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**Innovative PROcurement for Visual Impaired People**

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**Definition of uncovered common needs**

FG report

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# Introduction

PRO4VIP held a series of focus groups across EU, involving low-vision people, who are the primary target of this analysis phase, for which their feedbacks are considered paramount. Through the focus groups, the consortium gathered information to help decision makers, procurers and (potential investors) to analyse and define hierarchy between partially-sighted (PS) people’ unfulfilled needs in terms of assistive devices, to scan the market and assess the technology state-of-the-art and to design prospective procurement models and approaches to solve the innovation gap between actual needs and solutions currently available on the market.

This document describes the activities performed and the evidences emerged during the focus group held in The Netherlands the 15 of April 2016 aimed at problem domain and uncovered needs analysis.

# Summary of the focus group

Eye Association Netherlands held a focus group discussion with 14 PS people on 15 April 2016 in the city of Utrecht. The focus group was conducted as part of the involvement of the European Blind Union in PRO4VIP. Participants provided information in two ways: written responses (questionnaires) and group discussion.

The discussion was designed to gather information from the PS people in regard to the following common outcomes, emerged as statistically relevant from the questionnaires:

1. Indoor and outdoor orientation and mobility
2. Reading and writing
3. Personal care

Additionally, has been selected and/or has emerged also the following topics:

4. Access to information, goods and services

4.1 Banking

5. Social interaction

# Participant profiles

Total number of participants: 14, including:

Age

* under 25  : 1
* from 25 to 40 : 2
* from 40 to 55 : 2
* from 55 to 70 : 8
* over 70 : 1

Gender

* Number of  men : 8
* Number of women : 6

Employment status

* Student : 1
* Gainfully employed : 1
* Working as volunteer : 13
* Retired : 7

Self-defined level of low vision:

* Light/ moderate : 3
* Moderate : 5
* Severe : 6

Conditions represented:

* MD (juvenile or age related) : 4
* Glaucoma : 3
* Combination of uveitis,

macular oedema and glaucoma : 1

* Retina detachment : 1
* RP : 1
* PS caused by brain injury : 1
* Multifocal chorioretinitis : 1
* Unknown : 2

*Note: Several participants have combined eye conditions leading to low vision.*

# Methodology

The method used to identify innovation needs, validating them against their end-user relevance is the WIBGI developed by the English National Health Service (NHS UK). It uses collective brainstorm exercises with end-users to complete the sentence “Wouldn’t It Be Great If….”

In this setting, focus groups ought to be made by end-users: as they work and interact with a process on a daily basis, they are best-placed to see its problems or inefficiencies and identify possible areas of improvements.

WIBGI’s basic concept is to make time to take end-users out of their usual environment, group them and ask them to finish the sentence “Wouldn’t It Be great If....?” and, as a second step, to provide guide to collaboratively describe the problem to be solved, defining clear outcomes that are required (functionality / performance / efficiency improvements) rather than prescribing technologically how the solution for the problem should be built.

# List of topics

## *Topic 1 –* Indoor and outdoor orientation and mobility

Participants endorsed Indoor and outdoor mobility as an important topic. In this area more and more assistive tools are available, however, a lot of (combinations of) features are still felt to be missing. Mobility and orientation often require a lot of preparation and do create uncertainty in many situations, and various assistive tools have to be used with skills all at the same time. Travelling on public transport requires much preparation, getting around in a building is often difficult, safe traffic crossings are hard to find, information boards are often unreadable and getting to the entrance of a building or to the right bus stop requires a lot of searching.

**Wouldn’t it be great if….?**

Most of the participants identified having the following as being very important: a navigation assistive tool to be able to independently find their way around with very great accuracy that is applicable to different situations and locations.

Many participants also feel the need for assistive tools to enable them to have access to up-to-date information on signs in public space. People with specific eye problems feel the need for improvements to be made in advanced (magnifying) glasses which have an auto focus to see more and better in the dark.

