



Identity Management in PUBlic SERVICES

D2.12 IMPULSE pilot assessment V2

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Executive summary

This deliverable provides information of all the pilot activities that were performed during the second piloting round. In addition, the document provides goes through the relevant results from the pilot and does a comparison between the first and second round of pilots.

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Summary (for dissemination)	This deliverable presents the piloting activities during the 2nd round of pilots, the relevant results from the different activities as well as a comparison of activities and results between the first and second piloting rounds.
Keywords	Co-creation, pilot testing, survey, interview, focus group

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Abbreviations and acronyms

AI: Artificial Intelligence

ARH: City of Aarhus, Denmark

ERTZ: Basque Government – Security Department – Ertzaintza

GIJON: City of Gijón, Spain

MOP: Municipality of Peshtera, Bulgaria

RVK: City of Reykjavik, Iceland

UCIC: Union of Italian Chambers of Commerce / InfoCamere

1 Introduction

This documentation presents the activities and assessment of the second piloting round, scheduled for May 2023 to July 2023. This deliverable is designed to be a demonstration and provide a text representation of the activities as well as highlight the relevant results from the second piloting round.

The pilots follow the same plan as described in D2.10 that describes the first piloting round. The main changes have been done to the interview template that now includes more questions compared to the first round. Additionally, six questions were added to the post-pilot survey to further find out the participants opinions on the IMPULSE solutions. All changes and additions have been mentioned in the specific sections.

2 Pilot design

This section will cover each pilot activity separately and show the templates that were given for the public administrations. Each section will contain a comparison between the 1st and 2nd piloting round as well as highlight the differences between the case locations. Finally, every section will contain the results of each activity separately.

2.1 Pre-pilot survey

The pre-pilot survey was meant to gather demographics and background information of the participants to identify their knowledge and comfort with similar technologies. Compared to the first round, the second-round pre-pilot survey was almost identical. The main differences between 1st and 2nd round are the questions 9 and 10 that were added for the 2nd round. The two questions were added so that it would be possible to find out if participants have had problems with security as many participants had a concern of stolen phones during the first piloting round.

Below is the pre-pilot survey that was distributed to all partners. All partners used the same template except RVK, who had used a slightly different survey template. In their template, instead of the questions 9 and 10, they had a question “*Do you need help when using a smartphone?*” with five-scale response options (Never to Almost always) as well as “*Do you currently have an electronic ID?*” with yes/no response option. The main reason for RVK having a small difference with the template was the different type of target audience they have (people with disabilities / issues with accessibility) who may not have rights to have an electronic ID.

Introduction

This survey is part of the end-user pilot testing executed by the IMPULSE project team. The survey is meant for all participants to fill. The survey will be anonymous.

This is the pre-pilot survey, which has background questions related to you, and your current opinions and knowledge regarding digital services. There will be another survey after the testing of the IMPULSE solution, asking about your experiences and opinions.

Participant identifier (given by the local public administrator) _____

This identifier will only be used to be able to combine the pre-pilot and post-pilot surveys together when examining the answers. Remember to use the same identifier in both surveys.

1. **How old are you?**

Please input your age in years _____

2. **What is your gender?**

- Male
- Female
- Diverse
- Prefer not to answer
- Prefer to self-describe as _____

3. **What is your highest level of education?**

- Not completed primary school
- Completed primary school
- Completed secondary school
- Completed post-secondary vocational studies, or higher education to bachelor level or equivalent
- Completed upper level of education to master level or equivalent

- Completed doctoral degree
- Prefer not to answer
- Other _____

4. **I use smartphone to...**

	Never	Rarely	Sometimes	Often	Always
Stay connected with my family / friends (phone, SMS, messaging, etc.)					
Stay informed about what is happening around me (news, social media)					
Run my business / do my work tasks (email, phone)					
Use services in my area (shopping, taxi, membership app, bonus card, public transport)					
Interact with the public services (tax management, library card, online banking, electronic voting)					

5. **What do you think of digital services?**

	1 Strongly disagree	2	3	4	5 Strongly agree
Digital services are better than traditional services					
Digital services are difficult to use					
The government (authorities) should transform public services into digital					
I trust the authorities more when public services are offered in digital					

6. **I am concerned about privacy when accessing services over the internet**

Strongly disagree 1 2 3 4 5 Strongly agree

7. **Which of the following digital identity technologies have you used or heard about?**

	I have not heard of this technology	I have heard of this technology	I have used this technology
Username + Password			
Smartcard + PIN number			
PIN			
One-time passwords / codes			
Two-step authentication (SMS codes, Google authenticator, etc.)			
Fingerprint recognition			
Face recognition			
Voice recognition			
Eye (iris) recognition			

8. **If you have used biometric (facial, fingerprint, voice, eye recognition) technologies, why have you used them? Please select all that apply.**

- I was interested in new technology to try it out
- I was convinced it is more secure and reliable
- I had no choice but to use the device with biometrics
- I use biometric technologies for work
- I use biometric technologies on my free time
- It is easier / more convenient than passwords or PIN codes

9. **Please answer the following: “Have you ever...”**

	Yes	No	I don't know	Prefer not to say
Lost your smartphone?				
Recovered your lost smartphone?				
Had your smartphone been stolen?				
Forgotten your password or pin number?				
Had your personal information leaked?				
Had your login details compromised (e.g., due to hacking or phishing)?				
Recovered control over the compromised accounts?				
Experienced problems with using (online) public services after losing your smartphone?				

10. **(Open question) What kind of issues or problems (if any) have you encountered due to the incidents specified in question 9 (losing your phone, compromised login details, etc.)?**



2.2 Pre-pilot survey result summary

Table 1 presents the demographic distribution of the pilot participants. The distribution is quite similar to what was in the first round though the average and median age are now lower.

Table 1. Demographic representation based on the pre-pilot survey answers.

Question	Value
Number of participants	72 participants in total 21 ARH, 11 ERTZ, 10 GIJON, 11 MOP, 9 RVK, 10 UCIC
Average age	40 years
Median age	40 years
Gender distribution	59.7 % male, 37.5 % female, 1.4 % other, 1.4 % prefer not to say
Highest education level	6.9 % doctorates, 30.6 % master's or equivalent, 38.9 % bachelor or equivalent, 20.8 % secondary school, 2.8 % completed primary school
Concerned about privacy (1-5 disagree to agree)	3.49 average, 27.8 % are not concerned

Other interesting notes from the pre-pilot survey were Q5 – “What do you think of digital services?” as well as Q9 – “Have you ever...”. These two questions are displayed in Table 2 and Table 3.

Table 2. Q5: What do you think of digital services?

