



Sign Language Translation Mobile Application and Open Communications Framework

Deliverable 1.2: Use cases & Usage Domains and Stakeholders' Acceptance



Project Information
Project Number: 101017255
Project Title: SignON: Sign Language Translation Mobile Application and Open Communications Framework
Funding Scheme: H2020 ICT-57-2020
Project Start Date: January 1st 2021

Deliverable Information
Title: D 1.2: Use cases & usage domains and stakeholders' acceptance
Work Package: WP 1: Co-creation and User response
Lead beneficiary: KU Leuven (KUL)
Due Date: 30/09/2023
Revision Number: V0.1
Authors: Lien Soetemans (KUL), Lisa Rombouts (KUL), Myriam Vermeerbergen (KUL)
Dissemination Level: Public
Deliverable Type: Report

Revision History

Version #	Implemented by	Revision Date	Description of changes
V0.1	KU Leuven	12/9/2023	First Draft
V0.2	KU Leuven	22/9/2023	Partners' Contribution
V0.3	KU Leuven	29/9/2023	Final Version

The SignON project has received funding from the European Union's Horizon 2020 Programme under Grant Agreement No. 101017255. The views and conclusions contained here are those of the authors and should not be interpreted as necessarily representing the official policies or endorsements, either expressed or implied, of the SignON project or the European Commission. The European Commission is not liable for any use that may be made of the information contained therein.

The Members of the SignON Consortium make no warranty of any kind with regard to this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The Members of the SignON Consortium shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Approval Procedure

Version #	Deliverable Name	Approved by	Institution	Approval Date
V0.1	D1.2	Aoife Brady, Shaun O'Boyle	DCU	11/09/2023
V0.3	D1.2	Riccardo Corrias	FINCONS	22/09/2023`
Vx.x	D1.2	Bob Boelhouwer	INT	25/09/2023
V0.3	D1.2	Adrián Núñez-Marcos	UPV/EHU	13/09/2023
V.3	D1.2	John O'Flaherty	MAC	13/09/2023
V0.3	D1.2	Santiago Egea	UPF	19/09/2023
V0.3	D1.2	Irene Murtagh	TU Dublin	14/09/2023
V0.3	D1.2	Karim Dahdah	VRT	20/09/2023
Vx.x	D1.2	Jorn Rijckaert	VGTC	13/09/2023
V0.3	D1.2	Henk van den Heuvel	RU	13/09/2023
V0.3	D1.2	Davy Van Landuyt	EUD	18/09/2023
V0.1	D1.2	Mirella De Sisto	TiU	19/09/2023

Acronyms

The following table provides definitions for acronyms and terms relevant to this document.

Acronym	Definition
EUD	European Union of the Deaf
KUL	KU Leuven
LSE	Lengua de Signos Española (Spanish Sign Language)
MT	Machine Translation
NGT	Nederlandse Gebarentaal (Sign Language of the Netherlands)
SL	Sign Language
VGT	Vlaamse Gebarentaal (Flemish Sign Language)
VGTC	Vlaams GebarentaalCentrum (Flemish Sign Language Center)
UX Design	User Experience Design

Table of Contents

1. Overview	6
2. Background	6
3. Online survey use cases	8
3.1 <i>Why define use cases?</i>	8
3.2 <i>Methodology</i>	8
3.2.1 Defining research goals, research questions and target audience	8
3.2.2 Specifying target groups	9
3.2.3 Defining use case domains	10
3.2.4 Defining use cases	10
3.2.5 Defining the research tool and design of the online questionnaire	11
3.2.6 Pre-testing online questionnaire	15
3.2.7 Disseminating online questionnaire	15
3.3 <i>Results</i>	15
3.3.1 Participants	15
3.3.2 Use cases	17
4. Use case research in partner countries	20
4.1 <i>The Netherlands</i>	20
4.1.1 Participants	20
4.1.2 Use cases	21
4.2 <i>Spain</i>	22
4.2.1 Participants	22
4.2.2 Use cases	23
4.3 <i>Ireland</i>	24
4.3.1 Participants	24
4.3.2 Experience with translation software	25
4.3.3 Use cases	26
5. Conclusion	28
6. References	29
7. Annex	34

1. Overview

This report provides an outline of the research on potential use cases for the SignON application.

Firstly, the objective of the research will be briefly presented. Secondly, the methodology of the online surveys about potential use cases of the SignON application will be explained. Finally, the results and conclusions will be presented.

2. Background

The SignON project aims to reduce the communication gap between deaf, hard of hearing and hearing persons by developing an application that can translate between several signed, spoken and written languages. As the potential target audience is large and diverse, there is also a large number of potential use cases (or settings in which the app can be used).

At the launch of the SignON project, the following four use cases were identified:

1. everyday communication between a deaf (signer) and a hearing (non-signer) with similar understanding of the conversation setting;
2. formal dialogues between a deaf (signer) and a hearing (non-signer) with one of them being an expert in the topic of communication; the other a non-expert;
3. the facilitation of communication between a deaf person using speech and a hearing person;
4. text to sign language translation for media broadcasting of a crisis situation.

In order to develop an application that stays up to date and meets the needs and feasible expectations of stakeholders and potential end users, usage domains and use-case scenarios are continuously (re)defined and (re)evaluated during the course of the project.

As already mentioned, and explored more in depth in D1.1¹, one of the key challenges for projects targeting MT and including SLs, is the lack of engagement with deaf & hard of hearing communities and the very few scientific publications that are available about their experiences and preferences regarding this type of SL translation. By organising online surveys within the deaf, hard of hearing and hearing communities, the SignON project aimed to address this gap.

¹

see

https://signon-project.eu/wp-content/uploads/2021/07/SignON_D1.1_Case-Studies-and-Evidence-Analysis_v1.0_NEWLOGO.docx.pdf),

Since KU Leuven (KUL) had the lead in this research, the first survey was launched in Flanders where the university is based. This deliverable will set out the methodology of and the results obtained from the Flemish study, which served as the framework for similar research in three other partner countries. The results of these surveys will also be discussed further in the document.

3. Online survey use cases

3.1 Why define use cases?

As mentioned above, the group of potential end users of an application that seeks to reduce the communication barrier between deaf, hard of hearing and hearing persons is very substantial and diverse. This implies that the number - and especially the type of situations in which people would be willing to use the app can be extremely varied.

To determine the situations in which people find the app necessary and would wish to use it, the KUL research group organised an online survey in different partner countries, targeting the communities of deaf, hard of hearing and hearing potential end users.

In this way, pre-defined use cases could be updated, and new ones potentially identified to guide the SignON consortium in the development of an application that meets the needs and expectations of its users.

3.2 Methodology

3.2.1 Defining research goals, research questions and target audience

The central research question of this study was: “In which use cases would deaf, hard of hearing and hearing people find it appropriate to use the SignON app?”

In order to reach as many participants as possible for this study, an online questionnaire was chosen. Using this method, the survey could be easily and quickly distributed among the relevant communities. In addition, COVID-19 restrictions were still in place at that time. Online research could guarantee the safest conditions for participants as well as the continuation of the research project.

At first, it was decided to conduct the study in only 1 region. This decision was taken for the following reasons:

- modifications to the original study would be possible if needed before distributing the survey in other partner countries;
- the survey has to be displayed in the languages used in the target region;
- communication is tightly intertwined with the linguistic and cultural identity of the user communities in the target region.

Since KUL, one of the Flemish project partners, is responsible for this research, Flanders was taken as first region. KUL, being a Flemish institute, has more affinity with the Flemish context than those in other regions and countries involved in the SignON project. This familiarity is needed to create a survey adapted to the Flemish situation and to ensure the correct interpretation of specific situational results. Furthermore, a strong cultural and linguistic affiliation with the target audience facilitates the encouragement of people to participate. It is widely known that people and organisations are more inclined to take part in research addressed by their network, and that is even more the case with deaf communities (Kelley, et al., 2003). The Flemish project partners would not have the same local benefits when not exclusively targeting a Flemish audience.

3.2.2 Specifying target groups

Because of the enormous diversity of the large target audience of the SignON app, it is essential to have a very precise understanding of possible target groups, sub target groups and their various profiles. This allows the survey to be designed so that participants are maximally encouraged to complete the questionnaire. To identify these different stakeholders or involved parties, personae were created. A persona is the description of a certain "type" of user who is concretely characterised. It is therefore a fictitious person for whom fictitious characteristics are described. For this survey, each persona was described, using, among other things, their hearing status, (professional) background and communication needs and difficulties.

These personae were visualised with Miro - software (<https://miro.com/nl/>).



3.2.3 Defining use case domains

In the first phase, it was decided to determine more general use case domains in which particular use cases were later categorised. These domains were defined based on a literature study (see 6. References), as well as input from deaf, hard of hearing and hearing colleagues from the KUL research group and the Vlaamse GebarentaalCentrum (VGTC or Flemish Sign Language Center).

The selected use case domains are as follows:

- private domain
- educational domain
- public/professional domain.

3.2.4 Defining use cases

After defining the three use case domains mentioned above, a list of specific possible use cases was drawn up. The selection of these use cases was based on several sources of information, including a literature study on existing machine SL translation projects (already mentioned in section 3.2.3), a brainstorming session of the research team, various discussions with (deaf) colleagues and the experiences of members of the Flemish deaf community.

The first version of this list contained approximately 50 possible use cases (including the use cases proposed in the SignON proposal, see section 2).

In the next step, the researchers of KUL and the VGTC looked at the most relevant and appropriate use cases for the Flemish situation for these different *use case* domains, while considering the Flemish context. They selected a maximum of 15 different use cases (see below and annex 7.1 for a more in depth explanation) in order to not overload participants with too many questions:

1. search function in VGT (e.g. in online dictionary);
2. translating text messages (e.g. emails, WhatsApp messages);
3. general communication in everyday life (e.g. check-in at a hotel);
4. private communication in everyday life (e.g. chat at a family party);
5. formal communication in everyday life (e.g. appointment at a notary);
6. translation of online content;
7. contacting and communicating with emergency services;
8. (creating) anonymous videos in Flemish Sign Language or another sign language;
9. learning new languages;

10. following webinars;
11. communication during formal moments (e.g. work meeting);
12. communication during informal moments (e.g. chat with colleagues during break);
13. communication in public places (e.g. announced information at airport);
14. news on TV in VGT;
15. crisis communication on TV in VGT.

This selection of 15 use cases was also presented to the other partners of the SignON consortium and in particular to the European Union of the Deaf (EUD) for evaluation. They were also asked to indicate whether they considered other use cases to be more appropriate. However, all partners agreed with the original selection of the 15 use cases presented above.

Another key point discussed with the VGTC and EUD was the need for example situations to clarify the 15 use cases. The research team wanted to prevent the respondents from judging the limited number of concrete situations instead of viewing the bigger picture presented in the use case; while balancing this with the need for the use case presented to be sufficiently clear. According to the VGTC and EUD, adding example situations would make it more relevant. For this reason, the research team included clarifications when necessary which were provided by these two partners.

The questions, as well as how they were displayed, in the online survey can be seen in annex 7.1 and 7.2.

3.2.5 Defining the research tool and design of the online questionnaire

The design and distribution of the online survey were executed in Qualtrics (www.qualtrics.com). This software program can be used to design questionnaires and reports and meets all of the necessary ethical conditions and privacy requirements of KUL and SignON. From the very beginning of the development, it was evident that the whole survey would need to be bilingual (i.e. in both Dutch and VGT).

For the purpose of ensuring the best possible questionnaire, a student with expertise in UX design and developing surveys for deaf people was asked for advice. After several discussions and revisions, the following structure was chosen:

a) introduction and information about data protection

In this section, the outline and aim of the survey are explained in a general way: gauging experiences and use of translation apps in order to develop a new, high-quality translation app.

Participants were informed how their responses would be protected and how anonymity would

be guaranteed. They could see the information in VGT and read in Dutch (and were informed that the whole survey was bilingual).

If they agreed with the terms and conditions, the survey started. If they did not agree, the survey was closed.

b) questions regarding linguistic background of participant

The concept of the SignON translation app and the related use cases were introduced step by step. At the time of the survey, the app was not yet available for the participants to install on their own mobile phone. Therefore, it was key to introduce the idea of the app as a concrete idea, to enable participants to answer questions about an app they had never seen or used before.

That is why this first section was made up of questions regarding preferred language(s) use and use of languages in educational, professional and private settings.

c) questions regarding experiences with other translation technologies than SignON

In this section, the concept of translation technologies was presented through questions on translation (e.g. Google Translate, DeepL) and captioning (Zoom, Ava, Google Live Transcribe) software that participants may already be familiar with. For both types of software, participants were invited to answer multiple choices questions on:

- software programs they are familiar with;
- how often they use these programs;
- situations in which they use these programs;
- devices on which they use these programs;
- which functions of these programs they use.

d) questions regarding translation functions and use cases of SignON

In this third section, the SignON project and its goals were explained and illustrated with screen shots of the preliminary test version of the application. Next, the various translation options (from which language to which language) were presented and participants were free to indicate which one(s) they would use and they could also add other functions they would like to see developed. Then, the actual research question on use cases was addressed. Participants were told that 15 different situations would be shown where the participants themselves or their

interlocutors could use the SignON app. It was emphasised that presenting a situation did not imply that it could or would be technically realised, because the study was only trying to find out whether potential end users would be willing to use the app in the presented situations. On a scale of 0 to 10, participants could indicate to what extent they considered it a good idea to use the SignON app in a particular use case. Using a scale allows for more nuanced answers compared to polar (yes/no) questions. Finally, participants could suggest other use cases in which they would like to use the SignON app. The screenshot below shows how the 15 use cases were presented.

Q11.3.



3. Algemene communicatie in het dagelijks leven:

- Wanneer je incheckt in je hotel, stelt de balie medewerker je enkele praktische vragen over je verblijf. De medewerker stelt deze vragen in Britse Gebarentaal. De SignON-app vertaalt de vragen naar geschreven Nederlands en jouw antwoorden in geschreven Nederlands naar Britse Gebarentaal.

- Wanneer je jouw kind ophaalt bij de kinderopvang, wil de opvoeder je kort vertellen hoe de dag is geweest voor je kind. Jij en je kind communiceren in Vlaamse Gebarentaal, de opvoeder kent geen Vlaamse Gebarentaal. De SignON-app vertaalt het gesprek tussen jou en de opvoeder van VGT naar gesproken Nederlands en omgekeerd.

-

0 1 2 3 4 5 6 7 8 9 10

☐ niet van toepassing

← →

0% 100%

Figure 1: Question 11.3: "To what extent would you consider it a good idea to use the SignON app in the proposed situation? Indicate on a scale of 0 to 10."

e) optional questions regarding personal data

The final part contained some questions on the profile of the participants (age, gender, hearing status). From this, it would be possible to identify which groups of potential end users participated and to what extent the results could be representative for each subgroup (hearing, hard of hearing and deaf respondents).

These personal questions were only asked at the very end of the survey because this information was not the crucial part of the research. In case participants dropped out during the questionnaire (due to concerns about privacy, lack of time, etc.), it was more likely that questions on the app itself would be completed.

3.2.6 Pre-testing online questionnaire

Firstly, the survey was tested internally by the deaf and hard of hearing project officers of EUD and the VGTC and the hearing project researchers of KUL. Their feedback led to a second preliminary version that was tested by 6 people who are not part of the project (of whom 2 identified themselves as deaf, 2 as hard of hearing and 2 as hearing). With the help of their input the questionnaire was fine-tuned and with the support of the student with expertise in UX design, the survey was finalised.

3.2.7 Disseminating online questionnaire

The online survey was distributed to all potential end users of the SignON app in several ways. Firstly, the official social media communication platforms of the SignON consortium were called upon: a video in VGT was posted (with written translation in Dutch) that highlighted the goal of the research and provided the link to the survey.

Secondly, different stakeholders were contacted by mail or were addressed face-to-face to explain the research and to invite them to fill in and share the survey within their networks. Doof Vlaanderen, i.e., an organisation defending the rights of deaf people in Flanders, reposted the video of SignON on their own social media channels.

Other stakeholders asked to participate were deaf-led organisations and organisations collaborating or employing deaf people (e.g. deaf clubs, deaf schools, colleagues of deaf teachers at KUL).

Finally, and probably the most important factor in the dissemination process, was the personal effort of the researchers to contact their own colleagues, family and friends, especially those who identify as deaf.

3.3 Results

3.3.1 Participants

In total, 259 participants replied to at least 1 of the questions in the Flemish survey that ran between 30/3/2022 and 29/4/2022. Each of the 15 use cases was rated by an average of 94 participants. Use case 14 (news on TV in VGT) was rated least often (83 participants) while use case 6 (translation of online content) was rated most often (113 participants).

Of all participants, 117 filled in their age (participation was allowed from the age of 16 years). The youngest respondent was 18 years old, the eldest one 68.

The chart below shows the different categories of age and the number of respondents per age category.