The PS people offered a number of **reasons** for their evaluations:

* *When I’m on the campsite, I would like to be able to find my tent or (re) find my caravan by, for example, placing an IBeacon there.*
* *I would like to be able to run on my own without running into something.*
* *Finding your route and being warned about obstacles in time and then be guided around them.*
* *I would like to have a robot guide dog that takes me where I want to go.*
* *If I use a walking frame I cannot also hold a guide dog, and a cane too.*
* *I would like to stroll through the forest independently via trackless trails without getting lost.*
* *To be able to enter a hiking route in a navigation instrument.*
* *Easy access to information on signs in stations or at the stops of public transport.*
* *I would like to be able to find the bus that I need as well easily and the place where this bus is standing, so that I can easily find my tram or bus, also at a dynamic bus station without fixed places of departure.*
* *Navigation that indicates whether it would be better for me to walk on the left or right side of the road.*
* *A navigation system that you can give feedback to which other PS people could also benefit from.*
* *Navigation tools which enable you to choose the level of detail of the description depending on the degree of your visual impairment and your personal wishes and preferences.*
* *Navigation through bottlenecks in public transport and buildings.*
* *I would like to be able to say: I want to go to Bus 77. How do I get to platform B13?*
* *Navigation that filters out information according to your question or needs.*
* *A digital beacon in every bus, so that you can retrieve information immediately about where your bus is precisely going or stopping.*
* *I would like to reduce the number of occasions I bump into people; to enlarge my limited sight artificially.*
* *Getting around independently, wherever I want, in the quickest possible way, not only with public transport; which option is the fastest one for me at this moment? The choice: do I walk or is it better not to; making it quick and easy to choose what makes the most sense at this moment.*
* *An app telling me where you could safely let your dog loose or where it is not allowed.*
* *A navigation box that replaces your eyes. ‘Your eyes in a navigation box.*

*It must be so small, that you do not need to keep it in your hand, but could wear it around your wrist, or as a built-in chip’.*

* *In addition to speech output, it should give instructions (using vibro tactile signals) about which direction you should take so you can continue listening to the sounds in the environment.*
* *To find a traffic crossing and to know if you can safely cross.*
* **What are the main shortcomings of available solutions on the market?**

All the participants agreed that in the area of Indoor and outdoor mobility and orientation there are significant weaknesses and shortcomings, including (digital) navigation instruments that do not work in nature terrains

* (Digital) navigation instruments (apps on smartphones) are not accurate enough to find a specific path, entrance or door of a house, bus or building;
* Are not hands free;
* Are not sufficiently personalised;
* Often work only with speech output;
* Often lack voice input;
* Still combine too few features in one tool;
* Make digital information signs inaccessible or accessible in only one way;
* Do not make the place and direction in which to cross clear enough;
* Are not user-friendly;
* Do not allow the possibility to set, combine or vary individual preferences.

Some participants also quoted a number of shortcomings in the actual technologies and assistive devices, including:

* They require an individual to be able to take a picture;
* They miss an easy installation and user help;
* Do not detect obstacles on a route;
* Do not provide the option of running or cycling independently;
* There are no glasses that filter out bright light in the dark;
* Are vulnerable, heavy or too large to take with you wherever you go;
* Magnifying glasses cannot automatically focus;
* Binoculars have no solar filter for bright light;

The needs of the participants are synthetized in the table below.