	1 Strongly disagree	2	3	4	5 Strongly agree
Digital services are better than traditional services	1,39 %	4,17 %	33,33 %	27,78 %	33,33 %
Digital services are difficult to use	16,67 %	33,33 %	30,56 %	11,11 %	8,33 %
The government (authorities) should transform public services into digital	5,56 %	11,11 %	29,17 %	33,33 %	20,83 %
I trust the authorities more when public services are offered in digital	4,17 %	15,28 %	55,56 %	11,11 %	13,89 %

As Table 2 shows, over half of the participants agree that digital services are better than traditional services and that digital services are not difficult to use. Similarly, half of the participants agree that public authorities should make the services digital.

Table 3. Q9: Have you ever...

	Yes	No	I don't know	Prefer not to say
Lost your smartphone?	26,98 %	68,25 %	0,00 %	4,76 %
Recovered your lost smartphone?	12,70 %	53,97 %	0,00 %	33,33 %
Had your smartphone stolen?	9,52 %	84,13 %	1,59 %	4,76 %
Forgotten your password or pin number?	69,84 %	20,63 %	3,17 %	6,35 %
Had your personal information leaked?	11,11 %	49,21 %	34,92 %	4,76 %
Had your login details compromised (e.g. due to hacking or phishing)?	22,22 %	46,03 %	26,98 %	4,76 %
Recovered control over the compromised accounts?	23,81 %	28,57 %	19,05 %	28,57 %
Experienced problems with using (online) public services after losing your smartphone?	3,17 %	58,73 %	4,76 %	33,33 %

Table 3 shows that not many people have lost their smartphone or had it stolen. However, there are two other interesting notes for example, majority of participants have forgotten their password or pin number before. This means that the people are likely to forget their password or pin and would need to request a new from the service provider, providing an edge to the IMPULSE solution that would remove the need to remember passwords and pins. Additionally, while only tenth of the participants admit that they have had their personal information leaked, third of the participants do not know if their personal information has leaked before or not leading to almost half of the participants possibly having their information leaked. Similarly, fifth of the participants have had their login details compromised and another fifth do not know. These are significant details as the IMPULSE solution would require you to have a selfie taken to login to the platform, reducing the risk of hacking and phishing. At the same time, the personal information is being protected within the overall architecture, as the personal information is not stored anywhere that would be easily accessible by hackers (more information can be found in D5.2 IMPULSE Technology Block V2).

Overall, the pre-pilot survey provides interesting background information of the participants, and many things are relevant for the success of the IMPULSE solution as well as digitalization of public services.

2.3 User testing of the IMPULSE solution

Each pilot site ran the testing in their preferred way. Some case sites opted for just a single day of having participants test the IMPULSE solution and participate in the relevant activities. Other participants wanted to have an extended period of testing so that participants could test the solution on their own time as often as they wanted before finally making their own decisions on the IMPULSE solution and participating in the interview or focus group activities. Table 4 shows how the testing period for each case site was organized.

Table 4. Testing periods in each case site.

Pilot site	Testing period
ARH	Extended period of testing where participants could come and test the locker
ERTZ	Single day of testing for participants
GIJON	Single day of testing for participants
MOP	Extended period of testing where participants could test the IMPULSE solution at home
RVK	Three separate dates for different participants to gather and test the IMPULSE solution
UC/IC	Single day of testing for participants

2.4 Focus group activity

The focus group activity was designed so that participants can discuss their experiences in a group. The activity stayed the same in both 1st and 2nd piloting round and the only modifications to the script were additional example topics included into the text. The focus group activity was done in all piloting sites except ARH, where instead all participants were interviewed for additional details.

Below is the given focus group script:

IMPULSE focus group activity

Document summary

- **Use:** To prepare and run focus group session with the objective to collect user feedback
- **Who should use it:** Partnering Lead and Focus Group Moderator
- **Tool type:** Guidance
- **How to use it:** Reference for running the focus-group session

1.Scope and purpose

Focus group

- **Duration:** 1-2 hours (depending on accessibility of participants)
- **Tools required:** Notebook, voice recorder, video recorder, sticky notes and marker pens, flip-chart paper or whiteboard, participant consent forms
- **Participants:** 6-8 people who tested IMPULSE app
- **Expected outputs:** Text (transcript, notes), audio recordings, video recordings, photos

Focus group is a user research method aimed at understanding opinions and attitudes towards specific topic through an **informal group discussion** with the invited users.

Focus-group sessions are conducted as a part of pilot activities after end-users interact with IMPULSE software to test its features.

Focus-group session is run by **Moderator** who guides a group through a set of questions.

The role of Moderator:

- ensure the session is run following preplanned script
- encourage participants to contribute to the group discussion
- avoid situation where one participant's opinion is dominating
- facilitate the group discussion for all participants

The focus group **discussion is recorded** for data collection and analysis in project and research related tasks.

The remainder of this document describes the structure of IMPULSE focus group script.

2. Structure

2.1 Preparations

The focus-group session is organised by the partnering public administrations in the municipal premises of their respective pilot site.

A venue should be convenient enough for the participants and suitable for the tools' setup to run a group session and record the discussions.

Before the session begins, Moderator must ensure that:

- **all the participants are informed** that their discussion can be recorded in audio/video formats and the recordings are used for research and project related purposes as described in Participant consent form
- the results of the group discussion will be **anonymised and cannot be traced** back to participants individually
- should any participant refuse to give their consent they are **free to withdraw** from the session at any time
- tools for **audio/video recording** of the session are in place and functioning, along with the template for Journey Mapping exercise

If appropriate, incentives can be offered to the invited participants, such as coffee and snacks.

The focus group should be carried in **informal setting** to stimulate non-judgmental environment and make the participants feel free to discuss the given topics.

2.2 Introduction

Focus group introduction

In the beginning of session, Moderator:

- Welcomes participants
- Introduces hosts of the session (IMPULSE Consortium and public administration)
- Explains the goal, format, and expected outcomes
- Informs the participants that the session will be recorded and results anonymised

The session begins with short introduction on goal, format, and expected outcomes of the group session.

The **topic of the discussion** is "*IMPULSE technologies for accessing online public services*". The topic sets to explore **user experiences and opinions** about IMPULSE after testing the software. It is therefore structured around the questions such as:

- "*How was your interaction with IMPULSE?*",
- "*Did you find IMPULSE promising for your every-day use? Why and why not?*",
- "*What could make IMPULSE more appealing?*".

Moderator reminds the participants that the objective of the focus group is not about finding a consensus, but more about **understanding different perspectives**.

2.2.1 Topics for discussion

Depending on pilot specifics, Moderator is free to **steer the group discussion to relevant topics** and adjust questions for their participants. Some examples of topics are given below.