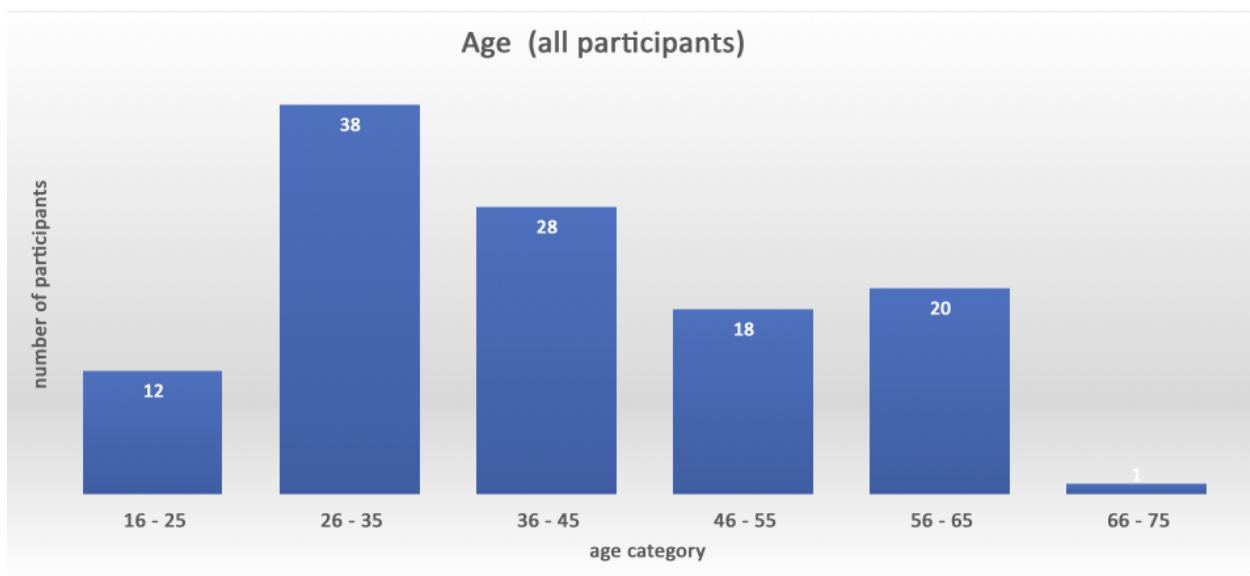


Figure 2: Age of all participants

120 participants identified themselves as either a woman (83), a man (33) or as non-binary (2). Two ticked the "I prefer not to answer this question" box.

119 participants indicated whether they identified themselves as hearing (68), deaf (36), hard of hearing

(8) or deafblind (1). 1 respondent preferred not to answer this question. 4 participants did not indicate one of the options mentioned above and filled in the free comment field. They identified themselves as:

- coda;²
- hearing but having a lot of contact with Deaf/deaf people;
- I have no hearing impairment;
- seeing and hearing.

The chart below shows the different answers and the number of respondents per answer.

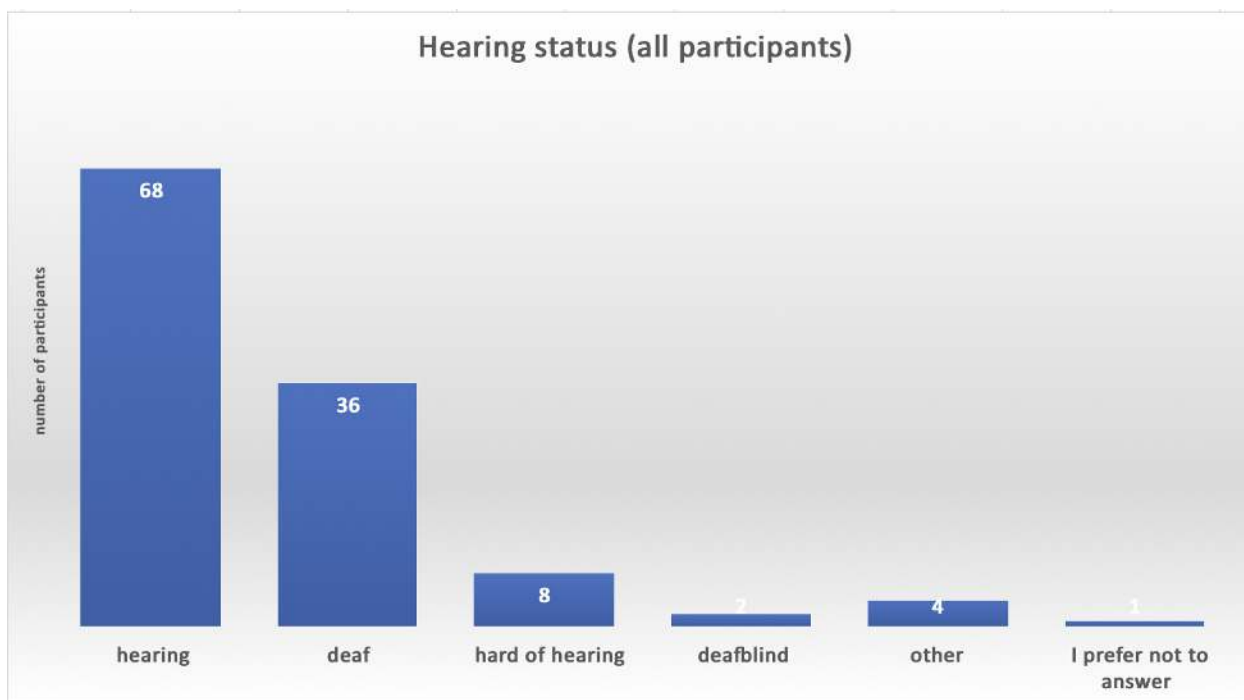


Figure 3: Hearing status of all participants

3.3.2 Use cases

Annex 7.2 lists the specific use cases that were included in the conducted survey. Participants were asked to indicate whether they would consider it a good idea to use the SignON app in that specific *use case* (without taking into account the feasibility of technological developments). Participants rated this on a scale of 0 (very bad idea) to 10 (excellent idea) or could indicate if they thought the *use case* did not apply.

² The term coda is the abbreviation of "child of deaf adult". It refers to a deaf or hearing child that is raised by a deaf parent or deaf parents.

In annex 7.2, the results of all use cases are discussed separately. For each *use case*, the findings of all participants are analysed, as well as the outcome of each subgroup per use case.

The table below shows the top 3 of both the most and least popular use cases per subgroup. The top was calculated by looking at the largest number of responses in the 8.1-10 score category for the most popular use cases and at the least number of responses in that same category for the least popular use cases. When two use cases had the same number of responses, the number of responses in the 6.1-8 score category was used to make the decision.

The three subgroups and the number of respondents per subgroup are:

- deaf participants (36);
- hard of hearing participants (8);
- hearing participants (68).

Based on the findings, it can be concluded that one single use case can be found in the top 3 of most popular use cases for each subgroup: *general communication in everyday life*.

In the top 3 of the least popular use cases, the 3 subgroups have 2 use cases in common: *anonymous videos in VGT or another sign language* and *news on TV in VGT*.

Each *use case* in the table can be found in the top 3 of at least two different subgroups, except for *private communication in everyday life* and *learning of new languages*. These two use cases only appear in the top 3 of 1 subgroup (i.e. the hearing participants).

The next 6 use cases did not figure in a top 3 for any subgroup:

- # 1. search function in VGT;
- # 2. translating text messages (e.g. WhatsApp messages, emails,...);
- # 5. formal communication in everyday life;
- # 10. attending webinars;
- # 11. communication during formal moments;
- # 12. communication during informal moments.

	deaf	hard of hearing	hearing
#3: general communication in everyday life	V	V	V
#4: private communication in everyday life			V
#6: translating online content		V	V
#7: contacting and communicating with emergency services	V		
#8: anonymous videos in VGT or another sign language	X	X	X
#9: learning new languages			X
#13: communication in public places	V	V	
#14: news on TV in VGT (Flemish Sign Language)	X	X	X
#15: crisis communication on TV in VGT (Flemish Sign Language)	X	X	

Figure 4: Table of top 3 most and least popular use cases for each subgroup (Flanders)

4. Use case research in partner countries

After the survey was completed in Flanders, and the results presented to the partners, it was decided to organise the same survey in the Netherlands and Spain. The Flemish questionnaire was translated into the local spoken and signed language (i.e. NGT for the Netherlands and Spanish and LSE for Spain). Since the Flemish study strongly guided the research methodology in those partner countries, only the general results will be discussed in the section below.

4.1 The Netherlands

4.1.1 Participants

In total, 67 participants replied to at least 1 question in the Dutch survey that ran in spring 2023. Each of the 15 use cases was rated by an average of 17 participants. Use cases 3, 4, 5, 6, 7 and 15 were rated least often (16 participants) while use cases 2, 11, 12, 13 and 14 were rated most often (18 participants). Of all participants, 17 filled in their age (participation was allowed from the age of 16 years). The youngest respondent was 24 years old, the eldest one 75.

The table below shows the different categories of age and the number of respondents per age category.

Age	Number of participants (17)
16-25	1
26-35	6
36-45	3
46-55	4
56-65	2

66-75	1
-------	---

Table 1: Age of participants (Netherlands)

19 participants identified themselves as a woman (11), a man (6) or non-binary (1). They could also fill in the free comment field or tick the “I prefer not to answer this question” box (1 respondent).

19 participants indicated whether they identified themselves as hearing (7), deaf (9), hard of hearing (1) or deafblind (1). 1 participant did not indicate one of the options mentioned above and filled in “other” the free comment field.

4.1.2 Use cases

The table below shows the top 3 of the most and least popular use cases per subgroup. The top was calculated by looking at the largest number of responses in the 8.1-10 score category for the most popular use cases and at the least number of responses in that same category for the least popular use cases. When two use cases had the same number of responses, the number of responses in the 6.1-8 score category was used to make the decision.

The three subgroups and the number of respondents per subgroup are:

- deaf participants (9);
- hard of hearing participants (1);
- hearing participants (7).

Since the subgroup of hard of hearing participants only consists of 1 respondent, the researchers decided that this number was too few to base conclusions on.

The table below is an illustration of the top 3 of the most and least popular use cases of participants in the Netherlands, based on the small number that identified themselves as a hearing or deaf person and rated (a part of) the proposed use cases (that were the same as the ones of the Flemish questionnaire).

	deaf	hearing
# 1: search function in NGT	X	X
#2: translating text messages (e.g. WhatsApp messages, emails,...)		V

#6: translating online content	V	
#7: contacting and communicating with emergency services		V
#8: anonymous videos in NGT or another sign language	X	X
#11: communication during formal moments	X	V
#12: communication during informal moments		X
#13: communication in public places	V	
#14: news on TV in NGT (Dutch Sign Language)	V	

Table 2: Table of top 3 most and least popular use cases per subgroup (Netherlands)

4.2 Spain

4.2.1 Participants

In total, 21 participants replied to at least 1 question in the Spanish survey that ran in spring 2023. Each of the 15 use cases was rated by all participants.

Of all participants, 15 filled in their age (participation was allowed from the age of 16 years). The youngest respondent was 20 years old, the eldest one 58.

The table below shows the different categories of age and the number of respondents per age category.

Age	Number of participants (15)
16-25	1
26-35	5

36-45	5
46-55	3
56-65	1
66-75	0

Table 3: Age of participants (Spain)

16 participants identified themselves as woman (12) or man (4). They could also fill in the free comment field or tick the box “I prefer not to answer this question” box.

16 participants indicated whether they identified themselves as hearing (1), deaf (13) or deafblind (1). 1 participant did not indicate one of the options mentioned above and filled in “hearing impaired” in the free comment field.

4.2.2 Use cases

The table below shows the top 3 of the most and least popular use cases per subgroup. The top was calculated by looking at the largest number of responses in the 8.1-10 score category for the most popular use cases and at the least number of responses in that same category for the least popular use cases. When two use cases had the same number of responses, the number of responses in the 6.1-8 score category was used to make the decision.

The three subgroups and the number of respondents per subgroup are:

- deaf participants (13);
- hard of hearing participants (0);
- hearing participants (1).

Since the subgroup of hearing participants only consists of 1 respondent, the researchers decided that this number was too few to base conclusions on.

The number of deaf participants is also quite limited compared to the response rate in Flanders. Therefore, the researchers will not discuss the results in detail, because they are probably not representative enough.

The table below is an illustration of the top 3 of the most and least popular use cases of participants in Spain, based on the small number that identified themselves as a deaf person and rated the proposed use cases (that were the same as the ones in the Flemish questionnaire).

	deaf
# 1: search function in LSE (Spanish Sign Language)	X
#3: general communication in everyday life	X
#4: private communication in everyday life	X
#6: translating online content	V
#10: attending webinars	V
#13: communication in public places	V

Table 4: Table of top 3 most and least popular use cases per subgroup (Spain)

4.3 Ireland

4.3.1 Participants

In total, 41 participants replied to at least 1 question in the Irish survey that ran in September 2023. We considered a survey completed if the participant answered all of the 15 use-case questions, which gave a completion number of 20 participants. The survey was available in English with ISL (40 participants) or English with BSL (1 participant). Seventeen of the participants indicated their preferred language was Irish Sign Language, 16 preferred English and 2 preferred BSL (the remaining 5 respondents did not answer). English was the most dominant language used by participants with 29 participants indicating they used it in the workplace and 33 saying they used it in their personal life. However, ISL was also widely used with 24 participants using it in work and 27 using it in their personal life. BSL was used by 2 people in their work life and 3 used it in their personal life. International sign was used by 5 people in their workplace. Finally, 3 participants used Gaeilge/Irish in their workplace and in their personal life.

Of all participants, 20 filled in their age (participation was allowed from the age of 16 years). The youngest respondent was 30 years old, the eldest one 61. The table below shows the different categories of age and the number of respondents per age category.

Age	Number of participants (15)
16-25	0
26-35	4
36-45	7
46-55	7
56-65	2
66-75	0

Table 5: Age of participants (Ireland)

21 participants identified themselves as a woman (14) or man (7). They could also select non-binary, fill in the free comment field or select 'prefer not to say'. 21 participants indicated whether they identified as hearing (4), deaf or hard of hearing (16) with one participant selecting 'other'.

4.3.2 Experience with translation software

Participants were asked of their prior experience with translation software. 24 (60%) had experience with translation software while 11 did not. Most participants (57.5%) indicated that they used such software only occasionally. Google Translate was the most well known machine translation software application with 32 of the participants (80%) indicating that they were familiar with it. The other applications were much less familiar among participants (e.g. Linguee, Bing Translator, etc.).

Participants indicated that they currently use translation software in work, education and in their personal lives, with the last of these being the most popular use (see Table 6 below).

Setting	n(%)
Work	17 (42.5%)
Education	10 (25%)
Personal life	28 (70%)

Table 6: Settings in which participants currently use translation software (Ireland)

Regarding the device on which they use translation software, participants more frequently reported smartphone usage over tablets or computers/laptops (see table 7 below)

Device	n(%)
Computer/Laptop	22 (55%)
Smartphone	29 (72.5%)
Tablet	10 (25%)

Table 7: Device on which participants used translation software (Ireland)

Participants were also asked about their use of live captioning and 29 (72.5%) of participants were familiar with it, with 27.5% or 11 participants using it at least several times a month. The subtitle function on zoom was the most frequently used (52.5% or 21 participants).

Setting	n(%)
Work	22 (55%)
Education	11 (27.5%)
Personal life	17 (42.5%)

Table 8: Settings in which participants currently use live captioning (Ireland)

Regarding the device on which they use live captions, participants more frequently reported computers/laptops usage over tablets or smartphones (see table 9 below)

Device	n(%)
Computer/Laptop	28 (70%)
Smartphone	16 (40%)

Tablet	7 (17.5%)
--------	-----------

Table 9: Device on which participants used live captions (Ireland)

4.3.3 Use cases

Twenty participants answered all of the questions about use cases in the survey. Their data is used below to identify the most popular 3 and least popular 3 use cases. The table below shows the top 3 of the most and least popular use cases per subgroup. The top three were calculated using the mean score on the 1-10 rating scale answered by participants for each use case. Where use cases consisted of more than one question, a mean of the means was calculated. The two subgroups of interest to this analysis and the number of respondents per subgroup are:

- deaf and hard of hearing participants (16);
- hearing participants (4).

Since the subgroup of hearing participants only consists of 4 respondents, the researchers decided that this number was too few to base conclusions on. The most and least preferred use cases are reported below for the entire group of deaf and hearing. Given the low numbers in this survey to date, no conclusions will be drawn from the descriptive data presented below. Survey data collection will continue beyond the lifespan of this deliverable in an attempt to increase the sample size and the validity of the findings.

The table below lists the three most and least popular use cases among participants in Ireland.

	Popularity rank /15
# 10 follow webinars	1
#8 Anonymous videos in ISL or another sign language	2
#12 Communication during informal moments	3
#2 Translating text messages	13

#5 Formal communication in everyday life	14
#14 News on TV	15

Table 10: Table of the three most and least popular use cases (Ireland)

Given that the table above represents responses from both deaf/hard of hearing *and* hearing people, a split file analysis was done using SPSS to check the top and bottom choices of deaf/hard of hearing people alone. Use case #10 remained the most popular choice and use case #14 remained the least popular choice when only data from deaf/hard of hearing people were included.

5. Conclusion

This report presents a study on the preferred use cases of potential end users of the SignON application within deaf, hearing and hard of hearing communities in Flanders, the Netherlands, Spain and Ireland. The first surveys in Flanders found that these different subgroups share a few (non-)preferred use cases, although their needs and wishes can also vary widely. The Flemish deaf, hard of hearing and hearing participants all agreed that general communication in everyday life would be an appropriate use case while anonymous videos in VGT and news on TV in VGT would definitely not be a preferred reason to use the SignON app. Furthermore, the Flemish study revealed that it was very challenging to find respondents to participate in this research. In the case of the SignON project, engagement and participation of the signing deaf community was of great importance, since similar projects in the past often did not consider their needs and preferences. Collaborating intensively with the two deaf-led project partners (i.e. EUD and the VGTC) and investing a lot of effort to include the deaf community in the study had a positive impact on the number of deaf respondents.

Comparing the results of the Flemish, Dutch, Spanish and Irish studies, shows the discrepancy between these countries in terms of 1) the number of participants and 2) (non-) preferred use cases. These two observations should not be ignored in any follow-up study and highlight once again the significance of co-creation with end users when working on projects targeting several communities.

6. References

Ava. (s.d.). *Hoe werkt het?*. <https://nl.ava.me>

Avasag. (s.d.). *Projekt Details*. <https://www.avasag.de/projekt-details/>

Bangham, J.A., Cox, S.J., Lincoln, M., & Marshall. I. (2000). Signing for the deaf using virtual humans. *Proceedings of the IEE Seminar on Speech and Language Processing for Disabled and Elderly People*. (pp. 4/1 – 4/5).

Bangham, J.A., Cox, S.J., Elliott, R., Glauert, J.R.W., & Marshall. I. (2000). Virtual signing: capture, animation, storage and transmission-an overview of the ViSiCAST project. *Proceedings of the IEE Seminar on Speech and Language Processing for Disabled and Elderly People*. (pp. 6/1 – 6/7).