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| *Topic 1 – Indoor and outdoor orientation and mobility* |
| Need 1.1 | A very accurate navigation instrument that lets you find your way independently, outside and inside, both in the built environment and in nature terrains, without walking into something. Being able to stroll independently; walking or running, whether or not combined with other means of transport, on existing routes or routes you have chosen yourself. Being able to find precise locations such as an entrance to a building, the front door of a house, or a forest trail. In the current situation you need many different assistive tools and route planners that don’t work everywhere. Not all trails and areas are covered and they are not accurate enough. They usually do not allow you to take your personal preferences into account.Finding your way or route without walking into something and with your hands free. And you should have the possibility of walking without having to use your ears to listen to instructions, and people who are deaf or have a hearing loss should be able to use it too. |
| Need 1.2 | A navigation instrument that could be combined with a bicycle, walking frame, wheelchair, scoot mobile or that is built in a *robot guide dog,* to find your way around independently without bumping into something or falling over. PS People are now dependent on public transport; they run the risk of walking into something; they cannot always ride on a bike or drive a vehicle (anymore); they have to use a number of assistive devices next to each other to find their way independently and, if they have trouble walking, they cannot always use a guide dog and cane.  |
| Need 1.3 | (Re) finding locations that have been marked by others or by yourself with very accurate (digital) beacons or landmarks that produce a sound or another signal if you approach them. (in combination with Need 1.1) This way, a tent, path, house, traffic crossing, specific bus or bus stop can be (re) found.  |
| Need 1.4 | Being able to see better in the dark. Glasses that (in the dark) filter out bright lights and reflections and make the environment somewhat lighter. Many PS people experience interference from the background light emitting from street lighting, vehicle lights and reflections of a wet road surface, all of which make it more difficult to see when its dark.  |
| Need 1.5 | A lightweight and strong pair of magnifying glasses, with auto focus, which would make it easier to use whilst cycling or navigating a boat, and easier to follow moving objects. Looking through magnifying glasses takes a lot of time especially when you have to try and focus them. Focussing with the currently available magnifying glasses takes too much time and effort. They are also too easily broken to take everywhere with you. |
| Need 1.6 | An information board for a public service or a street sign nearby, that is read out to you immediately, or displayed on your personal device without you having to take a picture of it first. In more and more places there are digital information boards indicating which bus or tram stops there, or whose turn it is in the queue for a public service. |
| Need 1.7 | A traffic light with an audio signal that is easy to find and that indicates the direction to walk in using a vibro tactile arrow and/or speech output. So you can be completely sure about which crossing direction is safe at that moment, without any doubt about the place or direction. |

***Topic 2 – Reading and writing***

In general, PS people were very active in their responses when talking about fast scanning the content of a newspaper, magazine or article (cross reading). Many participants also found it very important to be able to obtain an accessible version of a (study) book or text quickly.

* **Wouldn’t it be great if….?**

Being able to read a newspaper, magazine or text by scanning it quickly was referred to by all the participants as being very important. Some participants would like to combine magnification and speech output in an easier way. The need to have readable texts accessible faster and easier, was shared by nearly all participants. The bright light emitted by digital screens is a problem for some participants.

The PS people offered a number of **reasons** for their evaluations:

* *I would like to read the newspaper like I used to do when I could still see well.*
* *To quickly determine which articles are interesting to read or to read something quickly. Also when using speech output, to be able to make a distinction between large and small headings.*
* *To be able to quickly and easily switch between magnification and speech output and/or to use a combination of the two options.*
* *Having a handwritten text read aloud or be converted into digital text.*
* *A display without light (electronic Ink)*
* *Devices can be set up so inverse is used for texts and photos are automatically excluded.*
* *An intelligent speech output program that understands a table so you know which cell you are in.*
* **What are the main shortcomings of available solutions on the market?**

All the participants agreed that in the area of easy reading and finding information, there are significant weaknesses and shortcomings, including:

* They read everything to you, are not smart and flexible;
* Cannot read handwriting;
* Are not portable, or are very expensive and are not always covered by the insurance;
* Cannot easily combine and alternate between features for accessibility;

Some participants also quoted a number of shortcomings in the actual technologies and assistive devices, including:

* Not having access to source files of (study)books;
* Converting texts and books is time consuming;
* Cannot deal with tables, graphs and large numbers;
* Have no search function for quotations;
* Do not exclude photos when reversing colours.