Usability and accessibility of online public services:

- "*How easy it is for you to use public services online?*"
- "*Do you think IMPULSE would enhance your experiences of public services?*"
- "*Should IMPULSE be your personal assistant in digital public sector? Why and why not?*"

Managing own's identity in undergoing digital transformation:

- "*What do you think of idea having your own digital identity?*"
- "*You may usually carry your ID document in your wallet. Do you see IMPULSE as a digital wallet where you carry your digital ID? Why and why not?*"
- "*It is your responsibility to take a good care of your ID documents. Do you think the same applies to IMPULSE digital identity? Why and why not?*"

Contexts of verifiable identification:

- "*It is not always required to show an ID document when applying for services. Do you think that with digital tools identification will change? Will it affect your real identity? Why and why not?*"
- "*Digital tools can help cut costs: no paperwork, no need to go to the premises. Would you be willing to pay for such convenience? Should government upkeep them through taxes? Or should this be optional for you and paid annually like a subscription fee? What do you think?*"

The list of topics and questions is not exhaustive. Further, participants may initiate their own topics to discuss and Moderator should facilitate them if found appropriate.

For discussion topic, Moderator should use their own sense of judgement based on their knowledge of the participants (target users, their needs and concerns) and the pilot environment.

2.3 Journey Mapping activity

Journey Map summary

- Is supplementary, **not the key** activity of the focus group session
- Can **facilitate the discussion** offering different views to reflect on
- Serves to **outline participants' statements** and collect summaries of their experiences

The discussion is supplemented with the exercise activity called Journey Mapping. It should help participants **outline their key statements and visualise the process** of interacting with IMPULSE software.

The Journey Map is present in pre-defined template on a flip-chart paper or whiteboard (see Figure 1). The template can be easily replicated in a drawn format.

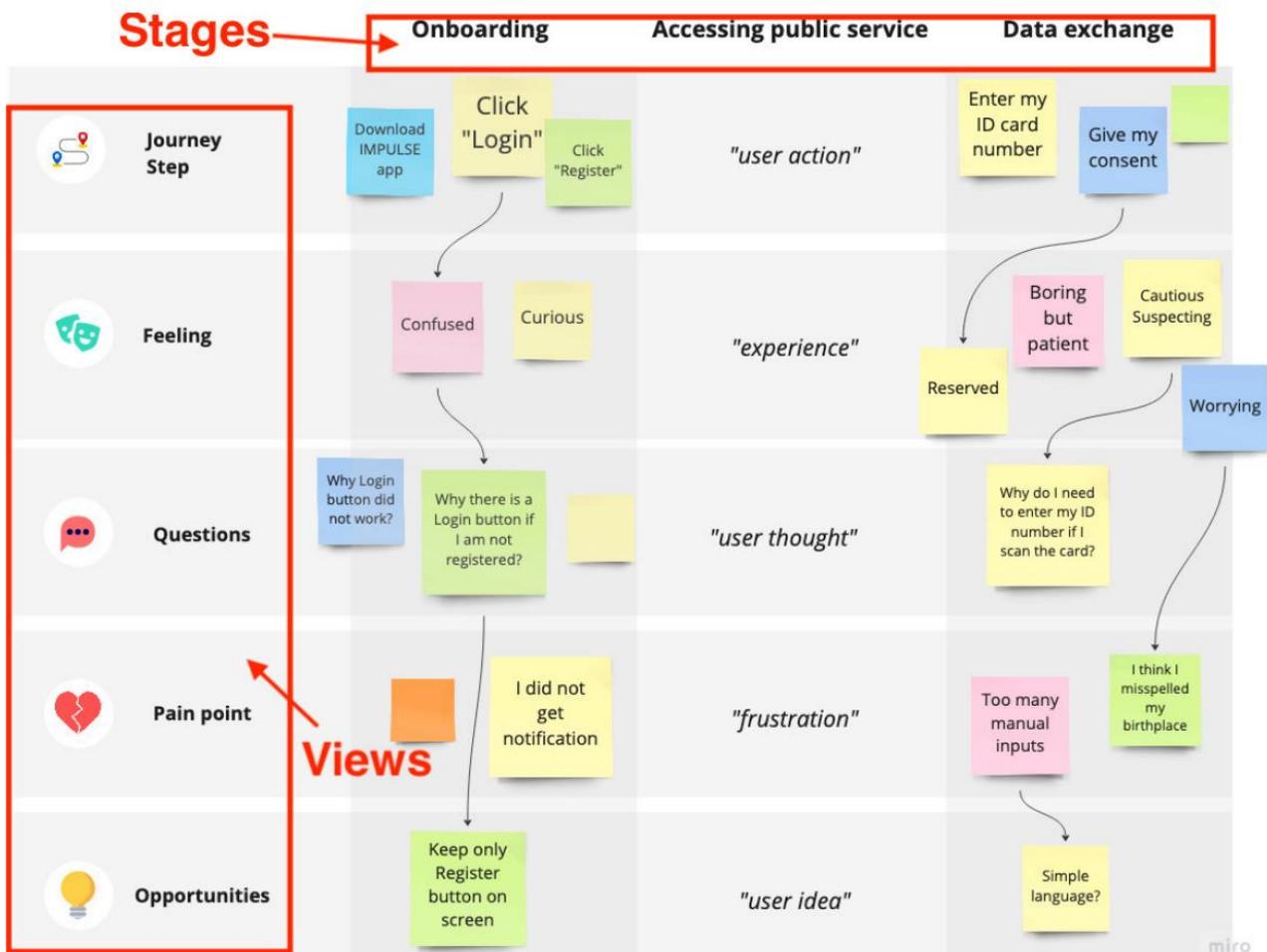


Figure 1. Journey Map template.

2.3.1 Moving in Stages

There are **three high-level stages** that generally describe IMPULSE functionality from the user's perspective:

- *Onboarding* - first use of the app, from downloading to registration process
- *Accessing public service* - actions taken after registration was complete (i.e., login with IMPULSE)
- *Data exchange* - reflections on sharing personal data and app's informativeness

The stages are highly aggregated to give participants flexibility and space for their thinking about taken actions. It's up to the participants to define **how specific the action** was, as long as they can make **meaningful reflections** on them.

2.3.2 Reflecting in Views

There are **five views** corresponding to different stages of interacting with IMPULSE application:

- *Journey Step* - **any** actions that users took while testing the app
- *Feeling* - experiences and reactions evoked at the stage by the app
- *Questions* - thoughts or uncertainties the users had regarding the app
- *Pain point* - malfunctions the app that raised frustrations or negative reactions
- *Opportunities* - ideas on what and how the app should work to improve the experiences

The views can help **guide the participants in their reflections** while discussing the topic. Participants or Moderator can write down their key **statements on a sticky note** and place it in the Journey Map field which corresponds their view and the stage.

By doing so, participants share their experiences, preferences, and frustrations to keep the discussion on track and further stimulate the exchange of opinions.

2.3.3 Linking ideas

The statements can be **connected with the lines** drawn between the sticky notes on different view levels. For example, the action "Register in IMPULSE" could evoke the *feeling* of "Confusion" as some misleading button was present on the app's screen. Further, the *opportunity* could be to "Leave the Register button as the only option on screen".

The sticky notes can also be **freely moved** vertically or horizontally, and the **statements can be repeated**. Ideally, the statements' outline should follow **left-to-right** direction to help visualise the overall IMPULSE workflow.