Boulares, M., Jemni, M. (2012). A Route Planner Interpretation Service for Hard of Hearing People. In K. Miesenberger, A. Karshmer, P. Penaz, W. Zagler (Eds), *Computers Helping People with Special Needs (Proceedings ICCHP 2012)*. (part II, pp. 52-58). Berlijn: Springer.

Bowden, R. (2021). *Keynote lecture on Computational approaches to sign language translation*. CREST Fest 2021. Online geraadpleegd via <https://www.youtube.com/watch?v=a4cKP1Tb5ZU>

Braci Smart ear. (s.d.). *What is Braci*. <http://www.braci.co/#about>

Debevc, M., Kosec, P., Holzinger, A. (2010). E-Learning Accessibility for the Deaf and Hard of Hearing - Practical Examples and Experiences. In: G. Leitner, M. Hitz, A. Holzinger (Eds,) *HCI in Work and Learning, Life and Leisure (Proceedings 6th Symposium of the Workgroup Human-Computer Interaction and Usability Engineering, USAB 2010)*. (pp. 203-213). Berlijn: Springer.

Debevc, M., Kožuh, I., Kosec, P., Rotovnik, M., & Holzinger, A. (2012). Sign language multimedia based interaction for aurally handicapped people. In K. Miesenberger (Eds), *Computers helping people with special needs (Proceedings ICCCHP 2012)*. (part II, pp. 213-220). Berlijn: Springer.

De Martino, J.M., Silva, I.R., Bolognini, C.Z., et al. (2017). Signing avatars: making education more inclusive. *Universal Access in the Information Society*, 16, 793-808.

Efthimiou, E. et al. (2012). The Dicta-Sign Wiki: Enabling Web Communication for the Deaf. In K. Miesenberger (Eds), *Computers helping people with special needs (Proceedings ICCCHP 2012)*. (part II, pp. 205-212). Berlijn: Springer.

Elliott, R., Cooper, H., Ong, E., Glauert, J., Bowden, R., & Lefebvre-Albaret, F. (2011). Search-by-example in multilingual sign language databases. *Proc. Sign Language Translation and Avatar Technologies Workshops*.

European Commission (CORDIS EU Research results). (15 September 2004). *Moving towards a computer that describes what it sees – the CogViSys project*. Cordis. <https://cordis.europa.eu/article/id/22620-moving-towards-a-computer-that-describes-what-it-sees-the-cogvisys-project>

Gansinger, L. (2012). SignMedia. In K. Miesenberger, A. Karshmer, P. Penaz, W. Zagler (Eds), *Computers Helping People with Special Needs (Proceedings ICCHP 2012)*. (part II, pp. 245-252). Berlijn: Springer.

Glasser, A. (2019). Automatic speech recognition services: deaf and hard-of-hearing usability. In *Extended abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. New York: Association for Computing Machinery via <https://dl-acm-org.kuleuven.e-bronnen.be/doi/pdf/10.1145/3290607.3308461>

Glasser, A., Kushalnagar, K., & Kushalnagar, R. (2017). Deaf, hard of hearing, and hearing perspectives on using automatic speech recognition in conversation. *Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility*. (pp. 427-432).

Glasser, A., Mande, V., & Huenerfauth, M. (2021). Understanding deaf and hard-of-hearing users' interest in sign-language interaction with personal-assistant devices. *Proceedings of the 18th International Web for All Conference*.

H3 World TV. (s.d.). *Vlog*. <https://h3world.tv/vlogs/>

Hand Talk. (s.d.). *App*. <https://www.handtalk.me/en/app/>

Huawei. (s.d.). *StorySign: aider les enfants sourds à apprendre à lire*. <https://consumer.huawei.com/fr/campaign/storysign/>

I HEAR YOU. (s.d.). *About us*. <https://www.ihearyou.ae>

Jantunen, T., Rousi, R., Rainò, P., Turunen, M., Valipoor, M., & García, N. (2021). Is There Any Hope for Developing Automated Translation Technology for Sign Languages? In M. Hämäläinen, N. Partanen, & K. Alnajjar, (Eds.), *Multilingual Facilitation*. (pp. 61–73). University of Helsinki: Rootroo Ltd.

KARA Technologies. (s.d.). *Making content accessible to sign language users*. <https://www.kara.tech>

Kaur, R. & Kumar, P. (2017). Sign language based SMS generator for hearing impaired people. *Proceedings of the International Conference on Computational Intelligence in Data Science (ICCIDS)*. (pp. 1-5).

Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003). Good practice in the conduct and reporting of survey research. *International Journal for Quality in Health Care*, volume 15 (issue 3), p. 261-266. <https://doi.org/10.1093/intqhc/mzg031>

Kobayashi, M., Minagawa, H., Nishioka, T., Miyoshi, S. (2012). Meeting Support System for the Person with Hearing Impairment Using Tablet Devices and Speech Recognition. In: K. Miesenberger, A. Karshmer, P. Penaz, W. Zagler (Eds), *Computers Helping People with Special Needs (Proceedings ICCHP 2012)*. (part II, pp.647-650). Berlijn: Springer.

Lawrence, S. (April 2015). Braam Jordaan, Instrumental Deaf Film Producer and Human Rights Ambassador. *Deaf Friendly Magazine* via <http://deafmagazine.co.uk/community/deaf-life/braam-jordaan,-instrumental-deaf-film-producer-and-human-rights-ambassador/>

López-Ludeña, V., González-Morcillo, C., López, J.C., Barra-Chicote, R., Cordoba, R., & San-Segundo, R. (2014). Translating bus information into sign language for deaf people. *Engineering Applications of Artificial Intelligence*, 32, 258-269.

Mimix3D Sign Language. (s.d.). *About this app.* https://play.google.com/store/apps/details?id=com.mindrocketsinc.mimix&hl=en_US&pli=1

Miyoshi, S. *et al.* (2012). Mobile-Type Remote Captioning System for Deaf or Hard-of-Hearing People and the Experience of Remote Supports after the Great East Japan Earthquake. In K. Miesenberger, A. Karshmer, P. Penaz, W. Zagler (Eds), *Computers Helping People with Special Needs (Proceedings ICCHP 2012)*. (part II, pp. 99-104). Berlin: Springer.

Quandt, L.C., Willis, A., Schwenk, M., Weeks, K., & Ferster R. (2021 pre-print). Attitudes toward signing human avatars vary depending on hearing status, age of signed language exposure, and avatar type. Online accessed on 2/7/ 2021 via <https://doi.org/10.31234/osf.io/g2wuc>.

Savla, S. (4/2/2019). Real-time Continuous Transcription with Live Transcribe. *Google Research Blog*. <https://blog.research.google/2019/02/real-time-continuous-transcription-with.html>

Shaikh, F., Darunde, S., Wahie, N., & Mali, S. (2019). Sign Language Translation System for Railway Station Announcements. *IEEE Bombay Section Signature Conference (IBSSC)*, 1-6.

Signly. (s.d.). <https://signly.co>

Simax. (s.d.). *This is how you can use me.* <https://simax.media/simax-this-is-how-you-can-use-me/?lang=en>

Sogou Inc. (May 2021). Sogou launched world's first AI Sign Language news anchor. *Nasdaq* via <https://www.nasdaq.com/press-release/sogou-launched-worlds-first-ai-sign-language-news-anchor-2021-05-18>

TapSOS. (s.d.). *A simple, non-verbal way to get help in an emergency.* <https://www.tech4goodawards.com/finalist/tapsos/>

Tleo. (s.d.). *Tleo App.* <https://www.tleo.app/home/>

VoxSciences. (s.d.). *How it works.* <https://www.voxsci.com/cms/showPage?PAGE=howDoesItWork.tml>

WFD and WASLI statement on use of signing avatars. (2018). Online geraadpleegd op 2 juli 2021 via <https://wfdeaf.org/news/resources/wfd-wasli-statement-use-signing-avatars/>

Yin, K., Moryossef, A., Hochgesang, J., Goldberg, Y., & Alikhani, M. (2021). Including signed languages in natural language processing. *Theme paper to ACL 2021* via <https://arxiv.org/pdf/210>

7. Annex

7.1 Online questionnaire (Flanders)

SignON online survey (KU Leuven – VGTC)

Introduction

With this questionnaire, KU Leuven (KUL) wants to map your use and experience with translation applications in collaboration with the Flemish Sign Language Center (VGTC).

Are you 16 years or older? Then you can fill in this questionnaire.

We will ask you some questions about your language background, experience with translation applications and situations where you think a translation application could be useful.

Based on your answers, we can investigate what is important when creating a new, high-quality translation application.

It takes approximately 15 minutes to complete this questionnaire.

On the next page we explain how we protect your data and ensure your anonymity.

Be sure to read this information carefully.

If you agree with this information, the survey will start.

You can read the questions in Dutch or view them in VGT via the videos that accompany each question.

We thank you in advance for your participation!

Do you have any questions or comments?

You can always contact (in Flemish Sign Language or Dutch) myriam.vermeerbergen@kuleuven.be, lien.soetemans@kuleuven.be or caro.brosens@vgtc.be

Protection of data and privacy

Please read the information below carefully.

- If you agree with all the information, you can agree to participate in the survey.
- If you do not agree with the information below, you can indicate not to participate in the survey. In that case, the survey will be closed without saving any further data.

Informed Consent Research Translation Applications

- I understand what is expected of me during this investigation.
- I understand that my participation in this survey is voluntary. I have the right to cancel my participation at any time. I do not need to give a reason for this and I know that no harm can arise for me from this.
- The public interest is the legal basis for the further processing of the collected data according to the AVG/GDPR. Stopping participation in the survey therefore means that the previously collected data can still be legally included in the research and must not be deleted by KU Leuven.
- The results of this research can be used for scientific purposes and may be published. My name will not be published, anonymity and confidentiality of the data are guaranteed at every stage of the investigation.
- For questions as well as for exercising my rights (inspection of data, correction thereof,...) I know that after my participation I can contact: myriam.vermeerbergen@kuleuven.be or lien.soetemans@kuleuven.be
- More information regarding privacy in research can be found at www.kuleuven.be/privacy. Further questions about privacy aspects can be addressed to the data protection officer: dpo@kuleuven.be
- For any complaints or other concerns regarding ethical aspects of this research, I can contact the Socio-Social Ethics Committee of KU Leuven: smec@kuleuven.be

- I have read and understood the above information and have received answers to all my questions regarding this study. I agree to participate.

- I have read and understood the above information and have received answers to all my questions regarding this study. I do not agree to participate.

Q1. What is your preferred language?

- Flemish Sign Language (VGT)
- Dutch

- Langue des Signes de Belgique francophone (LSFB)
- French
- others:

Q2: What language (s) do you use in work situations? You can choose multiple answers.

- Flemish Sign Language (VGT)
- International Sign
- Dutch
- French
- English
- not applicable
- others:

Q3: What language(s) do you use in teaching situations? You can choose multiple answers.

It concerns situations in which you follow education (classes at school, education, training, etc.)
It's not about teaching yourself.

- Flemish Sign Language (VGT)
- International Sign
- Dutch
- French
- English
- not applicable
- others:

Q4: What language(s) do you use in private situations? You can choose multiple answers

- Flemish Sign Language (VGT)
- International Sign
- Dutch
- French

- English
- not applicable
- others:

Q5: Do you have experience with translation software (e.g. Google Translate or DeepL)?

- Yes
- No

Q6: What translation software do you know?

- Google Translate
- DeepL
- Linguee
- Bing Translator
- Not even one
- others:

Q6.1: How often do you use translation software (eg Google Translate)?

- never
- occasionally
- several times a month
- several times a week
- daily

Q6.2: In which situation (s) do you use translation software (e.g. Google Translate)? You can select multiple answers

- work
- education
- private situations
- others:

Q6.3: On which device (s) do you use translation software? (e.g. Google Translate)? You can choose multiple answers.

- computer/laptop
- smartphone
- tablet
- others:

Q6.4: Do you use one of these functions of translation software (e.g. Google Translate)?

	YES	NO
translation from written Dutch into another written language	<input type="radio"/>	<input type="radio"/>
	YES	NO
translation from another written language into written Dutch	<input type="radio"/>	<input type="radio"/>
	YES	NO
captioning spoken Dutch	<input type="radio"/>	<input type="radio"/>
	YES	NO
captioning another spoken language (not Dutch)	<input type="radio"/>	<input type="radio"/>
	YES	NO
translation from another spoken language to written Dutch	<input type="radio"/>	<input type="radio"/>
	YES	NO
translation from another spoken language to another written language	<input type="radio"/>	<input type="radio"/>
	YES	NO
translation from an image in another language to written Dutch	<input type="radio"/>	<input type="radio"/>

Q7: Do you have experience with live captioning software (eg Zoom, Google Live Transcribe, Ava)?

- Yes

- No

Q8: What live captioning software do you use? You can click on multiple answers.

Google Live Transcribe

subtitle function Zoom

subtitles function Teams

subtitle function Skype

captioning feature Webex

captioning function Google Meet

ava

Speaksee

Not a single one

Others:

Q8.1: How often do you use live captioning software (eg Zoom, Google Live Transcribe)?

- never

- occasionally

- several times a month
- several times a week
- daily

Q8.2: In which situation (s) do you use live captioning (e.g. Zoom, Google Live Transcribe)?

You can select multiple answers.

- work
- education
- private situations
- others:

Q8.3: On which device (s) do you use live captioning? (e.g. Zoom, Google Live Transcribe)? You can choose multiple answers.

- computer/laptop
- smartphone
- tablet
- others:

Q8.4. Do you use the following function (s) of live captioning (e.g. Zoom, Google live Transcribe)?

	YES	NO
captioning spoken language	<input type="radio"/>	<input type="radio"/>
	YES	NO
store or copy of captioning	<input type="radio"/>	<input type="radio"/>
	YES	NO
search function in subtitles	<input type="radio"/>	<input type="radio"/>
	YES	NO
showing ambient sounds	<input type="radio"/>	<input type="radio"/>
	YES	NO
pausing subtitles	<input type="radio"/>	<input type="radio"/>
	YES	NO
add words	<input type="radio"/>	<input type="radio"/>
	YES	NO
vibrate when a name is called	<input type="radio"/>	<input type="radio"/>

Q8.5: When do you use live captioning software (e.g. Zoom, Google Live Transcribe)?

You can click on multiple answers.

conversation in Dutch

conversation in a language other than Dutch

physical 1-on-1 conversation

online 1-on-1 conversation

physical conversation with several people

online conversation with several people

Others:

SignON-project

KU Leuven and the Flemish Sign Language Center are part of SignON together with 15 other partners. This is a European project working on the development of the SignON app.

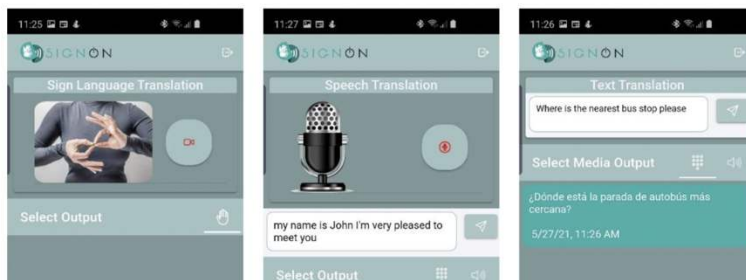
The SignON app aims to be able to translate between sign language, spoken and written language. So you can record a video in sign language, record an audio or type a text message.

Your video, audio recording or text message can be translated into a sign, spoken or written language of your choice.

The following languages are currently provided: Flemish Sign Language, Dutch Sign Language, Irish Sign Language, British Sign Language and Spanish Sign Language and Dutch, Irish, English and Spanish.

Below you can see some images of what the app looks like.

In the next part of the survey we will ask you some questions about using the SignON app.



Q9.1: Which translation function(s) of the SignON app would you use?

Select which language(s) you would translate your message in Flemish Sign Language into.

You can click on multiple answers.

	another sign language	written Dutch	another written language	spoken Dutch	another spoken language	does not apply
I translate from VGT to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9.2: Which translation function(s) of the SignON app would you use?

Select which language(s) you would translate your message into in another sign language (other than Flemish Sign Language).

You can click on multiple answers.

	Flemish Sign Language	another sign language	written Dutch	another written language	spoken Dutch	another spoken language	does not apply
I translate from another sign language (other than VGT) to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9.3: Which translation function(s) of the SignON app would you use?

Select to which language(s) you would have your message translated in written Dutch.

You can click on multiple answers.

	Flemish Sign Language	another sign language	another written language	spoken Dutch	another spoken language	does not apply
I translate from written Dutch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9.4: Which translation function(s) of the SignON app would you use?

Select into which language(s) you would have your message translated into another written language (other than Dutch).

You can click on multiple answers.

	Flemish Sign Language	another sign language	written Dutch	another written language	spoken Dutch	another spoken language	does not apply
I translate from another written language (other than NL) to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9.5: Which translation function(s) of the SignON app would you use?

Select which language(s) you would like to have your message translated into spoken Dutch.

You can click on multiple answers.

	Flemish Sign Language	another sign language	written Dutch	another written language	another spoken language	does not apply
I translate from spoken Dutch to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9.6: Which translation function(s) of the SignON app would you use?

Select which language(s) you would like to have your message translated into another spoken language (other than Dutch).

You can click on multiple answers.

	Flemish Sign Language	another sign language	written Dutch	another written language	spoken Dutch	another spoken language	does not apply
I translate from another spoken language (other than NL) to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q10: What other feature(s) would you like to be able to add to the SignON app?

You can click on multiple answers.

☐ indicate who is speaking (compare with frame in Zoom or glowing sphere in Teams)

☐ indicate in subtitles when a new conversation topic starts

☐ show conversation captions in keywords (and not full sentences)

☐ live subtitling incoming phone calls

☐ revision of written text (improving text on sentence structure, grammar,...)