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| *Topic 2 – Reading and writing* |
| Need 2.1 | Quick and easy reading of various texts; search for information and (re)find it without having to read the entire text all over again. The overview that is being missed because of the visual impairment must be compensated for by the ability to quickly select topics, based on titles and core of the content.Reading and searching for information in texts is very time consuming with the current assistive tools and is too inflexible to incorporate individual preferences, sources and situations. |
| Need 2.2 | Reading from a screen with minimal light while the contrast is maintained. Bright light and the back-lighting from a screen are prohibitive for many eye conditions. Because digital text is often the most easily accessible, PS people often read from screens. |
| Need 2.3 | To have quick and easy access to (study) books in a form that is readable for you (magnification and speech output). To be able to use source files of books would be very helpful here.In the current situation, reading aloud and converting of books or texts takes up an enormous amount of time. In study or work situations this causes problems. |

***Topic 3 – Personal care***

In general, PS people were extremely responsive when talking about being able to read and operate displays, touchscreens and the buttons on household appliances. But, there are still only a few appliances that are equipped with an accessible mode of operation. These include, for example, electronic cooking plates, ovens and microwaves, washing machines, coffee machines etc. The choice of appliances is, therefore, mostly limited, not all features can be used, or help from other people is required when using them.

* **Wouldn’t it be great if….?**

All the participants would like to be able to operate all the appliances in their homes by themselves and they want to have greater choice when purchasing them. Some would like to operate all the devices by using just one universal control box. Others would prefer all the devices to have accessible controls. Most of the participants stated that it was very important to be able to find products in a supermarket by themselves and to be able to read the product information. Some participants said that they were not familiar with what kinds of assistive tools were available in the area of personal care and a few wanted very specific practical assistive tools.

The PS persons offered a number of **reasons** for their evaluations:

* *In a supermarket the products you are looking for are hard to find and information on packaging is often unreadable, or difficult to read, which makes shopping on your own hard work and time consuming.*
* *I would like a toenail clipper that I can use myself; currently I can’t see where I’m cutting.*
* *I would like to be able to measure out a small amount of liquid washing detergent.*
* *A washing machine and lamps that you can operate with a mobile phone would be ideal.*
* *To recognise a small speck of dust or an insect and then (re)find it or catch it.*
* *To know whether your clothes or make-up is neat and that you don’t have a toothpaste stain on your face or clothes. (‘*a stain spotter’*)*
* **What are the main shortcomings of the available solutions on the market?**

All the participants agreed that there are significant weaknesses and shortcomings in the area of Personal Care, including:

* Existing accessible household appliances are costly, they cannot be used everywhere and there is little choice of type and model;
* Displays and control modules cannot be read, or are hard to read and operate.
* Usually there isn’t a universal interactive and accessible display unit, and method of operation, available;

Some participants also pointed out a number of shortcomings in actual technologies and assistive devices available, including:

* People do not know what kinds of assistive tools there are;
* There are no stain detectors to determine whether your clothes and face are clean and tidy;

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| *Topic 3 –* Personal care |
| Need 3.1 | Household appliances that are designed for all, so that all appliances on the market, and all their features, can be used independently by PS persons. |
| Need 3.2 | Products in a supermarket should be easy to find and the product information accessible onsite. |
| Need 3.3 | To be able to identify stains on clothing and on the face, so you know whether or not you look neat and attractive. |

**Topic 4 – Access to information and services including banking**

In general, PS persons were extremely responsive when talking about easy ways of being able to check their banking and payments independently. Banking services are still not always accessible and there are still banks which don’t offer them. Payment terminals are often different and don’t have enough accessibility features to make independently checking your payments possible. The accessibility of apps leaves much to be desired so these are not always usable.

* **Wouldn’t it be great if….?**

All the participants mentioned that it was important for them to be able to check their payments independently using a card. Some participants do not feel secure enough to make payments with their debit card. A large group indicated that they want to have accessible internet banking facilities available at more different banks. The participants believe, in general, that apps should only be admitted to App Stores and Play Stores if they are accessible to all.