Moderator can initiate the exercise with the first action that was required to use IMPULSE, "Download the IMPULSE app". After that, the participants can be asked the questions, such as "*How easy was it for you to find the app in store?*", "*How long did it take for the app to download/install?*".

Further actions should be stated by the participants while Moderator can write them down on sticky notes to facilitate the activity.

If necessary, Moderator can stimulate the participants' thinking by asking the questions:

- "*What was the following action you took with IMPULSE?*"
- "*How did find the registration process?*"
- "*Did you try to click on Login button first?*"

Another technique to stimulate the discussion is asking "What if...?" questions, which can add new perspectives on the topic.

There is **no strict framing nor completion goal** for the exercise. Rather, it should guide the discussion and help participant reflect on their testing experiences.

3. Closing focus-group session

Once time of the session is up and participants finish sharing their meaningful comments, Moderator can wrap-up the discussion. This could be the final questions to participants, such as:

- "Would you recommend using IMPULSE app to other people?"
- "Do you think it is a good idea to use IMPULSE in future?"
- "Would you see yourself using IMPULSE app regularly?"

Moderator reminds the participants, that taking part in this group discussion they **contribute to the design** of future technology.

Moderator thanks the participants for their **time and commitment** and invites to follow up the IMPULSE project for future updates and events.

2.5 Focus group result summary

The focus group activity provided an open forum for participants to discuss together of the topics and pain points with the IMPULSE solution. The focus group activity was done in most of the participating cases. Figure 1 and Figure 2 show some examples on how focus groups were done in UC/IC and MOP.



Figure 1 . Focus group in UC/IC

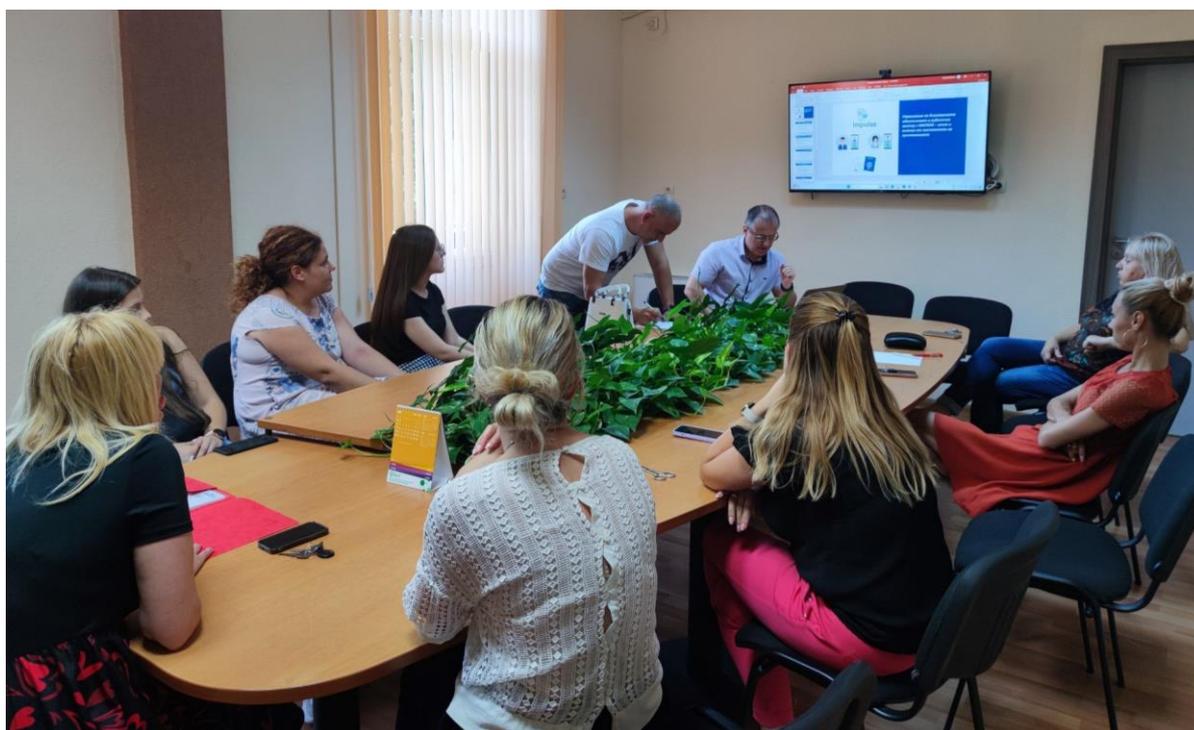


Figure 2. Focus group in MOP

In general, all participants were interested in the IMPULSE solution. Some of the participants had minor concerns or improvement ideas that would make the IMPULSE solution better than current available alternatives with minimal effort. For example, having the IMPULSE solution to be a universal solution instead of for one service, the solution would be more advantageous to adopt.

The most noteworthy improvement that IMPULSE provided over other examples in all case sites was the onboarding process, that was seen an improvement over the current available solutions. All agreed that the IMPULSE method of using facial recognition is better over the traditional username & password combination.

On the negative side, participants found various technical issues that they would like to see fixed before they would consider adopting the IMPULSE solution for a wider usage. One problem was the scanning of ID documents that should automatically fill personal information within the app but that did not work properly in many cases and required users to manually input all the necessary details. Another issue was the facial recognition that could be faked with some effort and it should be fixed. Finally, there should still be more helpful information available in the application, such as having a help/info button to provide more details what to do if the user does not know.

Overall, participants were quite pleased with the IMPULSE solution and could see themselves using it in the future if there were some improvements done.

2.6 Interview

Each case site was asked to interview at least four participants. The interview was designed to be semi-structured where public administrations were given a template with questions that they could ask. Few questions were requested to be asked from all participants but everything else the interviewee could skip if necessary. The questions were divided into seven topics, six topics included questions that were relevant to all cases, but the seventh section was “*Case-specific questions*” that were different for each case and some cases did not have any case-specific questions.

Below is the interview template provided to all case owners.

Semi-structured interview questions for pilot participants

This document contains the interview questions for pilot participants. The interview should be done in 1:1 setting. It would be recommended to have at least 4 participants interviewed.

The interview is meant to be semi-structured, meaning that the questions presented here can be altered or discarded if necessary. Similar situation with the presented follow up questions / information. The interviewer is recommended to have follow up questions whenever possible if the answers provided by the interviewee would suggest so (please write down what was asked as well as the response then).

Questions are categorized into topics and under each topic, there are several different questions. The interviewer can ask the questions as written or approach the topic in a different manner. Also the topics and questions can be covered in any order.

The interview answers should be recorded in as much detail as possible. A transcription of the interview would be the best solution but if that is not possible, writing the answers manually with as much detail as possible is also viable.

Participant id _____ (the same participant ID used for the survey answers)

Note for interviewers: You can connect the survey responses using the participant ID before the interview and adjust your questions according to the answers and your knowledge of the participant.