☐ no

☐ Others:

Q11

Below you will find a number of situations in which you and/or your conversation partner could use the SignON app

Not all the situations surveyed will immediately be able to be technically developed. With this question we only want to check whether you would be willing to use the SignON app in a certain situation.

In which situations would you think it would be a good idea to use the SignON app?

0 means you would think this is a very bad idea, 10 means you would think this is an excellent idea.

You can move the circle to the number that best fits your opinion.

0 1 2 3 4 5 6 7 8 9 10

☐ does not apply



(The questions related to the 15 use cases can be found in annex 7.2).

Q11.16

In what other situations would it be a good idea to use the SignON app?

Optional questions

In the last part of this survey, we ask you a number of personal questions. These answers are in no way linked to you as a person and are also completely anonymous. In addition, they are protected according to the GDPR legislation in force at KU Leuven and within the SignON project.

Based on these questions, we want to determine which groups of potential end users have completed the survey.

These questions are completely non-binding and you do not have to complete them if you do not wish to.

Q12: How old are you?

Q13: Are you

- woman
- man
- non-binary
- I prefer not to answer this question
- other:

Q14: Are you

- deaf
- deafblind

- hearing impaired
- hearing
- I prefer not to answer this question
- other:

Q15: Do you have any comments or other things you would like to share before closing this survey?

Q16: Are you interested in participating in a follow-up study about the SignON app?

Send your contact details without obligation
to caro.brosens@vgtc.be or lien.soetemans@kuleuven.be

If a follow-up investigation would start, we will contact you using the information you sent us.

Do you have any questions or comments about the SignON project or this research?

Then you can always contact the researchers of the VGTC and KU Leuven (NL or VGT) via:

- caro.brosens@vgtc.be
- myriam.vermeerbergen@kuleuven.be
- lien.soetemans@kuleuven.be

7.2 Results per use case setting and subgroup (Flemish survey)

Use case setting 1

a) description

1. search function in VGT:

- You want to look up a sign “X” in the Flemish Sign Language Dictionary. You do not type a Dutch word in the search bar, but you sign the sign “X”. The dictionary search engine shows you all the results that correspond to the sign “X” you entered in the search function.

- You are watching a video in VGT about a vacancy. You want to quickly find out how you can contact the contact person. Via a search function in VGT you sign the information you want to find. The search engine will immediately take you to that part of the video that contains the information you are looking for.

b) general results

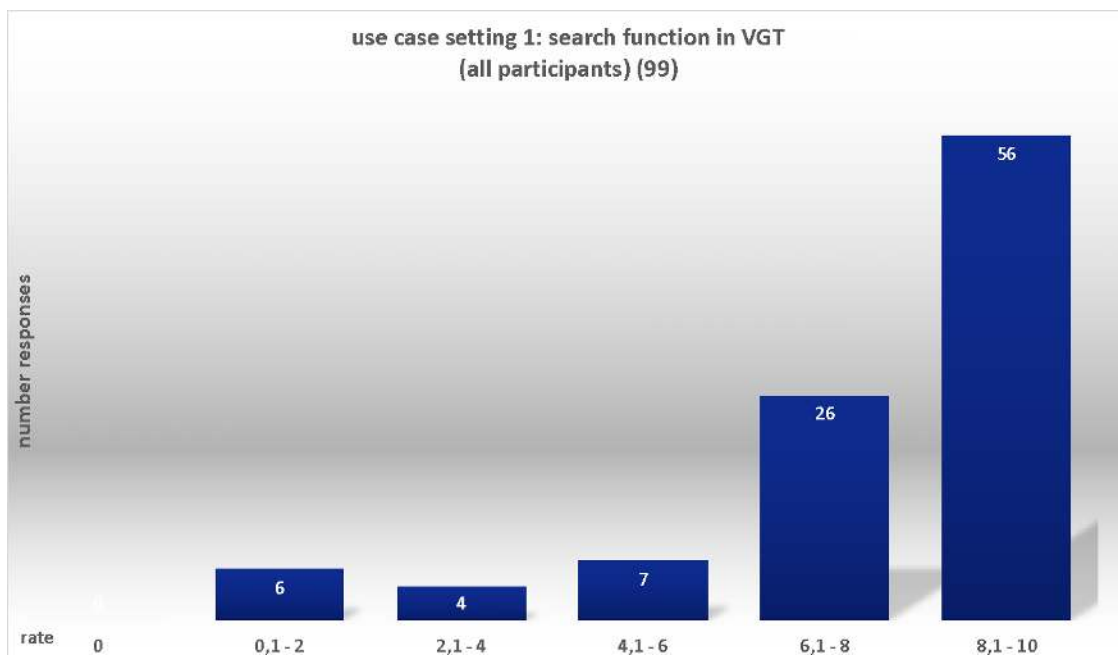
In total, 99 respondents assessed the use case setting “*search function in VGT*”.

For the sake of comprehensible and readable presentations of the analysis, it was decided to

show the results in score categories with a lower and upper limit (and not showing all the individual scores):

- blank responses
- score 0
- score from 0.1 to 2
- score from 2.1 to 4
- score from 4.1 to 6
- score from 6.1 to 8
- score from 8.1 to 10

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.

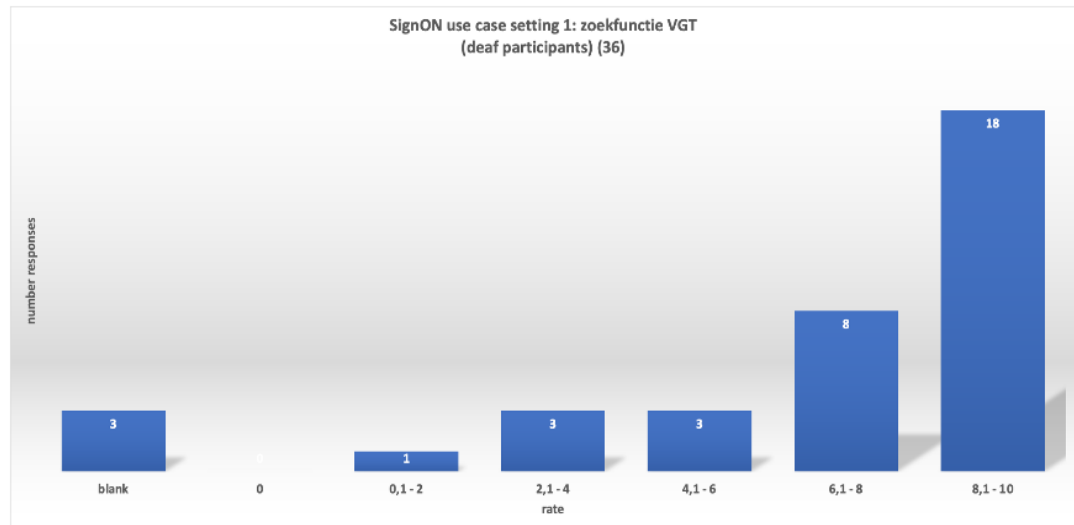


c) *results per respondent group*

i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 3 deaf participants didn't rate use case setting 1.

18 of them gave a score of 8.1 or higher. 7 participants gave a score of 6.0 or lower.

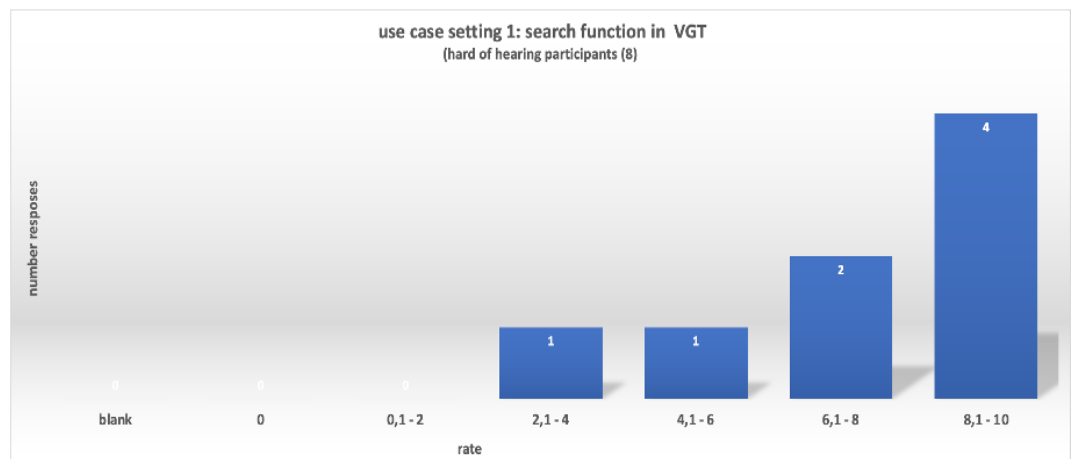


ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing.

They all assessed use case setting 1.

4 of them gave a score of 8.1 or more. None of the 8 participants gave a score of 2 or lower.



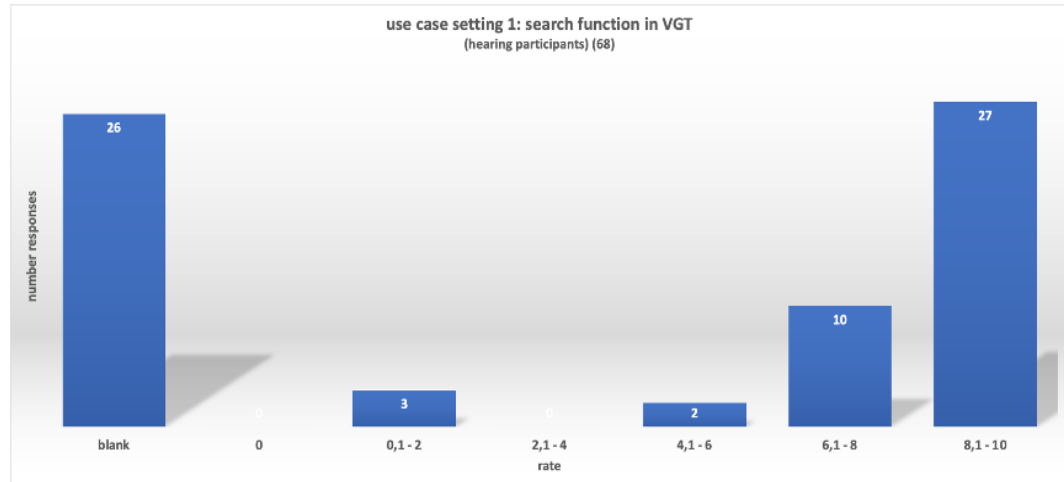
iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing.

26 of them didn't assess use case setting 1. 27 respondents gave a score of 8.1 or more.

5 hard of hearing participants gave a score of 6 or lower.

None of them rated 0.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

They both assessed use case setting 1 and gave both a score of 8.1 or more.

Use case setting 2

a) description

2. translating text messages (e.g., emails, WhatsApp messages):

- You want to send an email to the city service to inquire about how to apply for a permit for the construction of a roof terrace. You open the SignON app and sign in VGT what you want to ask the city service. The app translates your video into written Dutch. You send this Dutch translation as an email to the city office.

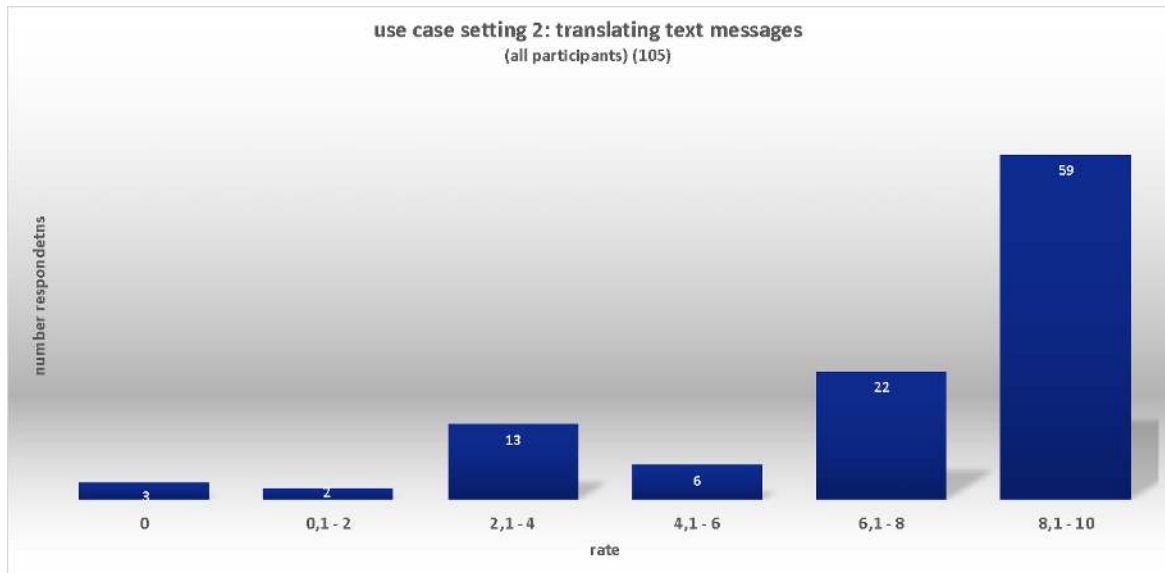
- You receive a voice message via WhatsApp from your Irish colleague. The SignON app translates this message into VGT and written Dutch.

b) general results

In total, 105 respondents assessed the use case setting “*translating text messages*”.

59 participants gave a score of 8.1 or higher. 3 of them rated 0 for this use case setting. 15 participants gave a score higher than 0 but lower than 4.1.

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



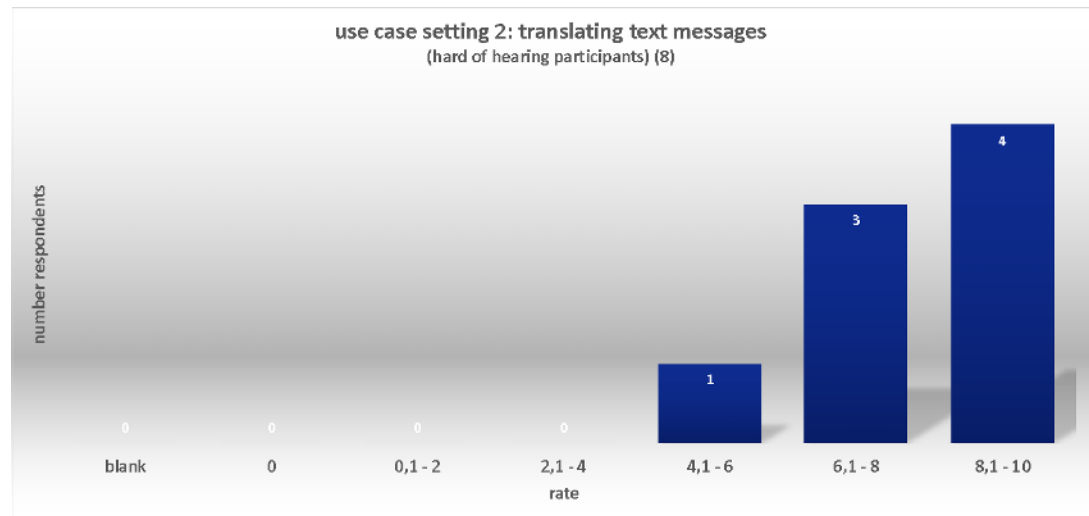
c) *results per respondent group*

i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 3 deaf participants didn't rate use case setting 2. 23 of them gave a score of 8.1 or more. 4 deaf respondents gave a score of 6 or lower (of which 1 deaf participant rated 0).

ii) *hard of hearing participants*

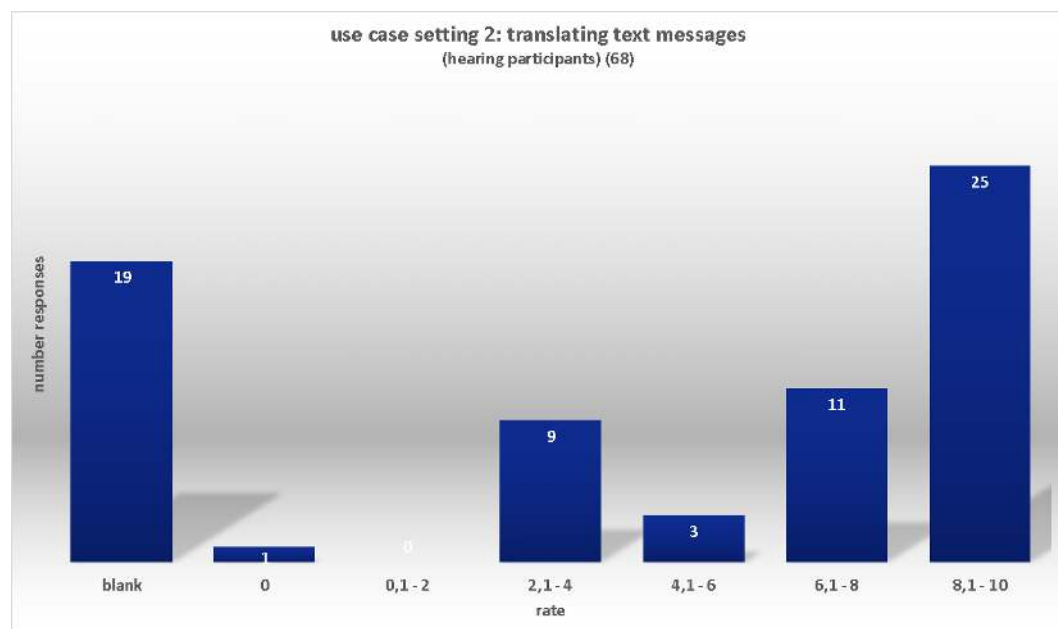
In total, 8 participants of the survey identified themselves as hard of hearing. They all assessed use case setting 2. 4 of them gave a score of 8.1 or higher. The other half gave a score between 4 and 8.1.



iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing.

19 of them didn't assess use case setting 2. 1 participant rated 0 for this use case setting. 25 hearing respondents gave a score of 8.1 or more. 23 hearing participants gave a score between 2 and 8.1.



v) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

They both assessed use case setting 2 and gave both a score of 8.1 or more.

