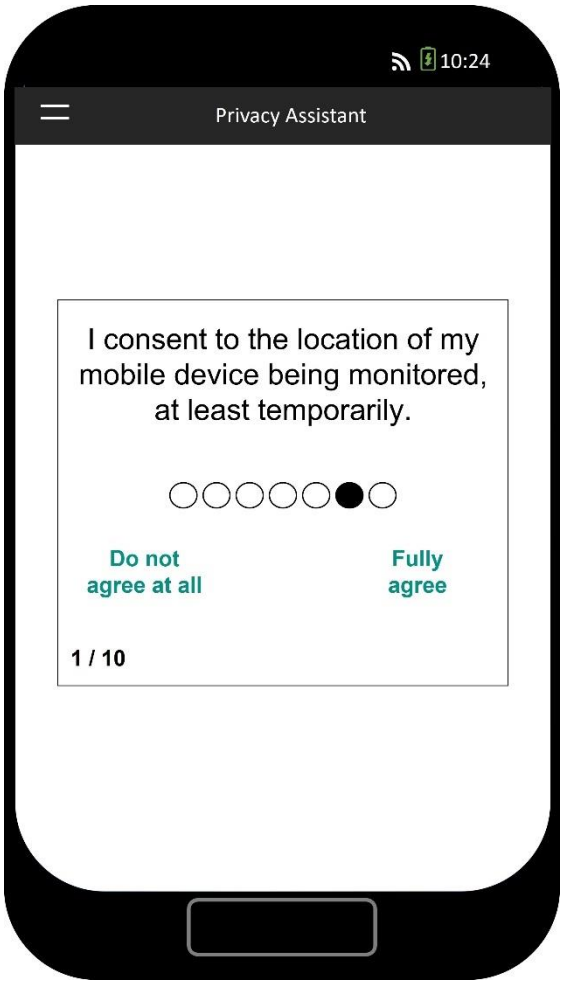
Please put the blue boxes in order by dragging and dropping them onto the fields with the numbers.
[Presentation of the design choice categorized as important in Station 1.1.]

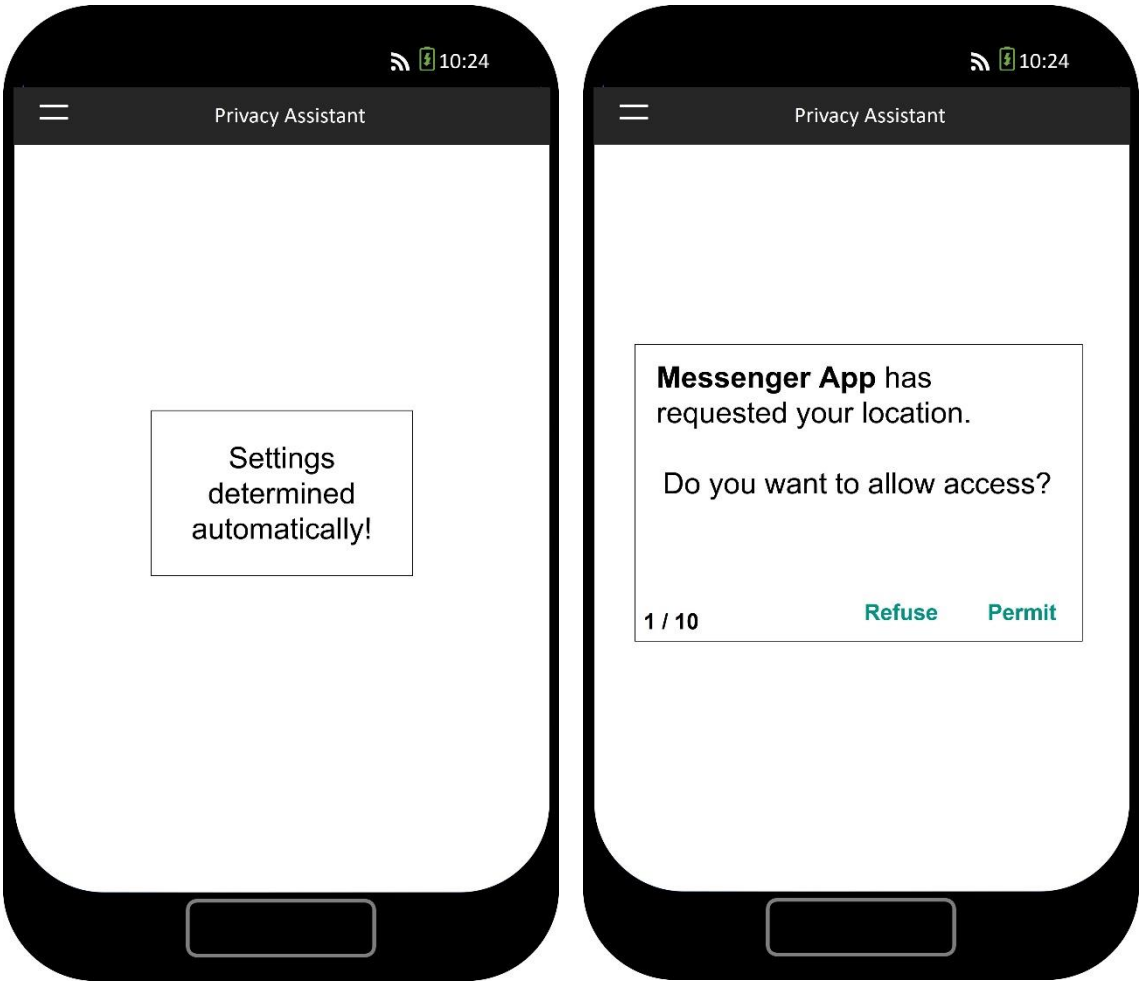
Make settings	Step by step guide	Reminders about personal preferences	1
			2
Information about devices in your environment	Notifications when applications want to access privacy compromising information	Tutorials on security and privacy protection	3
			4
			5
			6
Statistics on your security and privacy behaviour	Challenges and rewards in the form of gamification elements (e.g., an avatar)	Praise for privacy-relevant behaviour	7
			8
		Security and privacy indicator in the Appstore/Google Playstore	9
			10