Terminology to be used and may need to be explained (there is no correct answer, these are some general explanations if the interviewee asks):

Artificial intelligence (AI): The ability of a digital computer or computer-controlled robot to perform tasks commonly associated (such as identifying objects and features from images, understanding text, producing new text) with intelligent beings

Blockchain: A collection of digital data that is geographically distributed and securely linked together with cryptographic hashes. Each block in the blockchain contains a hash of the previous block, a timestamp, and transaction data.

Electronic identification (eID): A digital solution for proof of identity. Provides online authentication and login to services. May also be used to provide digital signature.

Self-sovereign identity (SSI): SSI is an approach to digital identification that allows users to control and selectively disclose their information necessary in access to a service. It is the opposite to how identity providers such as Google and Facebook allow for accessing services (e.g., Login with Facebook) because they retain control over the user's information even if there is a sensitive information that is not needed.

Topic 1: General questions

- How many digital identities do you think you have? For example, having several different emails for different uses, such as work, personal, free-time, for registering on different sites etc.
- Do you have multiple digital identities in the same service? For example, having multiple accounts in the same social media or e-commerce platform.
 - If you do, why?
- Do you have and do you use electronic identification to access different public or private services, such as digital libraries, online healthcare records, online banks services etc.?
 - Are there any services you feel are functioning really well with/without electronic identification?
- How do you feel about electronic identification?
 - Positive / negative feelings?
- In general, do you prefer handling different tasks in person (physically) or through online platforms or machines? For example, bank services, buying concert or transportation tickets, ordering food delivery, etc.
 - Does digital interaction increase/decrease your engagement with the service?

Topic 2: Details about the IMPULSE solution

- If you compare the IMPULSE solution with the existing method of identifying yourself, how would you rate it?
 - Is it better or worse? Why so?
 - Do you see any advantages and disadvantages in using it from your own perspective?
- How much did you need help to be able to use the IMPULSE solution?
 - Were you able to onboard / login without any help or did you need some minor support from others?
 - Was there any point when you felt confused or lost with the application?
- Do you think the IMPULSE solution would be better used with some other service?
 - If yes, can you give examples?

- If no, why not? Do you think this is the perfect option for IMPULSE to be used for or that IMPULSE should not be used at all?

Topic 3: Trust, data and privacy

- How much do you trust different service providers? What do you think helps you trust or distrust them?
 - Do you allow all cookies on websites or pick and choose?
 - Do you ever use fake names or false personal details when signing in to services?
- Do you read or pay attention to the terms of agreement / consent forms when signing up for services?
 - Do you know what data is stored and shared with other in the different services you use?
 - Are you afraid that your personal information would be shared with companies you do not support?
- **(please ask this question)** Do you know what it means to have “control over your data” (as what the GDPR aims for)?
 - Is it something you care about?
 - Do you think that with the IMPULSE solution you have control over your own data? Why yes and why not? What could be done to achieve this control?
- **(please ask this question)** Which is more important to you and why: Being able to control your own data or having better services?
 - So if a service limits your control to be able to provide better services, would you still use the service?

Topic 4: Technical questions

- How much do you know about AI or blockchain?
 - Do you think AI is more useful or harmful? Can you give examples on why you think that?
- Do you know how the IMPULSE solution uses AI?
 - **If the interviewee does not know, tell them that it is being used for the facial recognition (and document verification).**
 - Do you know where else such AI is being used?
 - **If the interviewee does not, give examples such as airport security and border control**
 - How do you feel about this technology? Do you think this is a helpful piece of technology or more invasive?
- Would you rather know or not know how some application or service work?
 - There is a saying “blissful ignorance” and “more knowledge brings more pain”, do you think one of these are appropriate?
- Are you familiar with blockchain?
 - What do you think about blockchain? Do you think your (un)familiarity with the technology affects how you feel? Would you be more comfortable with the technology if you knew/didn't know more?
- Do you know what is SSI (Self-sovereign identity)?
 - **SSI approach to digital identification allows users to control and selectively disclose their information necessary in access to a service. It is the opposite to how identity providers such as Google and Facebook allow for accessing services (e.g., Login with Facebook) because they retain control over the user's information even if there is a sensitive information that is not needed.**
 - Did you know that the SSI approach can be achieved with blockchain technology?
 - Is this kind of feature important to you?

- Using an SSI, you can have a wallet of digital identities where you could add and remove the identities however you want. Compared to an identity provider like Google and Facebook, where you have one general identity utilized for identification.
- **(question)** Do you think you would prefer this kind of wallet with digital identities that you can control would be a better solution than using e.g. Google account to log in everywhere?

Topic 5: Economic questions

- Do you need to pay for the current electronic identification method you are using?
 - Through taxes, separate subscription, etc.
- Would you switch to using IMPULSE if it was...
 - More expensive than the current electronic identification?
 - Less expensive than the current electronic identification?
 - If there are no existing electronic identification methods that cost any money, is there a price you would be willing to pay for an electronic identification solution such as IMPULSE (one-time, monthly, or annual payment)?
- If the current method of identification is to physically be present somewhere, how valuable is the time and effort used? Would you rather switch to a digital authentication even if it meant you had to pay a small amount of money (through service fee, subscription, taxes, etc.) or continue with going to the on-site location?

Topic 6: Social aspect

- If the IMPULSE solution was used in other parts of your country, would you start using it as well?
 - Or would you use the IMPULSE solution even if it was only used at your municipality / location?
 - Does the popularity or number of users have an effect on your willingness to you an application?
- What if the IMPULSE solution was connected to other public services, would you start using it?
- How do you feel that the IMPULSE solution is being developed by TREE, GRADIANT and ALICE?
 - Do you know these companies?
 - Would you prefer if IMPULSE was developed by large international companies (like Google, Apple, Microsoft)?
 - Does knowing / not knowing the company affect how much you trust the IMPULSE solution?
 - What if the IMPULSE solution is endorsed by EU, by your national government or by your local municipality? Would you trust the IMPULSE solution more?

Topic 7: Case specific questions

ARH

- Do you think using a locker with an external app (the IMPULSE solution) is useful?
 - What if the locker had an embedded camera and the IMPULSE solution was integrated into the locker?

UC/IC

- How does the IMPULSE solution compare with SPID?
 - Onboarding and logging in? General usability? And so on.
- Is there anything in SPID that you would like to be in the IMPULSE solution?

- Feature, functionality, interface related, technical, practical, etc.
- And is there anything in the IMPULSE solution you would like to be in SPID?

2.7 Interview result summary

This section presents a summary of the responses for the interview questions. The questions were divided into subcategories and the results are summarized at the category level.

Most participants had multiple digital identities for different platforms and some of the participants said that they have multiple identities for the same service. All participants reported that they use online public services and have the necessary electronic identities to be able to use the services. Most participants have positive feelings towards electronic identification but there are also concerns regarding security and crimes. One participant said *“I like it, I trust it a lot, although I know there are risks and crimes are committed. It never happened to me.”* In general, everyone preferred digital services over physical services because they are faster and easier.