Use case setting 3

a) *description*

3. general communication in everyday life:

- When you check in at your hotel, the receptionist will ask you some practical questions about your stay. The employee asks these questions in British Sign Language. The SignON app translates their questions into written Dutch and your answers in written Dutch into British Sign Language.

- When you pick up your child from daycare, the educator wants to briefly tell you how the day has been for your child. You and your child communicate in Flemish Sign Language, the educator does not know Flemish Sign Language. The SignON app translates the conversation between you and the educator from VGT into spoken Dutch and vice versa.

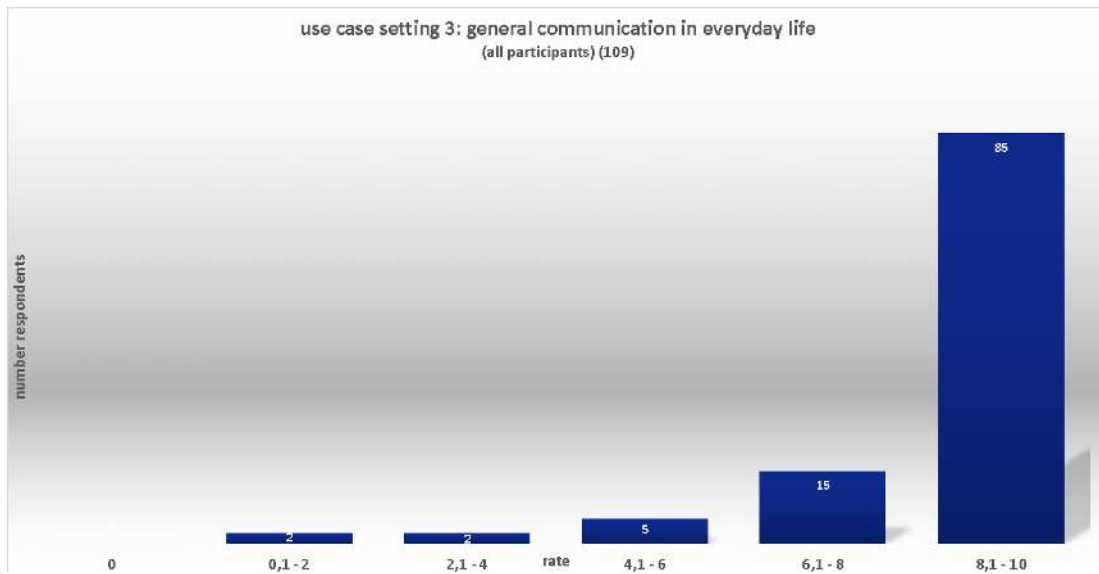
b) *general results*

In total, 109 respondents assessed the use case setting “*general communication in everyday life*”.

None of them rated 0. 24 participants gave a score lower than 6.1

85 respondents gave a score of 8.1 or more.

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.

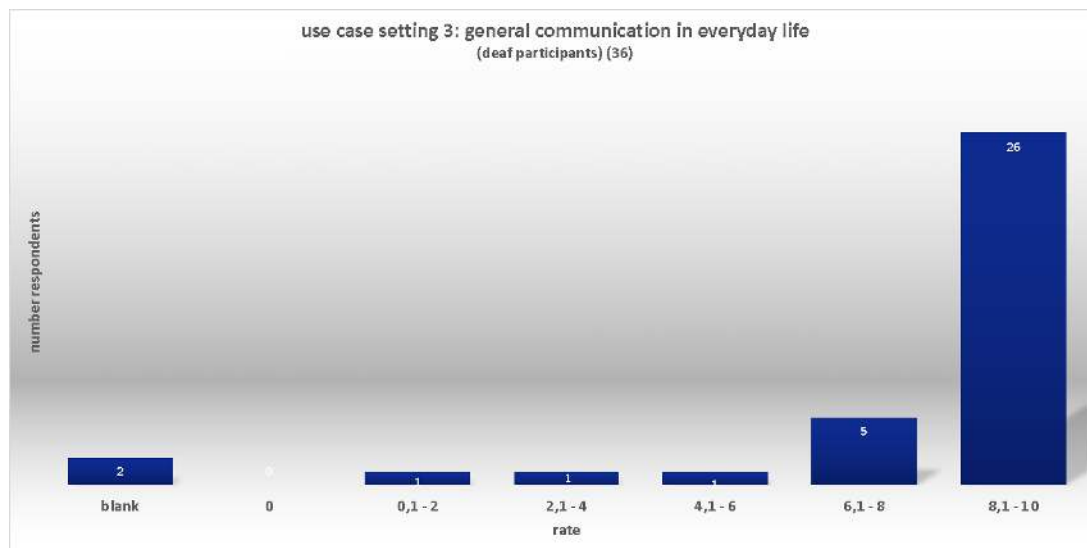


c) *results per respondent group*

i) *deaf participants*

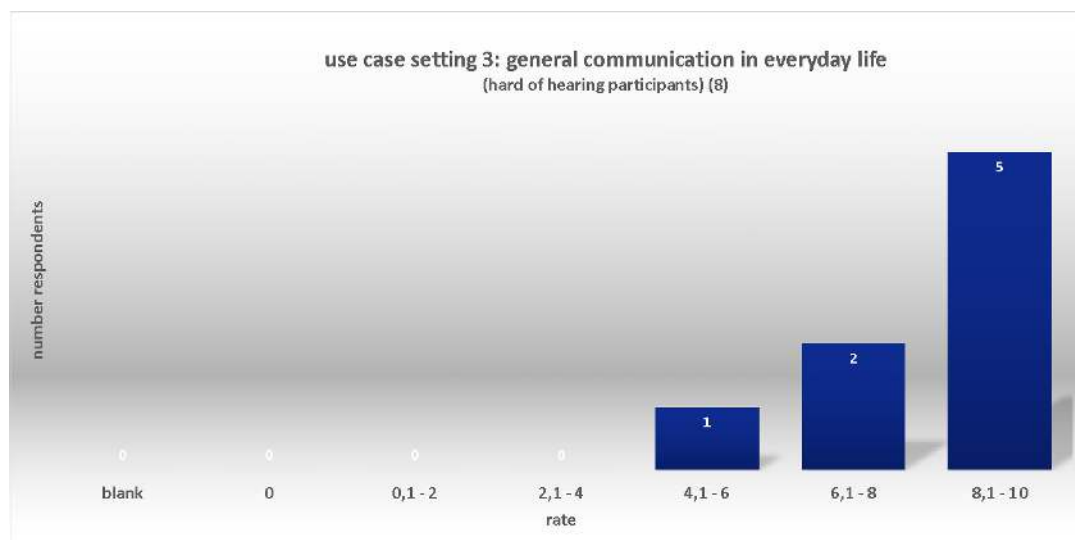
In total, 36 participants of the survey identified themselves as deaf. 2 of them didn't assess use case setting 3. None of them rated this use case setting a 0.

26 deaf respondents gave a score of 8.1 or higher. 8 of them gave a score lower than 8.1 (but higher than 0).



ii) *hard of hearing participants*

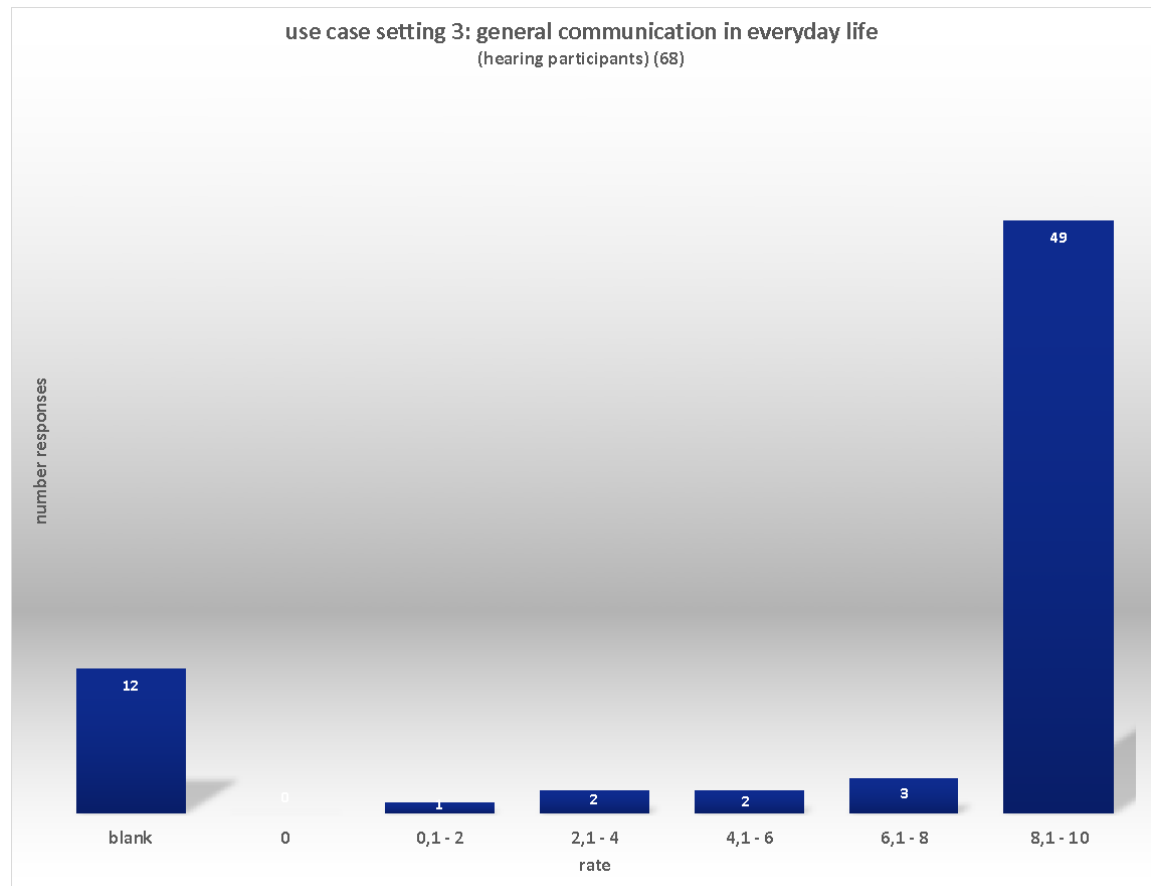
In total, 8 participants of the survey identified themselves as hard of hearing. They all assessed use case setting 3. None of the hard of hearing respondents gave a score lower than 4.1. More than half of them rated 8.1 or more.



iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 12 of them didn't assess use case setting 3. 8 hearing respondents gave score higher than 0 and lower than

8.1. More than half of this potential group of end users (49 participants) gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 7.9, the other deafblind respondent rated use case setting 3 a 10.

Use case setting 4

a) description

4. private communication in everyday life:

- At a family party, your uncle tells abouts the world trip he recently made. He doesn't know Flemish Sign Language, while you communicate in Flemish Sign Language. The SignON app translates his story in spoken Dutch into Flemish Sign Language. If you want to ask him something about his journey, the SignON app will translate your question in Flemish Sign Language into spoken Dutch.

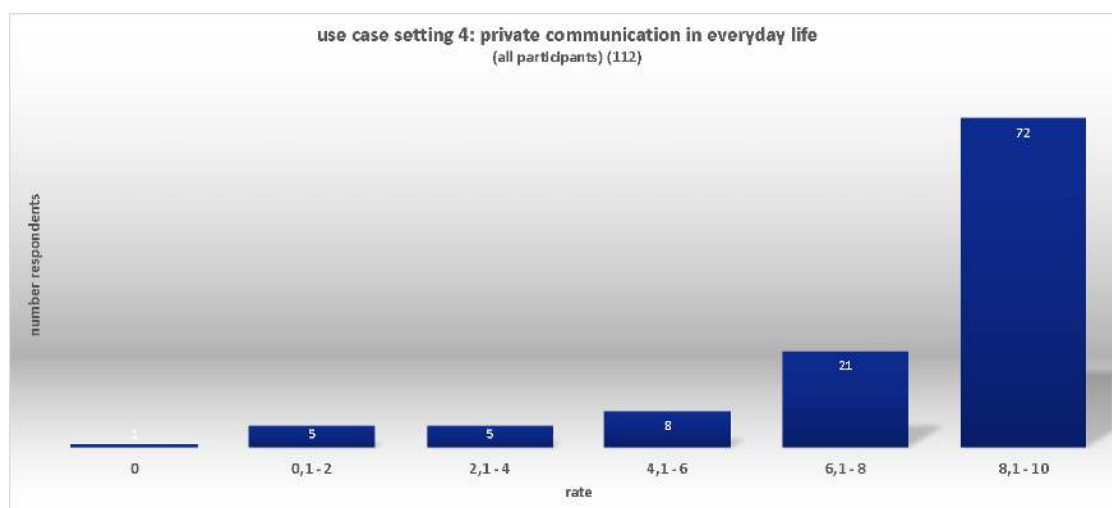
- You go to a bar with friends. You started learning Flemish Sign Language not so long ago. It is quite dark in the bar and you have trouble understanding your signing friends. You use the SignON app to translate their conversation from Flemish Sign Language to written Dutch. If you want to say something yourself, the SignON app will translate your answer from written Dutch to Flemish Sign Language.

b) general results

In total, 112 respondents assessed the use case setting "*private communication in everyday life*". More than half of them (72) gave a score of 8.1 or more. 21 potential end users gave a score higher than 6 and lower than 8.1

1 participant rated this use case setting a 0.

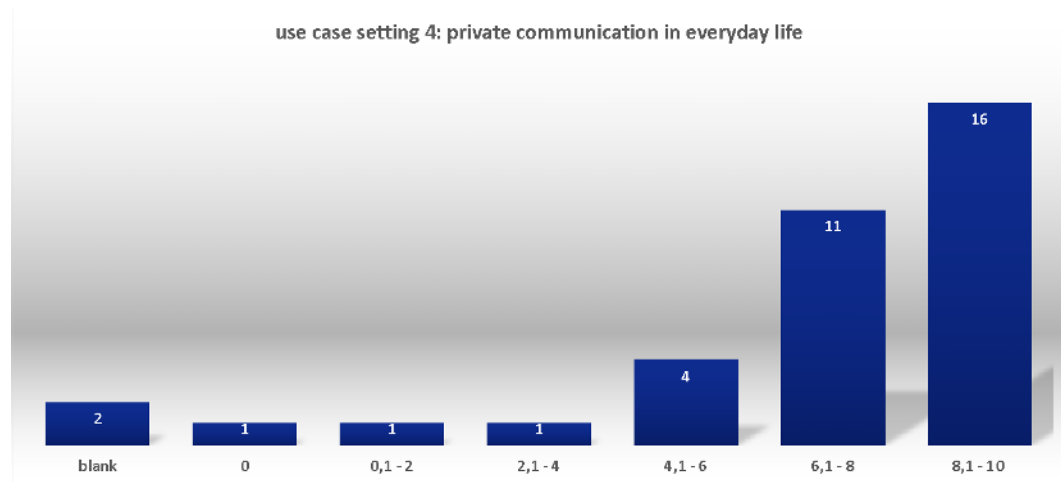
The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



c) *results per respondent group*

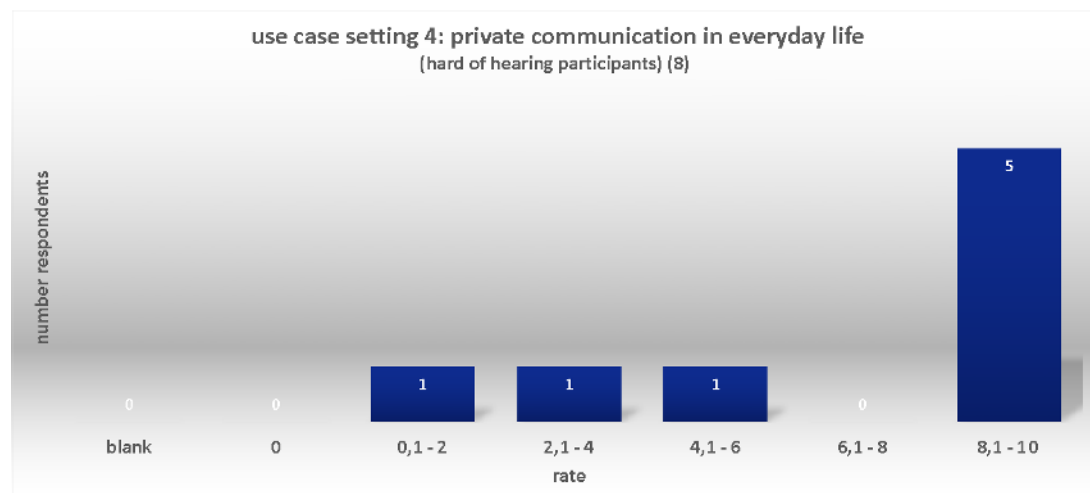
i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 2 of them didn't assess use case setting 4. One deaf respondent rated this use case setting a 0. In the score category of 8.1 – 10 were founded 16 deaf participants. 6 deaf respondents gave a score between 0 and 6.1



ii) *hard of hearing participants*

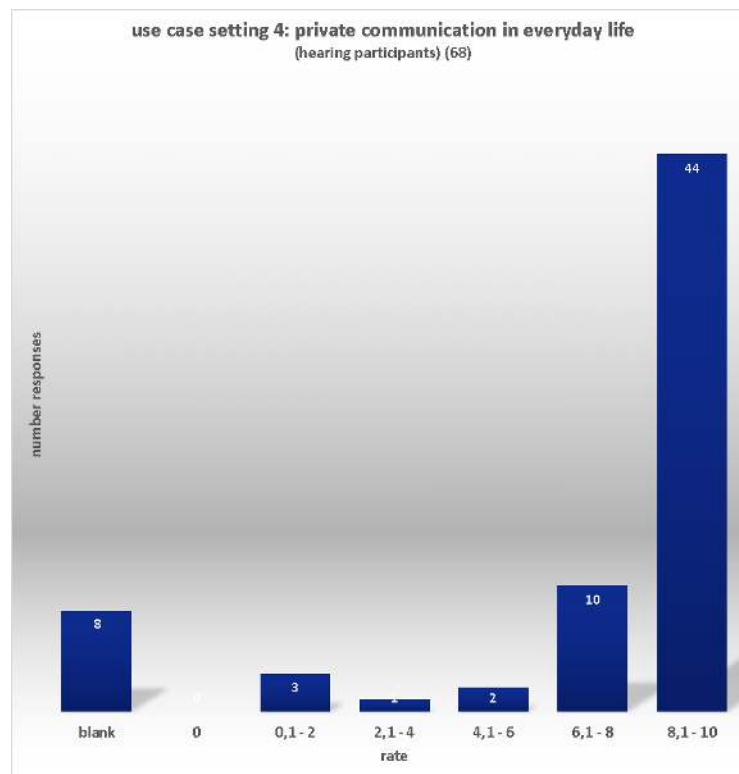
In total, 8 participants of the survey identified themselves as hard of hearing. They all assessed use case setting 4. None of the hard of hearing respondents rated this use case setting a 0. More than half of them rated 8.1 or more.



iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 8 of them didn't assess use case setting 4. None of them rated this use case setting a 0.