The PS persons offered a number of **reasons** for their evaluations:

* *Payment terminals at the tills in shops are often different or very small and therefore not easy to operate.*
* *I would like to have more control and be able to easily pay at the till. Now I do not feel secure enough to pay with my debit card and I cannot check what amount I’m paying.*
* *I feel the need for interactive help when installing and using apps.*
* *Only accessible apps should be admitted to app stores.*
* **What are the main shortcomings of the available solutions on the market?**

All the participants agreed that there are significant weaknesses and shortcomings in the area of goods, services and banking, including:

* Payment terminals designs vary too much and often are too small and difficult to operate;
* Displays on payment terminals are difficult to read;
* Payment terminals do not have any speech output;
* Apps often don’t work with the accessibility features on smartphones and tablets.

Some participants also mentioned a number of shortcomings in the technologies and assistive devices currently available, including:

* Audio signals of payment terminals are often difficult to hear;
* The verification boxes of some banks which are used for Internet banking are not really accessible;
* Software and apps are often not easy to install independently.

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| *Topic 4 – Access to information and services including banking*  |
| Need 4.1 | Universal payment terminals that are easy accessible and to operate and can activate personal preferences for accessibility options when there is contact with your debit card.Payment terminals at the tills in shops are all different, often small, hard to read, hard to recognise for contact-less payments and do not have speech output or any clearly audible beeping signals. |
| Need 4.2 | All apps must work with the options currently available for accessibility on smart phones and tablets.Many apps cannot be fully used by PS persons as these do not work with the options available for accessibility that many tablets and smartphones have. |
| Need 4.3 | The verification methods and websites of all banks must be accessible.Not all banks have accessible websites and verification systems that are usable for PS persons. It is, therefore, not possible to select a bank of your choice to arrange your banking. |

**Topic 5 – Social interaction**

An important topic that is omitted from the list is social interaction. In general, PS persons were extremely responsive when talking about not being able to recognise acquaintances in various situations. They experience this as one of the most difficult things related to having a visual impairment. It often makes people insecure in social situations.

**Wouldn’t it be great if….?**

All of the participants reported that being able to recognise relatives, neighbours and friends is very important. Some would also like to know if and when someone is looking in their direction and they would like an assistive tool to recognise nonverbal communication such as facial expressions and gestures.

The PS persons put forward a number of **reasons** for their evaluations:

* *One of the trickiest things if you have low vision is probably not being able to easily recognise people.*
* *Not recognising people can lead to uncomfortable or embarrassing situations.*
* *If someone greets you when they’re passing by, often you don’t see that quickly who it is.*
* *Use of face recognition based on Facebook and Linked In photos from your contacts to be able to recognise acquaintances.*
* *Is there any eye contact, is someone looking in your direction, is someone approachable?*
* *Is a person you know approaching you?*
* *It is hard to know the way in which someone is looking at you and to know what someone means. (Being able to recognise non-verbal communication.)*
* *It would be fantastic if I could surprise someone by spontaneously being the first to greet him or her.*
* *You often have to bide your time when you meet people and you cannot react as spontaneously as you would like when you meet people.*
* **What are the main shortcomings of the available solutions on the market?**

All the participants agreed that in the area of social interaction, there are no assistive tools they know of which can be used to recognise people you meet on the street or at social activities.

Some participants also mentioned the lack of assistive tools to be able to recognise non-verbal communication.