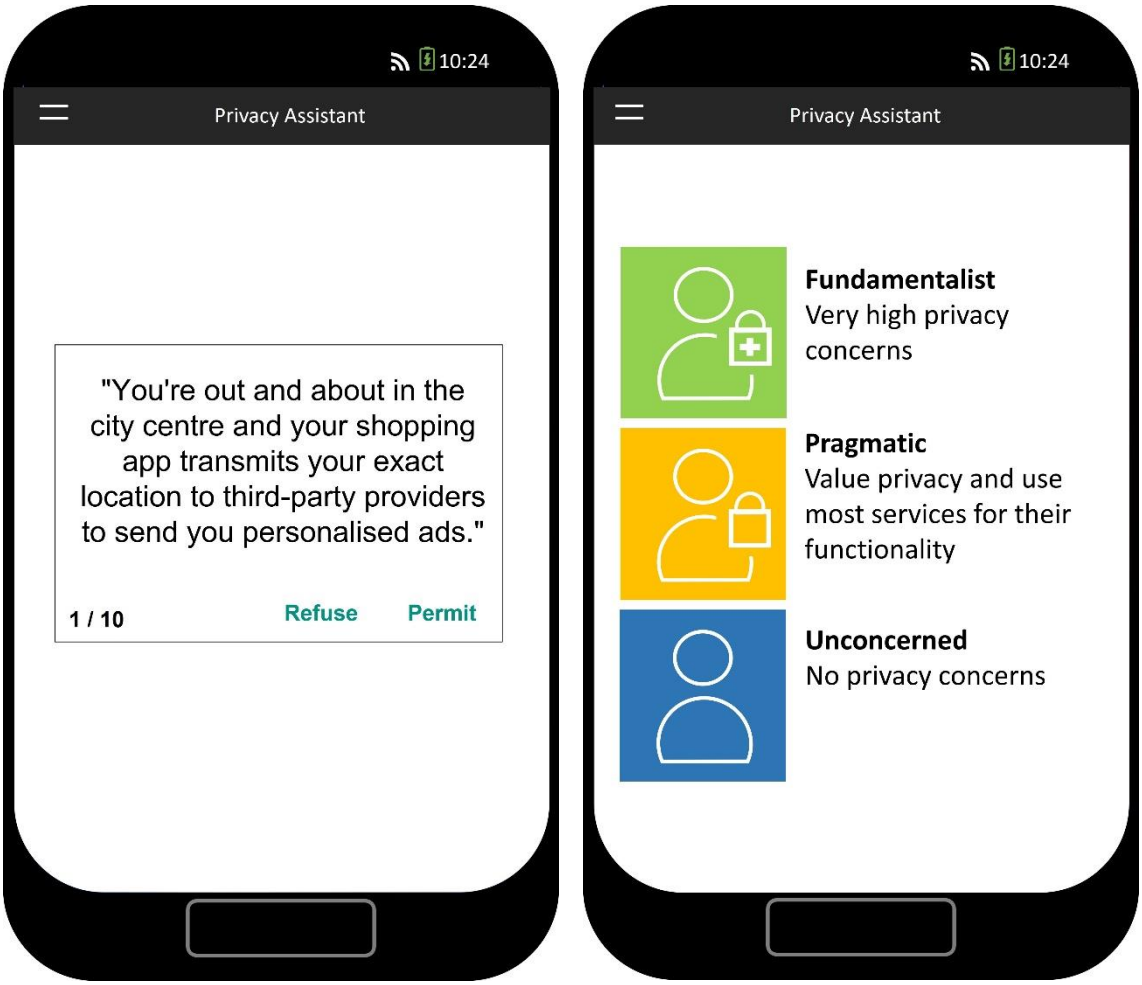
Station 2

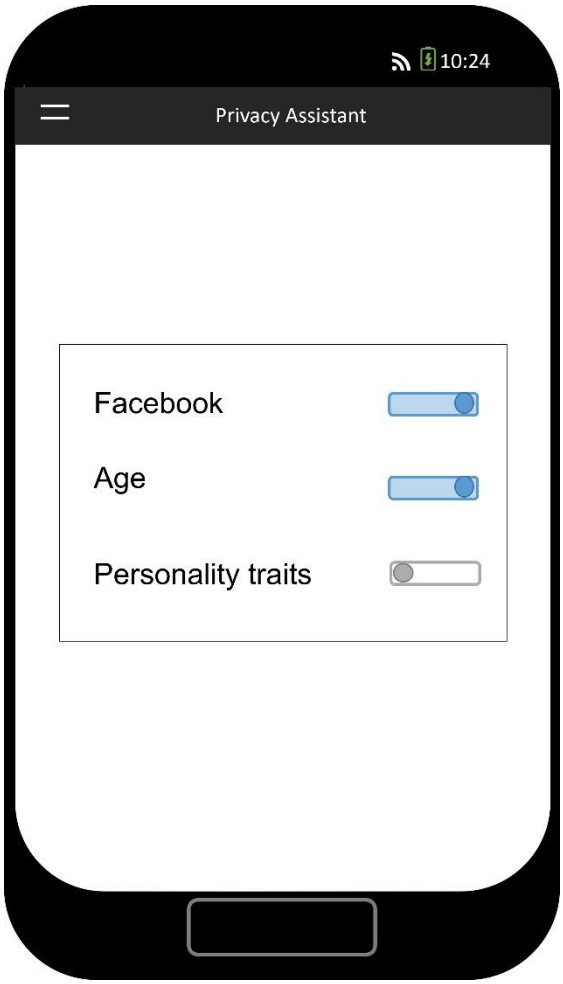
How should the PPA learn your privacy preferences?

This station is about how your PPA should learn what is important to you. To do this, it can determine a profile of you. There are several options here as well. Please take a close look at the options listed below and then select the one that suits you best by clicking on it.




10:24
Privacy Assistant
Settings determined automatically!
10:24
Privacy Assistant
Messenger App has requested your location.
Do you want to allow access?
1 / 10
Refuse
Permit


10:24
Privacy Assistant
"You're out and about in the city centre and your shopping app transmits your exact location to third-party providers to send you personalised ads."
1 / 10
Refuse
Permit
10:24
Privacy Assistant
Fundamentalist
Very high privacy concerns
Pragmatic
Value privacy and use most services for their functionality
Unconcerned
No privacy concerns



Station 3

How should the PPA communicate with you?