16 hearing respondents gave score higher than 0 and lower than 8.1. More than half of this potential group of end users (44 participants) gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 6, the other deafblind respondent rated use case setting 4 an 8.1

Use case setting 5

a) description

5. formal communication in everyday life:

- You have an appointment at the notary to sign the purchase deed of a real estate. When the notary goes over the deed and explains it in spoken Dutch, the SignON app translates everything from spoken Dutch to Flemish Sign Language.

- You have an appointment with your doctor because you have not been feeling well for several days. You want to explain in Flemish Sign Language what your complaints are, but your GP has trouble fully understanding you. Your GP uses the SignON app to translate what you say in Flemish Sign Language into written Dutch.

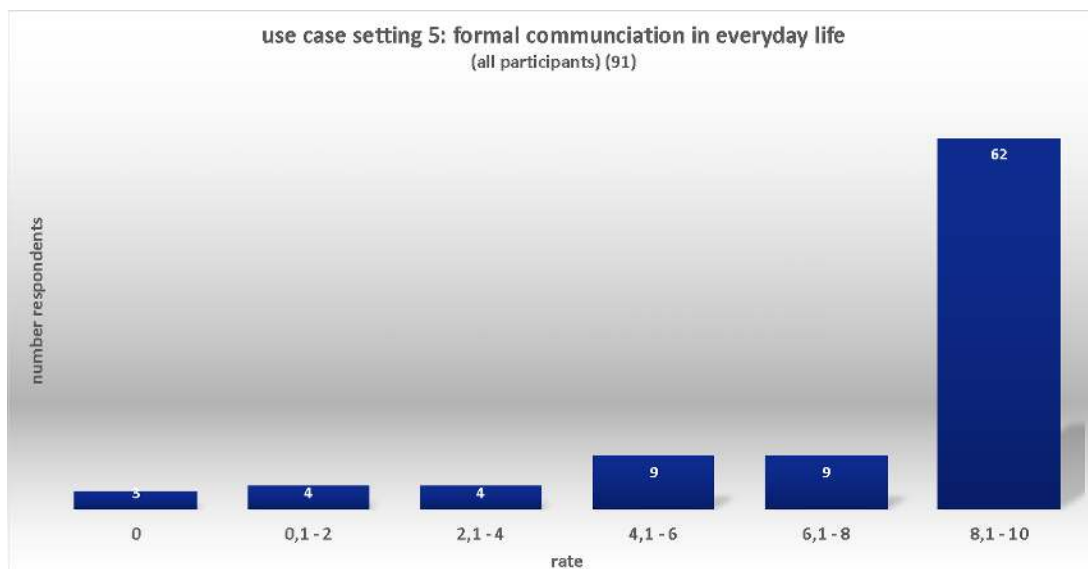
b) general results

In total, 91 respondents assessed the use case setting “*formal communication in everyday life*”.

More than half of them (62) gave a score of 8.1 or more.

3 participants rated this use case setting a 0. 18 respondents gave a score between 4 and 8.1

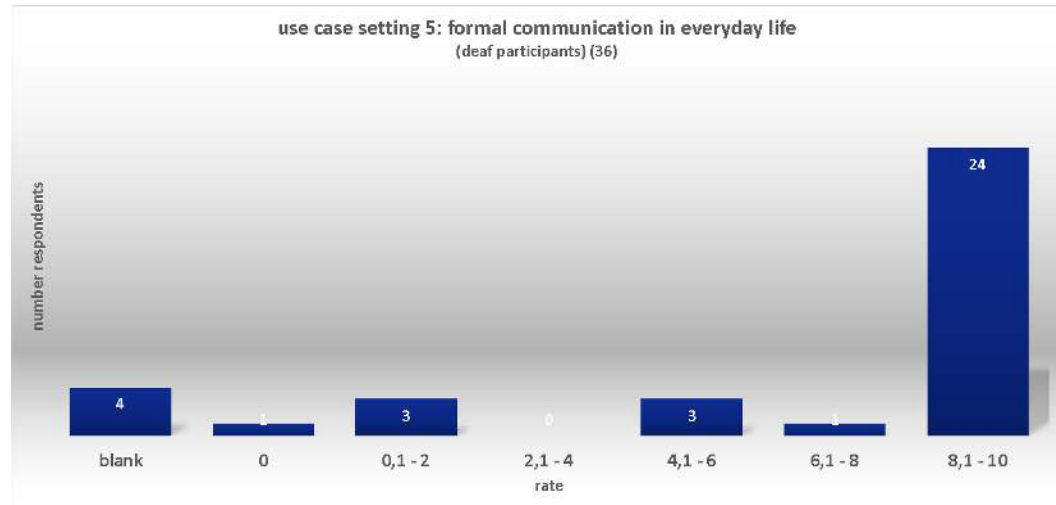
The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



c) results per respondent group

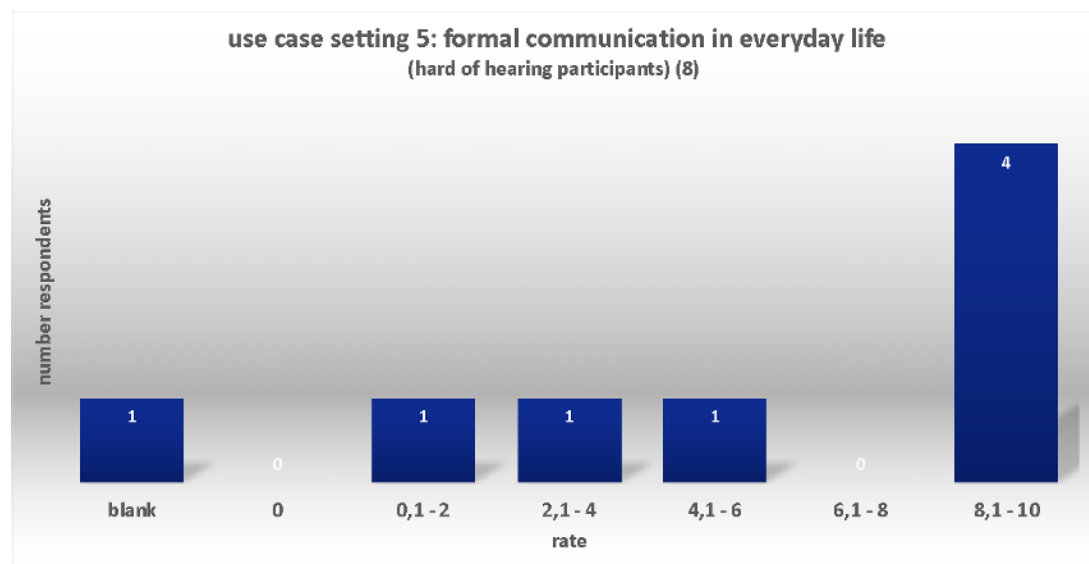
i) deaf participants

In total, 36 participants of the survey identified themselves as deaf. 4 of them didn't assess use case setting 5. One deaf respondent rated this use case setting a 0. In the score category of 8.1 – 10 were founded more than half of the responses (24).



ii) *hard of hearing participants*

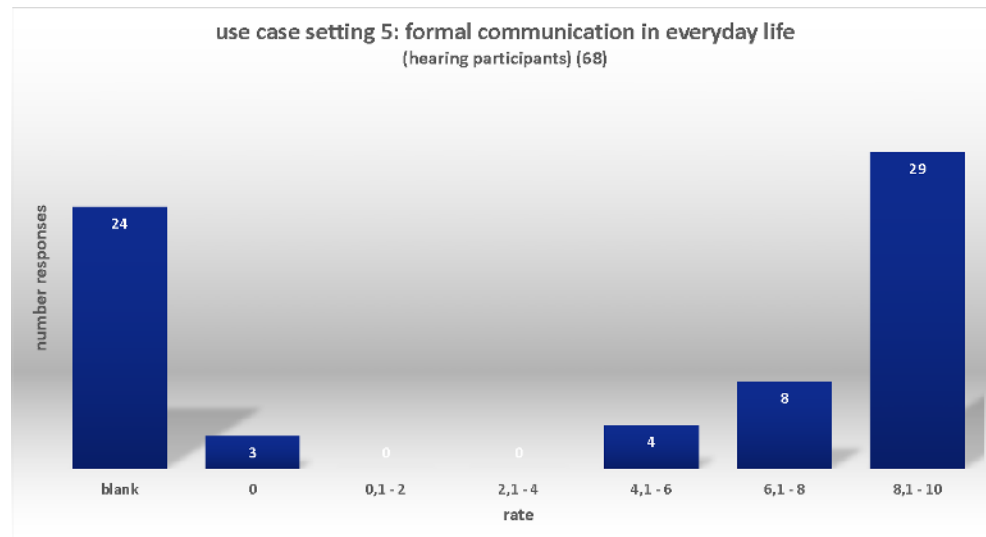
In total, 8 participants of the survey identified themselves as hard of hearing. One of them didn't assess use case setting 5. None of the hard of hearing respondents rated this use case setting a 0. Half of them rated 8.1 or more.



iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 24 of them didn't assess use case setting 5.

3 hearing respondents rated this use case setting a 0. Less than half (29 participants) gave a score of 8.1 or more. The other 12 hearing respondents gave a score between 4 and 8.1



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 4, the other deafblind respondent rated use case setting 5 a 10.

Use case setting 6

a) *description*

6. translating online content:

- You visit an English website, but you do not fully understand a certain part of the text. The SignON app translates the English written text into written Dutch and/or into Flemish Sign Language

- You come across an interesting video in Spanish that you want to watch. You do not master Spanish and therefore use the SignON app to watch the video in Flemish Sign Language or Dutch.

- Your Dutch colleague sends you a video message in Dutch Sign Language. You do not understand the Dutch Sign Language sufficiently. You use the SignON app to translate the video message in Dutch Sign Language into spoken Dutch.

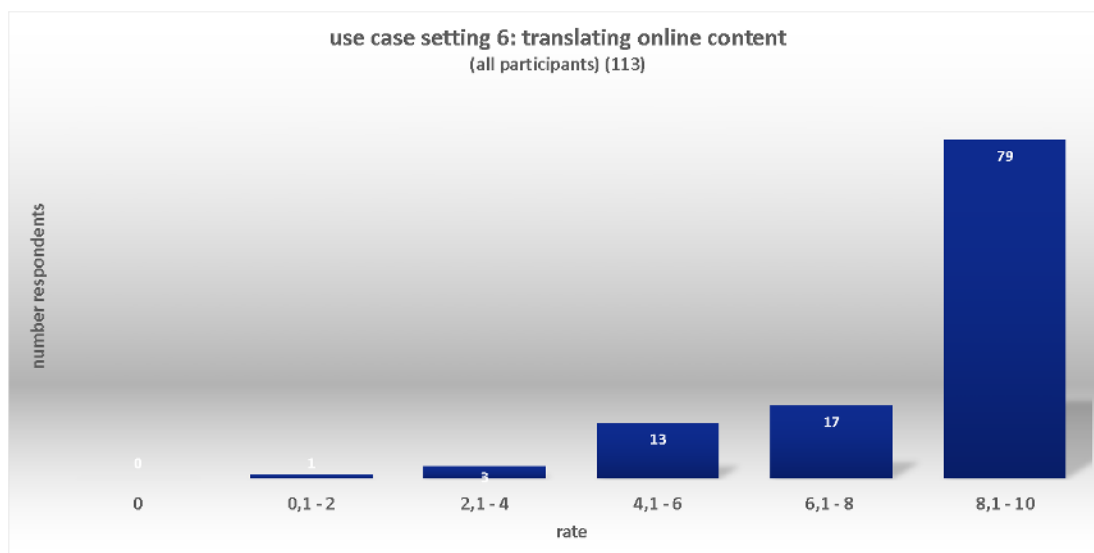
b) *general results*

In total, 113 respondents assessed the use case setting “*translating online content*”.

None of the respondents rated this use case setting a 0. Four participants gave a score between 0 and 4.1

79 respondents gave a score of 8.1 or more.

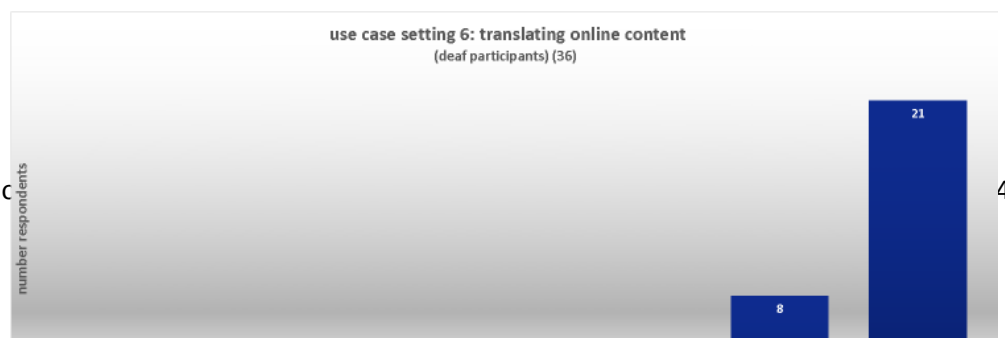
The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



c) *results per respondent group*

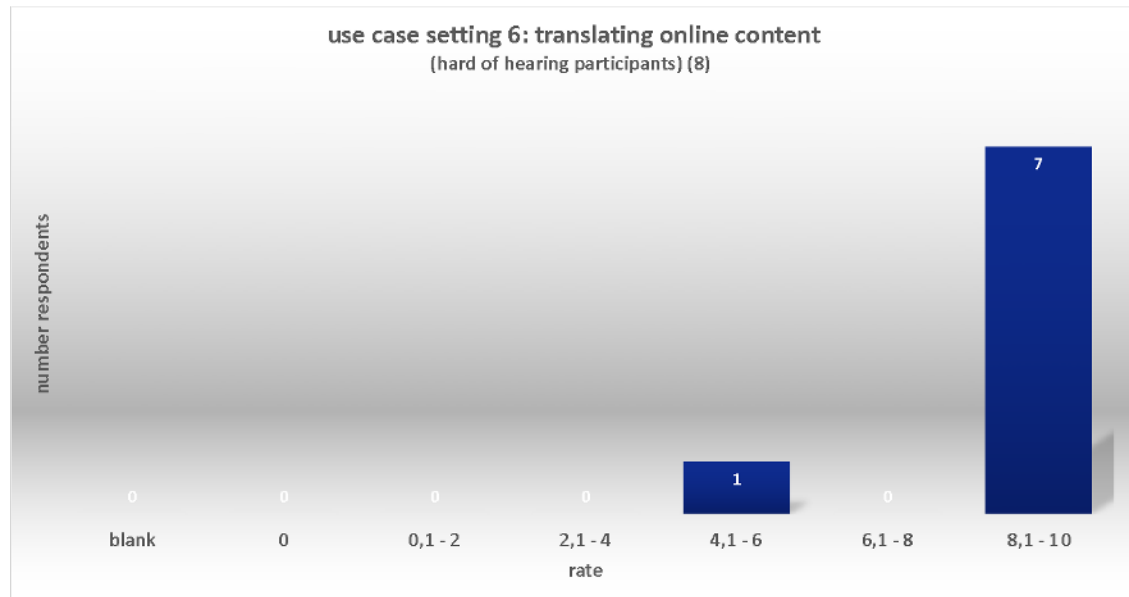
i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 2 of them didn't assess use case setting 6. None of them rated this use case setting a 0. In the score category of 8.1 – 10 were founded more than half of the responses (21).



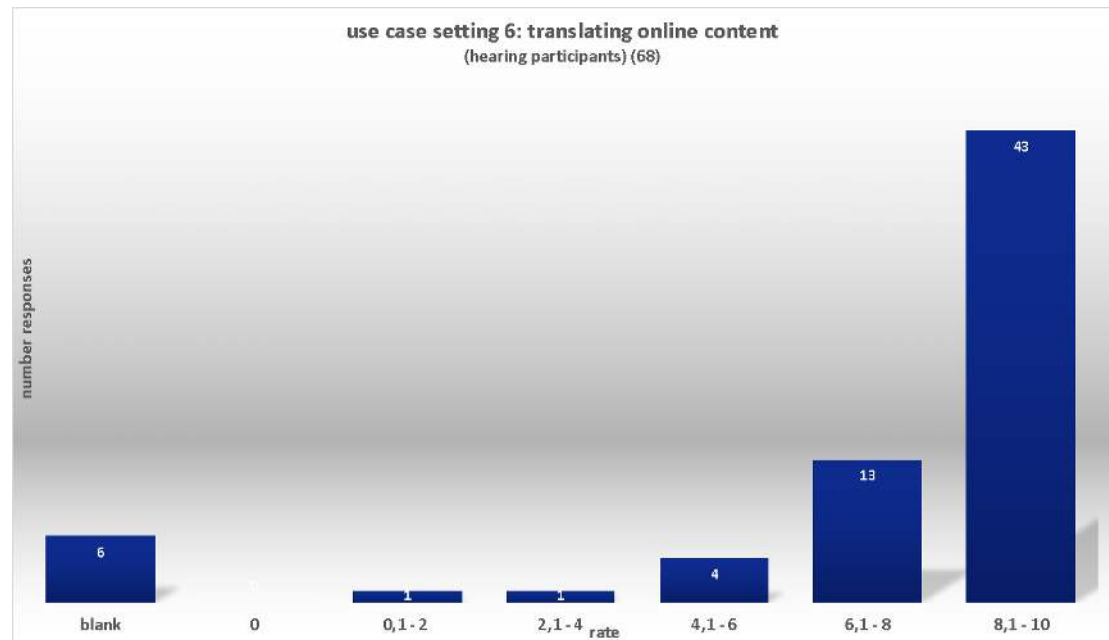
ii) hard of hearing participants

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 6. Only 1 hard of hearing respondent gave a score lower than 8.1

*iii) hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 6 of them didn't assess use case setting 6.