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| *Topic 5 – Social interaction* |
| Need 5.1 | Recognising people you meet or you are looking for on the street, at a party or another social occasion, so you can greet them, or approach them for a chat.For PS persons, recognising people is often a problem, making them embarrassed in social situations and often dependent on others taking the initiative. |
| Need 5.2 | Recognising the non-verbal communication of people in your nearby environment or the people you are talking to, so you know how someone means something.PS persons now often miss the non-verbal signals of the person they are talking to. |

1. **Findings**

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| **Need 1.1 – Finding your way independently** |
| **Function 1** | A very accurate and reliable indication of where you are and where you are going;  |
| **Function 2** | Indicating where you are and where you are going in a forest or nature reserve; |
| **Function 3** | The timely detection of obstacles in you path;  |
| **Function 4** | To be warned about obstacles promptly via a specific vibrating signal; |
| **Function 5** | Automatic or adjustable modifications to individual preferences both for the accessibility options and for the level of details and type of information; |
| **Function 6** | Finding your route by entering a destination, hiking route or by knowing where you are and then where you can go to; |
| **Function 7** | Entering the desired destination both via a map and via an address; |
| **Function 8** | Options to choose input (text and speech) and play back options (both enlarged text and speech output and vibrating alerts); |
| **Function 9** | Gives the best side to walk on the road, for example, where a footpath is; |
| **Function 10** | Is so small and light that you can wear it on your wrist;  |
| **Function 11** | Features a long lasting battery.  |

**Use case #1**

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| **Need 1.1 – Finding your way independently** |
| Use-case today | *As a PS person I need to use a lot of assistive tools and apps simultaneously to plan my route and to find my way independently without walking into something. I cannot walk a route independently or find my way in a forest or nature reserve and I cannot find the entrance or way into a building. It consumes a lot of my time and energy, it creates unclear and uncertain situations and I depend on the help of others.* |
| Use-case tomorrow | *As a PS person I can simply and quickly (re)find my way independently in different situations and circumstances inside and outside, in the city, or in nature reserves without walking into something or stumbling. I need only one assistive instrument that is completely adjusted to my preferences both in terms of input, output, the level of details and need for information, and it modifies itself to routes of preference. Feedback that I enter, based on my experiences, is also available for other users.**The assistive tool is available at anytime and anywhere, it is small, strong and light, can be used hands free and at low costs.* |

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| **Need 2.1 – Easy and fast reading and searching for information** |
| **Function 1** | Can quickly find and distinguish the importance of, and search through, headings in text, newspapers or magazines; |
| **Function 2** | Can find the core of (part of) the text; |
| **Function 3** | Has all accessibility options which are easily used in an interchangeable way or in combination (speech output, magnification, colours, contrast, brightness); |
| **Function 4** | Is small and light, strong and portable; |
| **Function 5** | Can be used to make various types of media readable; |
| **Function 6** | Is affordable; |
| **Function 7** | Can be fully adjusted to individual preferences and situations; |
| **Function 8** | Makes text quickly accessible for reading; |
| **Function 9** | Has a screen that can radiate low light, but still maintains enough contrast; |
| **Function 10** | Is intuitive and accessible to use with an intuitive and accessible manual; |
| **Function 11** | Understands tables so these are easily accessible to the reader; |
| **Function 12** | Can read handwriting; |
| **Function 13** | Can find quotes; |
| **Function 14** | Can automatically exclude pictures from the ‘inverse’ setting. |

**Use case #2**

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| **Need 2.1 – Easy and fast reading and searching for information** |
| **Use-case today** | *As a PS person searching, selecting and (re)finding information in books, newspapers, magazines and texts is very time consuming. With the current assistive tools I cannot quickly read in a scanning manner and I cannot flexibly switch and/or combine speech output and the magnification of texts.*  |
| **Use-case tomorrow** | *As a PS person I have a small, strong and light assistive tool that is not too expensive and that I can take everywhere I go. I can combine various accessibility options flexibly and I can read in a scanning manner and find, select and (re)find the information I want.* |