This station is about how much your PPA communicates with you and involves you. Please adjust the slider according to your preference.

No Automation - The PPA is in constant contact with you, informs you about every decision and always involves you

Full Automation - The PPA runs in the background and you notice as little of it as possible

Station 4.1

Who should provide the PPA?

To use your PPA, it must be developed by a vendor. Please indicate to what extent you would trust the following vendors to provide your PPA.

	rather untrust-worthy	rather trust-worthy	don't know
Google: US company, known for its Google search engine and Android operating system, among other things.			
Apple: US company, known for smartphones, among other things			
National NGO: (country anonymized for review)			
General Public Licence (GNU): US software project, known for the development and administration of licence-free software.			
National University (country anonymized for review)			
Facebook: US company, known for online social media platforms			
The Government: Government of the State of country (country anonymized for review)			
Samsung: South Korean company, known for smartphones, among other things			
Huawei: Chinese company, known for smartphones			
National Telecommunication provider: (country anonymized for review) company, known as a telephone provider			
National telephone provider (country anonymized for review): (country anonymized for review) telephone provider			
2121 Atelier, Inc: Android application developer, known for a privacy and security assistant.			
Other: [open text input]			

Station 4.2

Your desired provider

Now please choose a vendor which should ideally provide your PPA.

Which manufacturer would you finally choose?

[Presentation of the vendors categorized as rather trustworthy in Station 4.1.]

What criteria were decisive for you to choose this provider?

Criteria: [open text input]

Station 5

Which data are you willing to disclose to your PPA?

For your PPA to work well, it needs certain data from you. Previous research has shown that the following data can be used to determine as accurate a profile of your preferences as possible and that the privacy assistant can support you well.

What data would you be willing to disclose to your PPA?

I would be fine if the privacy assistant knew the following about me:

[5-point Likert scale: absolutely disagree - absolutely agree, don´t know:]

My age: Different age groups differ in their knowledge and attitude about the protection of their data.

My identity (personal data by which you can be identified, such as name): Personalised recommendations to protect your data can be better tailored to users.

My personality traits: Machine learning algorithms can use personality traits to make better recommendations to protect your data.

Privacy knowledge and prior knowledge: Users can be better classified into privacy profiles based on their knowledge.

The purpose for which I want to use the privacy assistant: The accuracy of the recommendation strongly depends on the context, such as your expectation of the assistant.

Organisations where I have concerns about my data processing: The sharing of certain types of data depends on the trust in the provider.

Information from my online social media account (e.g., visibility of profile information or selective sharing of content): Based on the profile information and access rights can be used to create profiles of users that provide better recommendations.

Summary of your privacy assistant

Functionality: answer from Station 1

Communication: answer from Station 2

Degree of automation: The privacy assistant is to be [answer from Station 3] % automatic.

Vendor: answer from Station 4

Data: You are reluctant to give your privacy assistant access to the following data: answer from Station 5

On this page you will find a summary of your personal privacy assistant. Please briefly describe which aspects are particularly important to you.

How likely do you think you would be to use a privacy assistant like the one you have just put together?

Please adjust the slider according to your estimation.

Would you pay anything for such a privacy assistant?

- Yes
- No

If you would pay something for the privacy assistant:

How much would you be willing to pay once? [open text input] local currency (anonymized for review)

How much would you be willing to pay regularly? [open text input] local currency (anonymized for review)

If you would not pay anything for the privacy assistant:

What else would the privacy assistant have to do for you to be willing to pay something for it?

[open text input]

Final Questions

Internet Users' Information Privacy Concerns (IUIPC) 8 scale [2]

References

[1] Thomas Franke, Christiane Attig, and Daniel Wessel. A personal resource for technology interaction: Development and validation of the affinity for technology interaction (ati) scale. *International Journal of Human–Computer Interaction, 35*(6):456–467, 2019.

[2] Thomas Groß. Validity and reliability of the scale internet users' information privacy concerns (iuipc). *Proceedings on Privacy Enhancing Technologies*, 2021.