None of the hearing participants rated this use case setting a 0. More than half (43 participants) gave a score of 8.1 or more.



iv) deafblind participants

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 7, the other deafblind respondent rated use case setting 6 an 8.1

Use case setting 7

a) description

7. contacting and communicating with emergency services:

- You contact the emergency service 112 via the 112 BE app. You send a video in Flemish Sign Language to explain the emergency. The care provider uses the SignON app to translate your video into Dutch. The care provider sends his answer in a text message. The SignON app translates this answer into Flemish Sign Language.

- When you go to the emergency room, the emergency doctor wants to ask you several questions. She wears a mask and you don't understand what she is saying. The SignON app translates the doctor's questions into Flemish Sign Language. You answer the question in Flemish Sign Language. The doctor reads your answers via the Dutch translation on the SignON app.

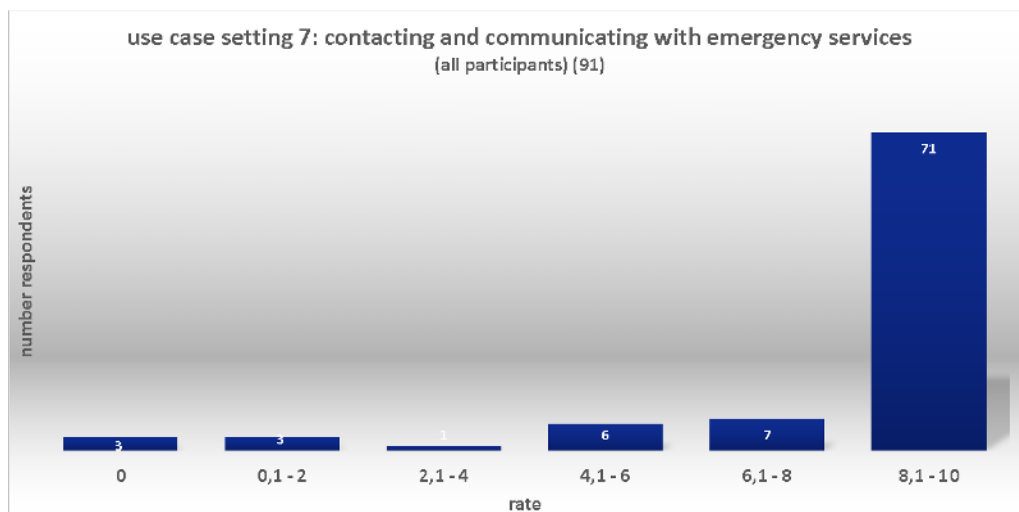
b) general results

In total, 91 respondents assessed the use case setting “*contacting and communicating with emergency services*”. 3 respondents rated this use case setting a 0.

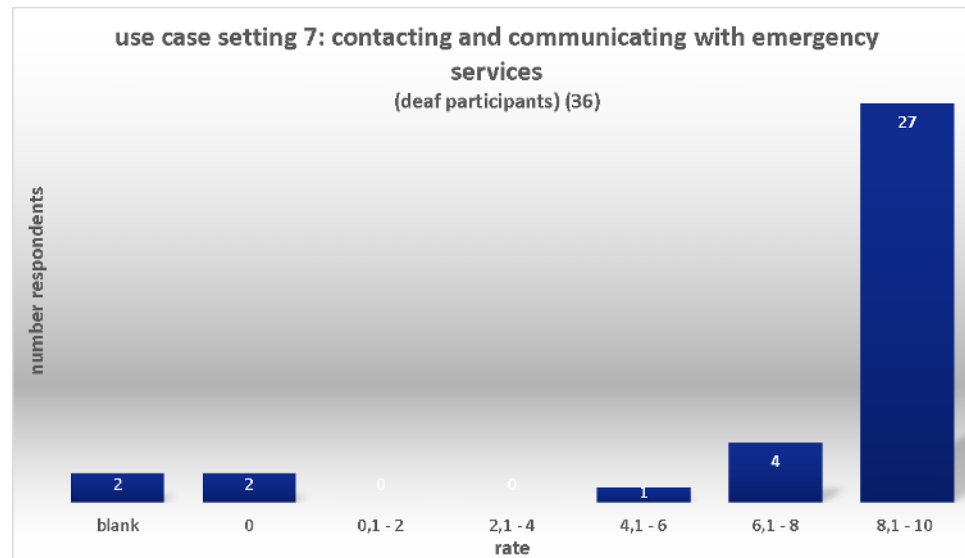
17 of them gave a score below 8.1

The other participants (71) rated this use case setting an 8.1 or more.

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.

**c) results per respondent group****i) deaf participants**

In total, 36 participants of the survey identified themselves as deaf. 2 of them didn't assess use case setting 7. 2 of them rated this use case setting a 0. In the score category of 8.1 – 10 were founded more than half of the responses (27).

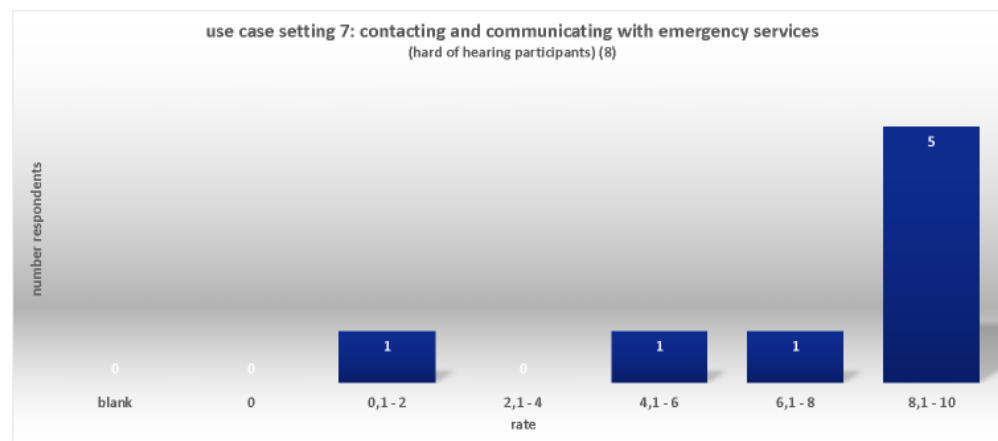


ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 7. None of them rated a 0.

3 hard of hearing respondents gave a score lower than 8.1

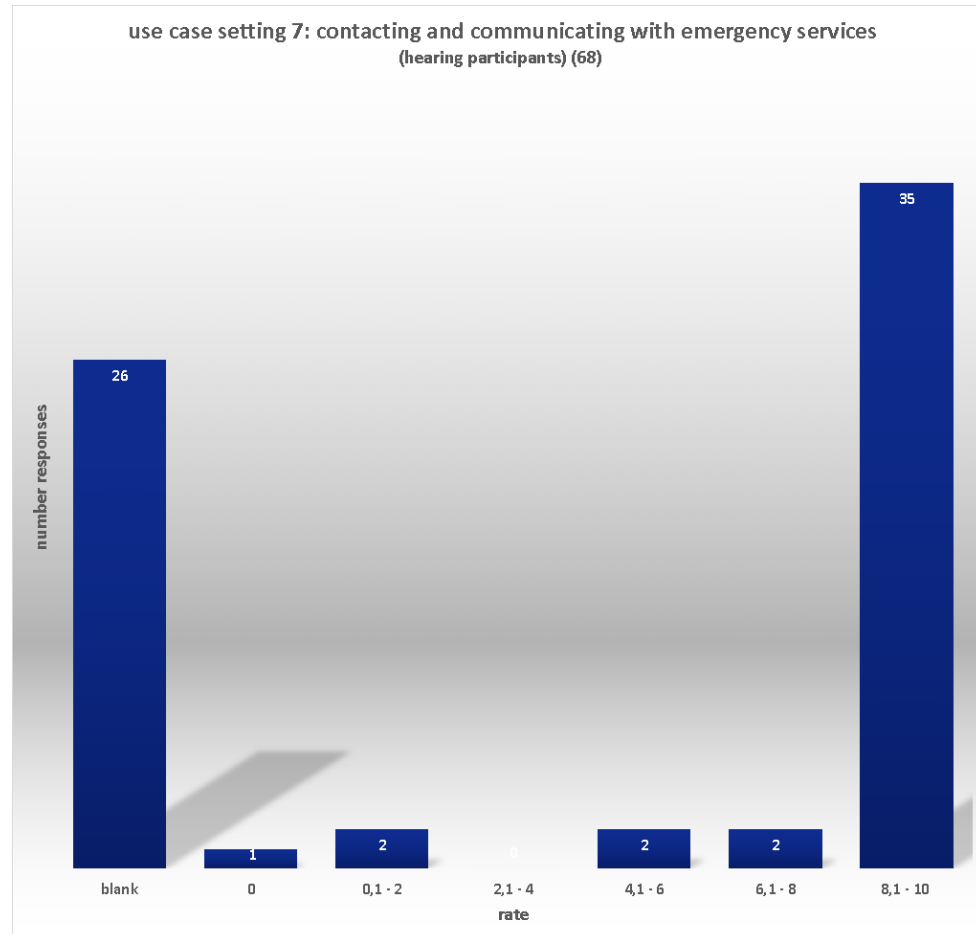
The 5 other hard of hearing participants rated this use case setting an 8.1 or more.



iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 26 of them didn't assess use case setting 7.

1 of the hearing participants rated this use case setting a 0. More than half (35) participants gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 4.1, the other deafblind respondent rated use case setting 7 a 10.

Use case setting 8

a) *description*

8. anonymous videos in VGT or other Sign Language:

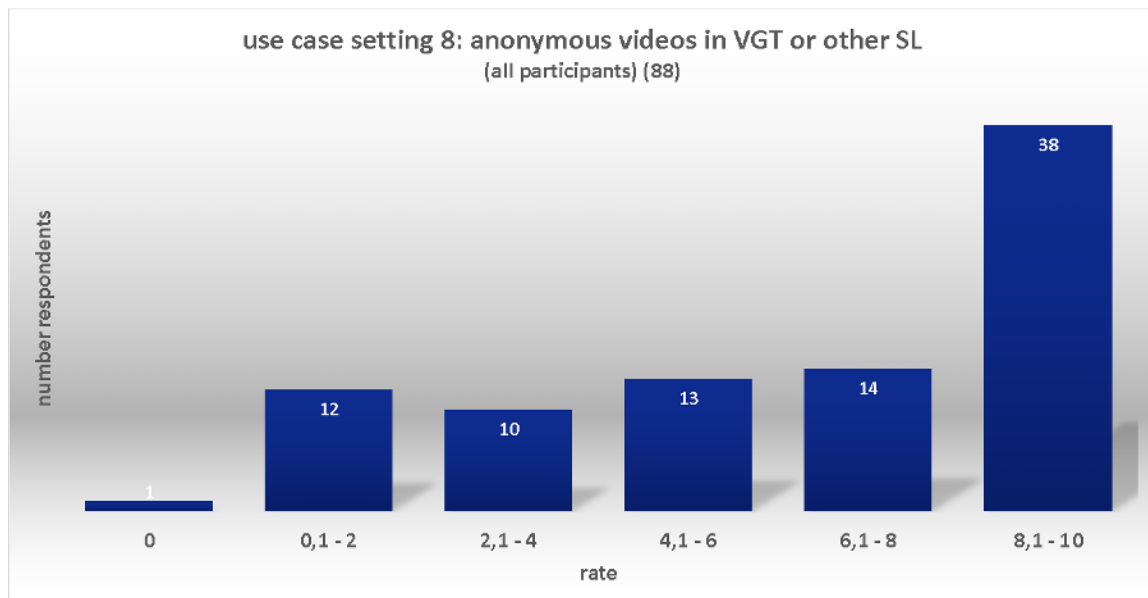
- With the SignON app you can create anonymous videos in VGT or another sign language via the avatar. In this way, you are not visible in the video, because the avatar is signing your message. For example, you can post anonymously on social media, internet forums, etc.

b) *general results*

In total, 88 respondents assessed the use case setting “*anonymous videos in VGT or other Sign Language*”. 1 respondent rated this use case setting a 0. Less than half of the participants (38) gave a score equal to or more than 8.1

Almost 2/5 of all respondents gave a score between 0 and 6.1 (35).

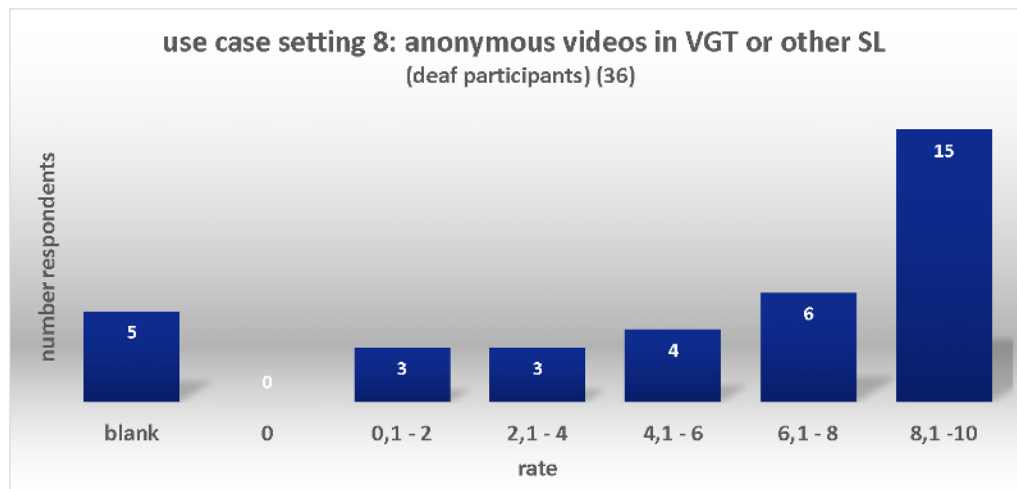
The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



c) *results per respondent group*

i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 5 of them didn't assess use case setting 8. None of them rated this use case setting a 0. In the score category of 8.1 – 10 were founded almost half of the responses (15).

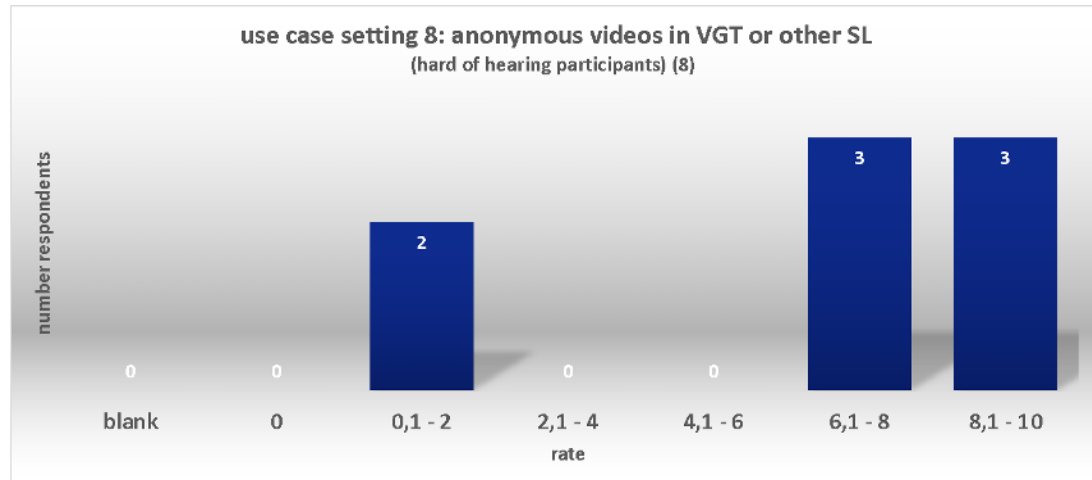


ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 8. None of them rated a 0.

2 hard of hearing respondents gave a score lower than 2.1

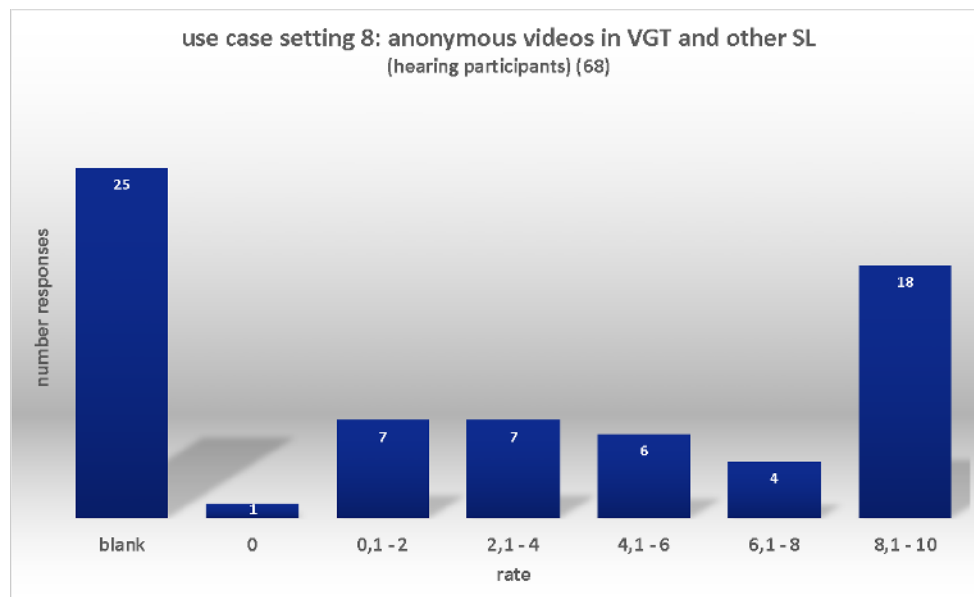
The 6 other hard of hearing participants rated this use case setting a 6.1 or more.



iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 25 of them didn't assess use case setting 8.