Over half (above 57 %) of the participants felt that the IMPULSE solution is better than their current one and some said that IMPULSE had the potential to be better. Some participants mentioned getting lost and needing some support while trying out the solution. But while the participants were positive towards the IMPULSE solutions, they also mentioned that it would require improvements.

Regarding trust, there was a clear difference between the UC/IC participants and everyone else. The UC/IC participants were quite concerned and strict of trust and privacy and it showed in the responses. They would know how their data is stored and shared, select the cookies on websites and even read the terms and conditions before signing up for services. However, the UC/IC participants would also prefer better services over being able to control their own data.

On the other hand, participants from other case locations would not be so strict with cookies they choose nor would they read the different terms and conditions before signing up for services. Additionally, they would not necessarily use fake IDs for services nor know how their data is shared in services. However, the participants also felt that they would prefer being able to control their own data instead of having better services.

All participants felt that GDPR is important and are worried that their personal data is shared with companies they do not support.

Most participants (above 70 %) did not understand or know much of blockchain. At the same time, they did not have any opinion of the technology itself being used as they were unfamiliar with it. On the other hand, participants were quite familiar with AI. Most participants agreed that AI can be useful but also harmful and invasive if used in such a way and it depends on how it is being implemented. In the case of IMPULSE, AI was seen quite useful but when AI is being used for surveillance, it is seen as harmful and invasive.

The participants mostly would prefer a free solution over a paid one. However, if the payments happened with the tax money, then participants would not mind.

The social part of the interview provided interesting feedback. Overall, many participants (above 60 %) would use the IMPULSE solution if it was being used in other parts of the country. But they also reported that the popularity of the solution does not affect their willingness to use the solution, they would use the solution if it were useful.

None of the participants knew the companies behind the IMPULSE solution, not even the companies from the same countries (Italy, Spain). Some of the participants said that knowing / not knowing the companies may affect how much they trust the IMPULSE solution but in general, most did not care. The participants also

would not prefer that the solution is developed by a big company, such as Google, Apple, or Microsoft, as they feel that the companies are not committed to data protection or ownership, leading to a negative view on these companies.

2.8 Post-pilot survey

The main goal of the post-pilot survey was to gather feedback from the users regarding their experiences with the IMPULSE solution and their opinions of it. The survey was changed quite drastically compared to the first piloting round, with questions 6-13 being new additions and question 5 having few more options, while two questions from the previous round were removed. All participants were asked to answer the post-pilot survey. Only ARH did not distributed the post-pilot survey to their participants but instead, interviewed everyone who participated to get more detailed feedback as they had less participant during the first piloting round.

Introduction

This survey is part of the end-user pilot testing executed by the IMPULSE project team. The survey is meant for all participants to fill. The survey will be anonymous.

This is the post-pilot survey, which will ask your opinions regarding the IMPULSE solution.

User identifier (given by the local public administrator) _____

This identifier will only be used to be able to combine the pre-pilot and post-pilot surveys together when examining the answers. Remember to use the same identifier in both surveys.

1. **How likely would you be to use the IMPULSE solution instead of the digital identity (log in) systems you currently use (username/password, smartcard, PIN, etc.)?**

Not at all likely 1 2 3 4 5 Very likely

2. **Why would you use the IMPULSE solution? Tick only the most important ones for you (maximum of 4)**

- It is intuitive to use
- It makes assessing online services faster / more convenient
- It is modern and interesting
- It gives me control over my data
- It is secure
- It does not require a passwords
- With facial recognition, I am less worried about hackers
- Other reason (please specify) _____

3. **Why would you not use the IMPULSE solution? Tick only the most important ones for you (maximum of 4)**

- I do not want to depend on my smartphone
- I do not have a smartphone
- I am worried about what happens if I lose my smartphone or it is stolen
- I am worried about facial recognition technology
- It is too complicated
- I use too few online services to make IMPULSE worthwhile
- I am worried about hackers and identity theft
- Switching to a new system is too much hassle
- Other reason (please specify) _____

4. **Please circle all of the following words and phrases that you feel describe IMPULSE.**

	Unnecessary	Privacy-friendly
Convenient	Dangerous	Not useful
Complicated	Easy-to-use	Weird
Surveillance	With IMPULSE I can decide who gets my data	Safe
Makes signing up for services easier	Saves time	Makes login process easier
Creepy	IMPULSE gives me control over my data	Boring

5. Please share your opinion on the following:

	Strongly disagree				Strongly agree
	1	2	3	4	5
I found the IMPULSE solution cumbersome to use					
The IMPULSE solution reduce/simplifies the number of steps in accessing PA services					
I think that I would need someone to give me in-person technical support to be able to use the IMPULSE solution					
The IMPULSE solution gives me a positive user experience					
The IMPULSE solution provides clear use instructions					
I feel that my personal information is protected with IMPULSE					
I have doubts about the security of the IMPULSE solution					
Overall, I find the IMPULSE solution useful					
I would recommend the IMPULSE solution to other people					

6. What would motivate you to use the IMPULSE solution instead of the current solution? Select all that apply

- I don't have to remember my user ID and password
- The onboarding is more convenient compared to the existing solution
- The IMPULSE solution feels more secure
- The IMPULSE solution has a modern interface compared to the existing solution
- Other reason, please specify:

7. How likely would you be to pay to use the IMPULSE solution to access the public service(s)?

Not at all likely 1 2 3 4 5 Very likely

8. **Answer this question only if you answered 4 or 5 to the previous question, how much would you be willing to pay?**

- Less than 5 euros annually
- 5-10 euros annually
- 10-20 euros annually
- 20-40 euros annually
- More than 40 euros annually

9. **How likely would you be willing to support your municipality or company if they were planning on purchasing the IMPULSE solution?**

Not at all likely 1 2 3 4 5 Very likely

10. **How likely would the IMPULSE solution increase your activity with the public service(s)?**

Not at all likely 1 2 3 4 5 Very likely

11. **Did you participate in the first IMPULSE piloting round?**

- Yes
- No

12. **Answer this question only if you participated in the first round:
The second version of the IMPULSE solution is noticeably better than the first version.**

Not at all likely 1 2 3 4 5 Very likely

13. **Answer the following question only if you answered 4 or 5 to the previous question:
Why do you feel that the IMPULSE solution is noticeably better? Select all that apply.**

- It is easier to navigate
- It fixed the issues I had with the previous version
- I require less technical support
- It provides more information to me
- It is visually/aesthetically more pleasing
- It feels more responsive
- It is overall easier / more intuitive to use
- Other reason (please specify) _____

2.9 Post-pilot survey result summary

The post-pilot survey provided interesting results overall. Around 65 % of participants would be likely to use the IMPULSE solution instead of the current digital identity system they use. Most likely participants to use IMPULSE are from MOP while RVK had the participants least likely to use the IMPULSE solution instead of the current one. The main difference between these two case locations is the level of digitalization and existing solutions, where MOP has relatively recently started moving towards digital services and RVK has quite an extensive portfolio of working digital services and a decent eID solution in the market. These factors may be the largest contributors to being able to accept a new eID solution such as IMPULSE.