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| **Need 3.1 – Operating household appliances** |
| **Function 1** | Displays are accessible through large high-contrast texts and a feature for speech output;  |
| **Function 2** | Buttons are easy to feel and see and provided with large, high-contrast letters and numbers; Rotary buttons are adjustable with tactile ‘klick modes’.  |
| **Function 3** | Devices can be operated via a universal accessible remote control that can be used for all appliances in the home;  |
| **Function 4** | Touchscreens are equipped with all the accessibility options such as magnification, contrast, colour and speech input and output; |
| **Function 5** | All the functions of an appliance can be operated in an accessible way; |
| **Function 6** | Operating is universal, simple and intuitive and can easily be adjusted to your preferences; |
| **Function 7** | Operating is personalised and individual preferences such as frequently-used programs and modes are stored in the memory; |
| **Function 8** | Is provided with an accessible user manual in any desired form; |
| **Function 9** | An appliance with parts that can become hot has a clear distinction between the control and the heat source, so that a PS person does not run the risk of burning his/her hands; |
| **Function 10** | Meets standard dimensions so they can be applied everywhere; |
| **Function 11** | Displays do not give bright light or are dimmable yet remain easy to read; |
| **Function 12** | Is provided with audio signals that you can easily adjust yourself; |
| **Function 13** | If it stops working or works in a problematic way, it indicates what might be wrong and what can be done to fix it; |
| **Function 14** | Indicates, in an accessible way, which lights are burning and what is on. |

**Use case #3**

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| **Need 3.1 - Operating household appliances** |
| Use-case today | *As a PS person I often cannot, or only with much difficulty, operate household appliances with a display, I cannot choose all the appliances I want, I cannot use all the features and I have to memorise functions to operate the appliance or I need the help of others.* |
| Use-case tomorrow | *As a PS person I can use and operate all household appliances that are on the market that are of my preference* *independently with one multi-functional box or every single appliance on its own, with all the accessibility options I prefer (enlarged letters, speech output, audio alerts and/or tactile) so I can use all the features of the appliance.* |

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| **Need 5.1 – Recognising people**  |
| **Function 1** | Recognises people who are standing close to me; |
| **Function 2** | Can be linked to personal contacts and contacts from social media platforms; |
| **Function 3** | Accurately specifies where, and in what direction, acquaintances are located or where they are going; |
| **Function 4** | Is very small and light and hands free, can for example, be worn in the ear or as an ear plug; |
| **Function 5** | Is beautifully designed or virtually invisible when worn; |
| **Function 6** | The control is universal, simple and intuitive and adjustable to individual preferences; |
| **Function 7** | Also provides information about the direction someone is looking and the eye contact of the person you know; |
| **Function 8** | The user manual is accessible in every desired form; |
| **Function 9** | Is fitted with speech output, audio and vibration features as well as the option of reading via a little display; |
| **Function 10** | Gives information about the facial expression of the person nearest to you;  |
| **Function 11** | Gives information on different levels based on personal preferences; |
| **Function 12** | Is affordable |

**Use case #4**

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| **Need 5.1 – Recognising people**  |
| Use-case today | *As a PS person I cannot easily recognise people I meet and there is no assistive tool for this, so I, in various social situations, have to depend on the initiative taken by others. This way, I could miss out on social contacts and feel insecure in social situations.* |
| Use-case tomorrow | *As a PS person I can recognise people I know by myself. I can greet them or go up to them for a chat, so I can more easily have social contacts and feel more secure in social situations.* |

1. **Recommendations**
* The approach for the FG has worked out well and makes the participants enthusiastic.
* It was very nice to moderate an FG this way and the outcomes are also interesting for our own organisation.
* The added value of the moderator and co-moderator having a visual impairment themselves. This proved to facilitate the discussion and made it more open since we all share the experience of sight loss and know what the participants are talking about.
* The short format of the FG was fine to work with. The preparatory exercise via Skype was worthwhile.
* The available time to prepare the FG was very tight. This required loads of flexibility and commitment from the organisation.
* The FG takes a lot of time and is in fact, still too short for all the steps of the format to be filled in. In practise some steps get less attention even though a lot of information is provided.
* Following the format for writing, the report is very time-consuming. It requires too many repetitions to be made that do not provide new information. Then it has to be translated as well, and all of this within a tight schedule.
* Most of the FG participants found the PRO4VIP project survey difficult to complete, partly because it is in English.