The top three reasons not to use the IMPULSE solution were:

1. Worried what happens if smartphone is lost or stolen
2. Worried about hackers and identity theft
3. Worried about facial recognition

Interestingly enough, not many participants had their smartphone lost or stolen based on the pre-pilot survey. The worry of facial recognition is often related to not knowing or understanding how the technology works.

The top three reasons to use the IMPULSE solution

1. It does not require passwords
2. Makes online services faster / more convenient
3. It is modern and interesting

Figure 3 shows how participants chose words to describe the IMPULSE solution.

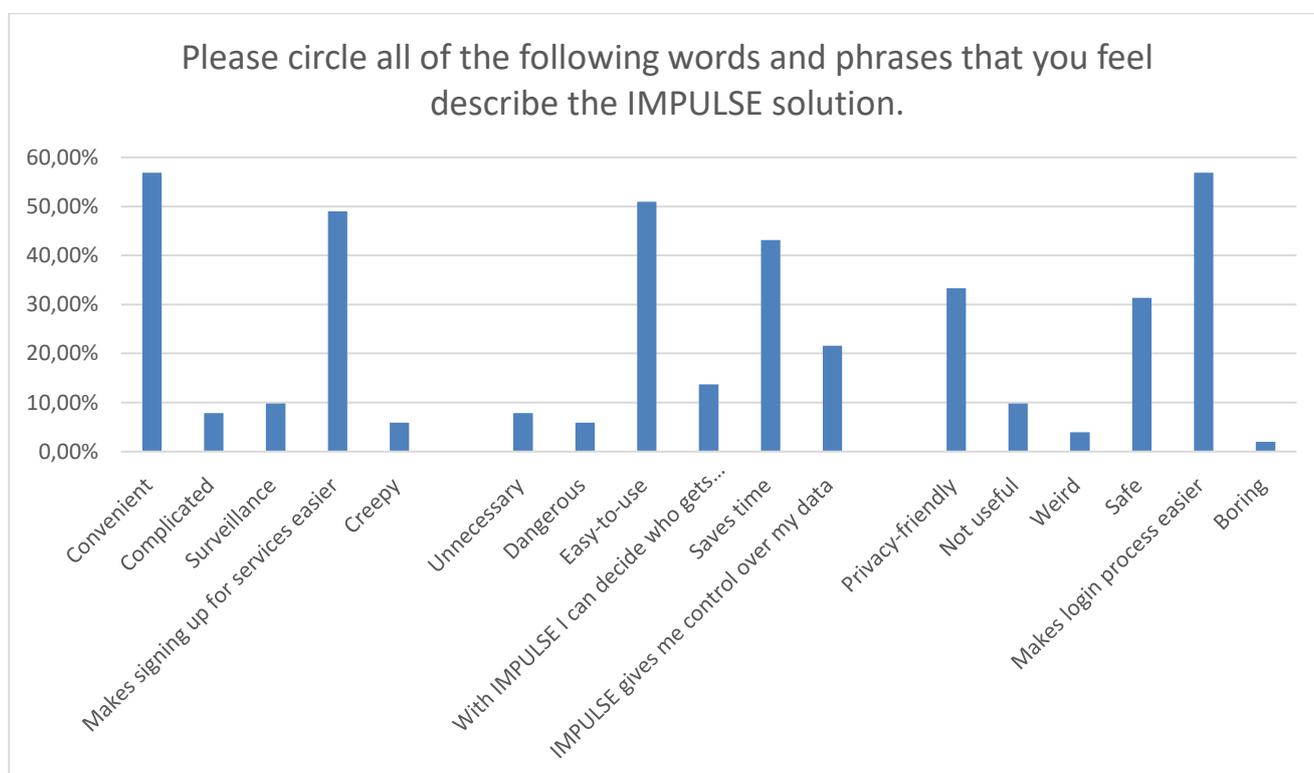


Figure 3. Q5: Words and phrases that describe IMPULSE solution

Table 5 shows how participants agreed or disagreed with the given statements. In all statements, more than half of the participants positively agreed or disagreed, giving the impression that the IMPULSE solution was seen quite positively. Especially the security and protection of personal information were positively received.

Table 5. Q5: Please share your opinion on the following

	1 Strongly disagree	2	3	4	5 Strongly agree
I found the IMPULSE solution cumbersome to use	41,18 %	23,53 %	19,61 %	7,84 %	7,84 %

The IMPULSE solution reduce/simplifies the number of steps in accessing the given service	11,76 %	9,80 %	13,73 %	37,25 %	27,45 %
I think that I would need someone to give me in-person technical support to be able to use the IMPULSE solution	37,25 %	39,22 %	15,69 %	3,92 %	3,92 %
The IMPULSE solution gives me a positive user experience	1,96 %	7,84 %	23,53 %	39,22 %	27,45 %
The IMPULSE solution provides clear use instructions	2,38 %	11,90 %	28,57 %	28,57 %	28,57 %
I feel that my personal information is protected with IMPULSE	2,38 %	14,29 %	14,29 %	47,62 %	21,43 %
I have doubts about the security of the IMPULSE solution	26,19 %	50,00 %	19,05 %	2,38 %	2,38 %
Overall, I find the IMPULSE solution useful	3,92 %	7,84 %	13,73 %	33,33 %	41,18 %
I would recommend the IMPULSE solution to other people	5,88 %	9,80 %	21,57 %	27,45 %	35,29 %

Most participants were not willing to pay for the IMPULSE solution but there were who would pay less than 5 euros annually to be able to use the IMPULSE solution. On the other hand, 67 % of the participants would support their municipality or company if they were planning on purchasing the IMPULSE solution to be used. Similarly, 67 % of the participants agree that the IMPULSE solution would increase their activity with public services. However, this has to be taken with a grain of salt as it depends what kind of service the IMPULSE solution would be connected to and how often those are used in general.

Over half of the participants had participated in the first piloting round (excluding the participants from ARH and RVK), with ERTZ having the most equal division of 6 and 5 people who have and have not participated in the first round. Most participants agree that the second version of the IMPULSE solution was noticeably better than the first one, with only one person strongly disagreeing. The top three reasons why the second version of IMPULSE solution was better were:

1. It fixed the issues found in the previous version
2. It is easier to navigate and overall easier / more intuitive to use
3. It is visually/aesthetically more pleasing

3 Comparison with the first piloting round

This section presents the differences between the first and second piloting rounds in terms of activities and events, participants as well as the results.

3.1 Activities and events

As noted in D2.11, some questions that were deemed irrelevant had been removed from the interview and survey. Additionally, the timing of pilots was done in a cascading manner so that one case site starts first, then another and another and so on. This was done to avoid the technical team being overwhelmed with work from all case sites and they could focus on making sure one place works perfectly at the given times.

For the activities themselves, the goal was that all case locations can run the pilots this time. During the first piloting round due to various reasons, one case locations could not run the pilots at all and another case location had a fairly limited number of participants. This meant that the data collection was mainly from four case locations and the amount of input from each location varied.

During the second piloting round, each case location was able to run the piloting activities. However, one case location (ARH) mainly focused on performing interviews and interviewed all participants, instead of having a focus group or post-pilot survey, to provide more qualitative data as well as quantitative data by having the most participants out of all case locations.

In addition to the data collection activities, the testing was done differently in some locations during the second piloting round compared to the first round. For example in MOP, the participants could go home and test the solution by themselves instead of just one day of testing at the designated location.

Overall, the completion of activities and collection of data was much higher during the second piloting round.

3.2 Participants

Between the participants, there were major differences. Table 6 shows the differences of the participants between the first and second piloting round.

Table 6. Demographic representation based on the pre-pilot survey answers pilot 1 vs pilot 2.

Question	1st pilot round	2nd pilot round
Amount of participants	38 participants	72 participants
Average age	46 years	40 years
Median age	47 years	40 years
Gender distribution	60 % male, 36 %, female, 4 % other	59.7 % male, 37.5 % female, 1.4 % other, 1.4 % prefer not to say
Highest education level	8 % doctorates, 29 % masters or equivalent, 29 % bachelor or equivalent, 21 % secondary school, 13 % prefer not to answer	6.9 % doctorates, 30.6 % masters or equivalent, 38.9 % bachelor or equivalent, 20.8 % secondary school, 2.8 % completed primary school
Concerned about privacy (1-5 disagree to agree)	3.47 average 26 % are not concerned	3.49 average, 27.8 % are not concerned

As the table shows, the number of participants almost doubled for the second piloting round. The average and median age were close to same but gender distribution was almost equal during both pilots. Education level had the most differences between the participants, as more participants had a bachelor or equivalent. Finally, being concerned about was pretty much the same between both piloting rounds.

3.3 Results

For results, there similarities and differences between the two piloting rounds. From the focus group, similar concerns were raised but during the second piloting round, the concerns were less related to the onboarding or login process that felt cumbersome during the first piloting round. This time the concerns were more serious technical issues, such as being able to fake a selfie. In the case of the interviews, it is difficult to draw comparison as the interviews were drastically different from one another. However, there were some repeating topics in both interview rounds, such as the privacy and security aspects being important to participants and that the participants would consider using IMPULSE in the future if the largest issues (usability and privacy related) were to be resolved.

For the post-pilot survey, most questions from the first piloting round were used and can be directly compared. Table 7 presents how likely participants would be to use the IMPULSE solution instead of the current system.

Table 7. How likely would you be to use IMPULSE solution instead of the current systems you use

	1 Not at all likely	2	3	4	5 Very likely
First pilot	3,45%	6,90%	24,14%	31,03%	34,48%
Second pilot	7,84 %	13,73 %	13,73 %	29,41 %	35,29 %

As the table shows, similar results are on the “Very likely” side but the major difference happens on the 2 and 3 options. Looking at the individual case results, the main contributor to the negative side is RVK where majority responded with 1 or 2. The top reasons for using or not using the IMPULSE solution still staid the same during both piloting rounds (see section 2.9). Comparing the question *Words and phrases that describe IMPULSE* there can be seen some minor differences between the two rounds. Table 8 shows the results from the first and second piloting as well as the percentage increase/decrease between the rounds. The change has been colored in green or red indicating if the change was positive or negative.

Table 8. Words and phrases that describe IMPULSE

Word or phrase	First round	Second piloting round	Percentage change
Convenient	44,83%	56,86 %	+26.8 %
Complicated	13,79%	7,84 %	-43.1 %
Surveillance	3,45%	9,80 %	+184.1 %
Makes signing up for services easier	48,28%	49,02 %	+1.5 %
Creepy	0,00%	5,88 %	-
Unnecessary	3,45%	7,84 %	+127.2 %
Dangerous	3,45%	5,88 %	+70.4 %
Easy-to-use	58,62%	50,98 %	-13.0 %
With IMPULSE I can decide who gets my data	13,79%	13,73 %	-0.4 %
Saves time	51,72%	43,14 %	-16.6 %
IMPULSE gives me control over my data	31,03%	21,57 %	-30.5 %
Privacy-friendly	24,14%	33,33 %	+38.1 %
Not useful	3,45%	9,80 %	+184.1 %
Weird	13,79%	3,92 %	-71.6 %
Safe	37,93%	31,37 %	-17.3 %
Makes login process easier	65,52%	56,86 %	-13.2 %
Boring	0,00%	1,96 %	-

As the table shows, there are vast differences between the chosen terms between the two rounds. Of course, the first piloting round had considerably less responses compared to the second round but there are still important things to be noted. First of all, things that were seen in positive light during the first piloting round, were still mostly positive during the second piloting round. Some positive phrases, such as *Convenient* and *Privacy-friendly* were chosen noticeably more during the second round compared to the first round, both having over fifth more responses. However, some positive terms were selected less such as *Makes login process easier*, *Safe*, *Easy-to-use* and *Saves time*, each having around 15 % decrease in response rates. Most drastic negative change was in the response rates for *IMPULSE gives me control over my data* with a 30 % decrease.

On the other hand, there were some negative terms that were chosen less during the second piloting round, *Complicated* and *Weird*, which is good news but at the same time, *Surveillance*, *Creepy*, *Dangerous*, *Unnecessary* and *Not useful* were chosen more. The last two terms were mainly chosen by RVK participants but the other two negative terms were mainly chosen by participants from other case locations.

Overall, the results from the first round of pilots were more focused on the minor technical elements, problems with the IMPULSE solution and when people were not able to use the solution properly or had difficulties to understand everything. The results from the second round of pilots are less focused on the technical deficiencies of the solution as they were improved or fixed for the second round and the focus is on actual usability and acceptability aspects as well as major security concerns. As with the first and second round results, the main selling point of the IMPULSE solution is the facial recognition and not needing usernames & passwords. Most participants did not have a large problem with the use of facial recognition and one participant mentioned it is more beneficial to have the facial recognition implemented in the solution itself rather than having to use the facial recognition provided by the phone or a separate company as the control of the facial recognition is then tied to another external service.

4 Conclusion

The pilot activities run quite successfully during the second round of pilots. There were some deviations from the data collection plan, but each case location successfully ran the pilots and provided feedback from the participants. Compared to the first round, there were less technical issues but due to a small delay on the development, the pilots had to start a little later in the schedule with the summer holidays on the other end.

For future reference, better communication and explanation of the different activities has to be ensured so that everyone understands things the same way. While small misunderstandings can happen and lead to deviations, it is always better to have uniform data collection in all case sites.