1 of the hearing participants rated this use case setting a 0. Approximately a quarter of the participants (18) gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 5.9, the other deafblind respondent rated use case setting 8 a 7.3

Use case setting 9***a) description*****9. learning new languages:**

- You learn a new language via the SignON app by, among other things, using the translation and subtitling functions of the app.

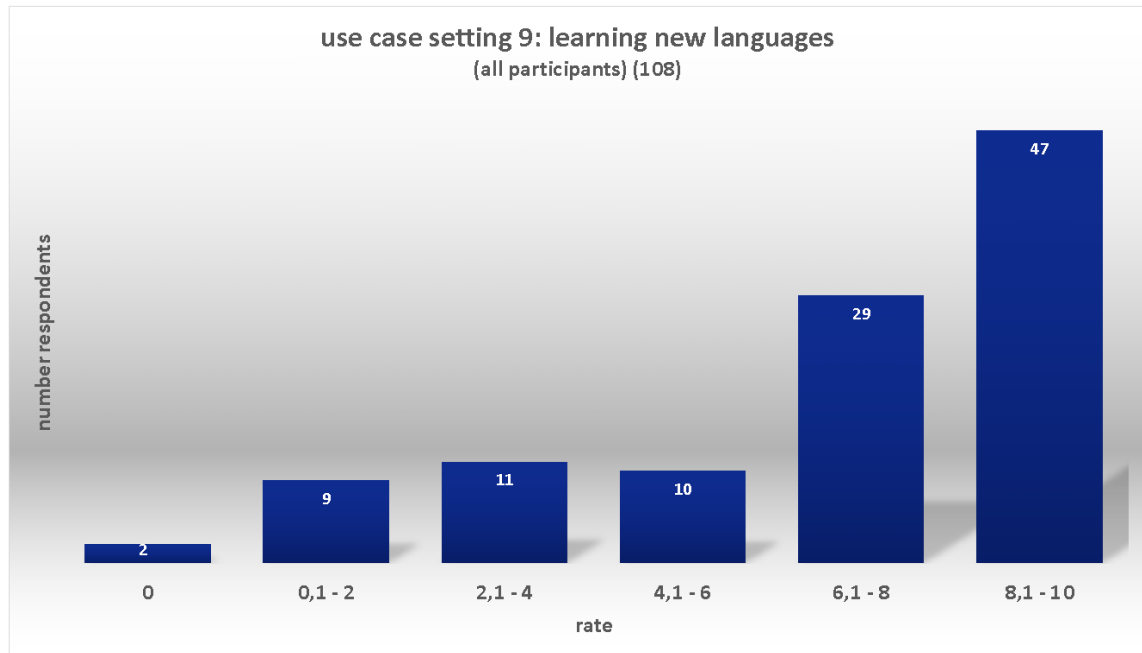
b) general results

In total, 108 respondents assessed the use case setting "*learning new languages*".

2 respondents rated this use case setting a 0. Less than half of the participants (47) gave a score equal to or more than 8.1

Almost a third of all respondents gave a score between 0 and 6.1 (30). The same result corresponds more or less with the score category between 6 and 8.1 (29 respondents).

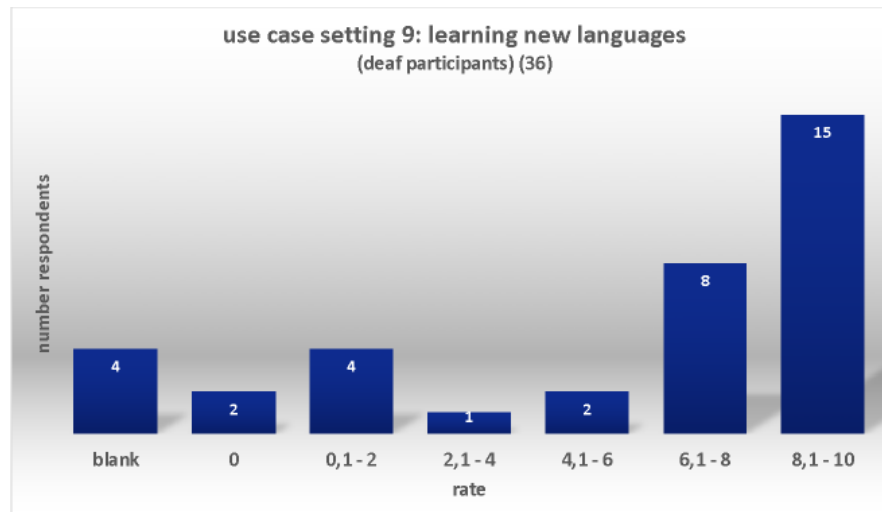
The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



c) *results per respondent group*

i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 4 of them didn't assess use case setting 9. 2 of them rated this use case setting a 0. In the score category of 8.1 – 10 were founded almost half of the responses (15).



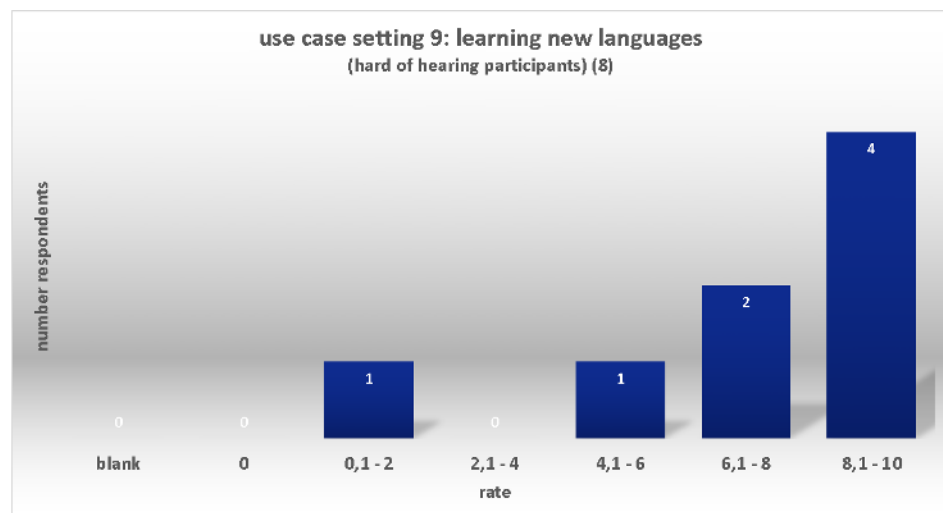
ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 9. None of them rated a 0.

2 hard of hearing respondents gave a score between 6 and 8.1

Half of the hard of hearing participants rated this use case setting an 8.1 or more.

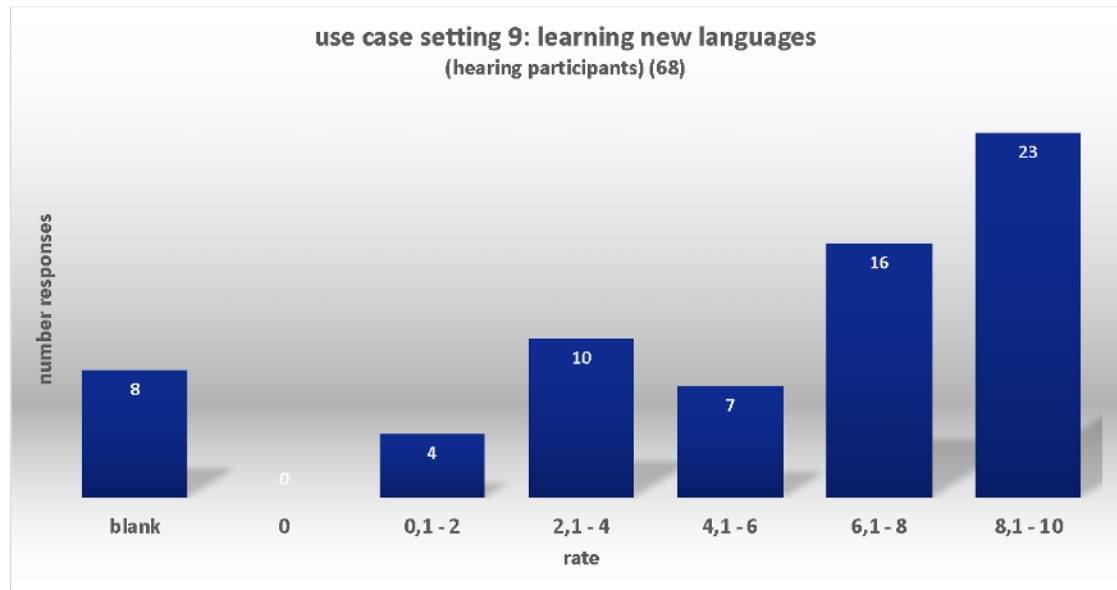
iii) *hearing*



participants

In total, 68 participants of the survey identified themselves as hearing. 8 of them didn't assess use case setting 9.

None of the hearing participants rated this use case setting a 0. More than half of the hearing participants (39) gave a score of 6.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 6.1, the other deafblind respondent rated use case setting 9 a 9.2

Use case setting 10

a) *description*

10. attending webinars:

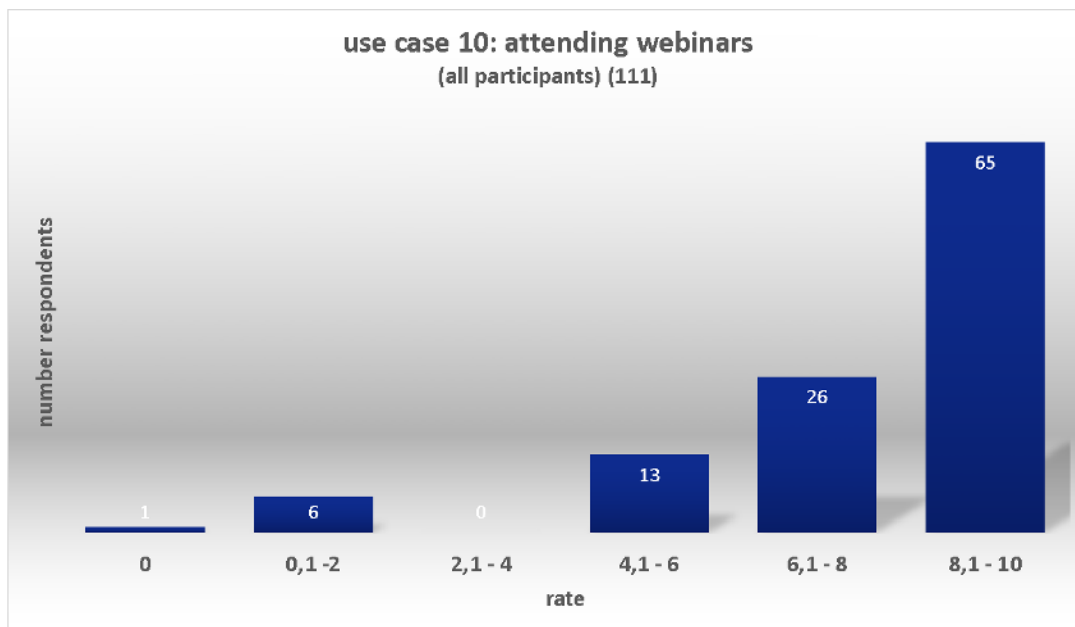
- Via the SignON app you can have webinars translated or subtitled into the language in which you want to follow the webinar (e.g. translation into VGT? Dutch).

b) *general results*

In total, 111 respondents assessed the use case setting “*attending webinars*”. 1 respondent rated this use case setting a 0. More than a third of all respondents gave a score between 4 and 6.1

More than half of all participants (65) rated this use case setting an 8.1 or more.

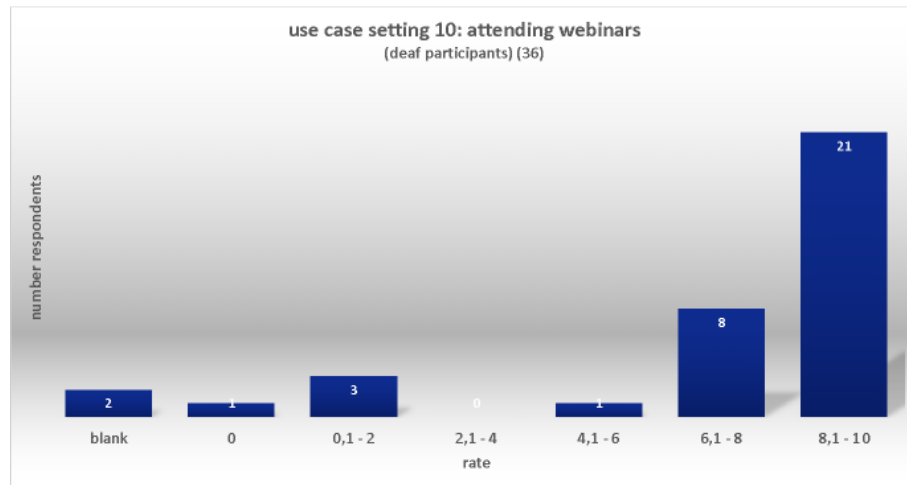
The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



c) *results per respondent group*

i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 2 of them didn't assess use case setting 10. 1 of them rated this use case setting a 0. In the score category of 8.1 – 10 were founded more than half of the responses (21).



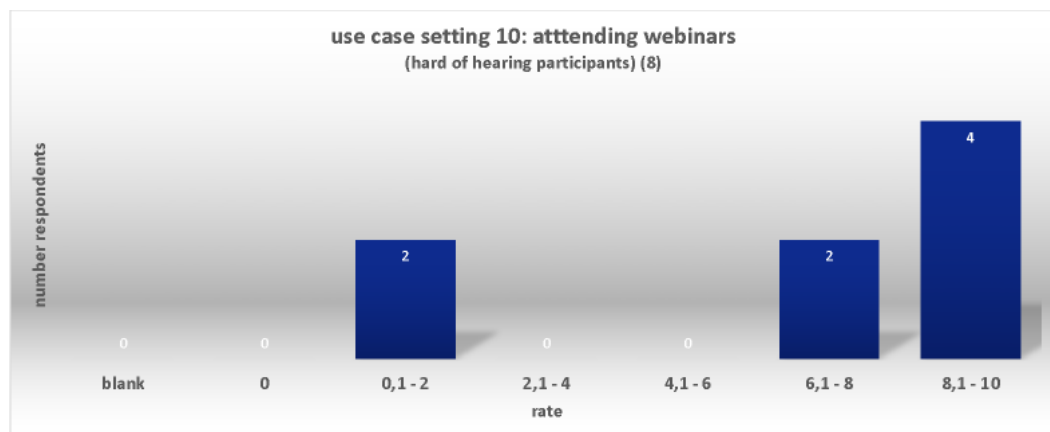
ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 10. None of them rated a 0.

2 hard of hearing participants gave a score between 0 and 2.1

2 hard of hearing respondents gave a score between 6 and 8.1

Half of the hard of hearing participants rated this use case setting an 8.1 or more.



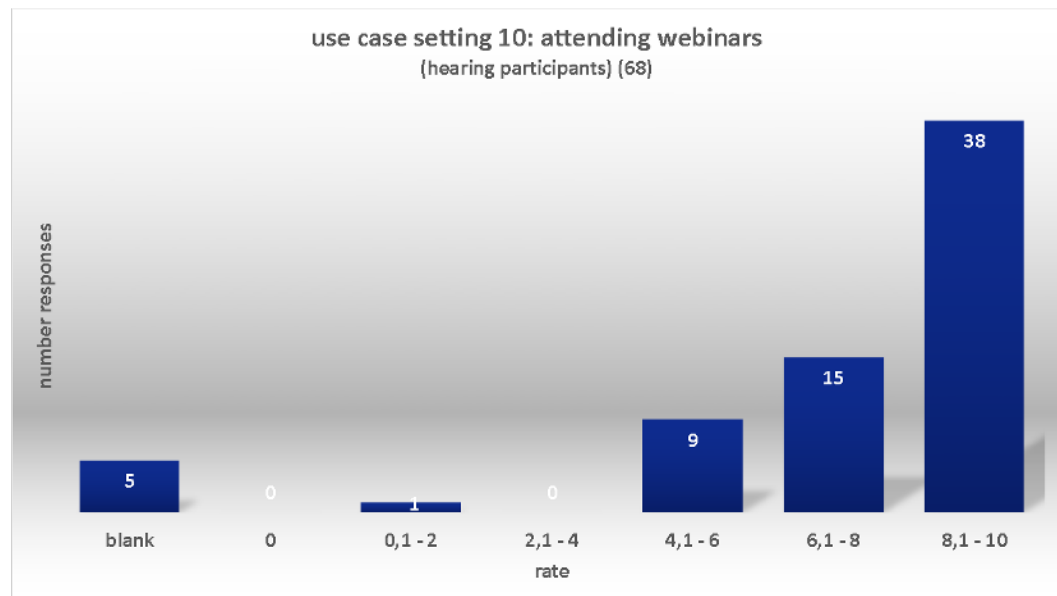
iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 5 of them didn't assess use case setting 10.

None of the hearing participants rated this use case setting a 0. More than a third of the

hearing respondents gave a score between 4 and 8.1

More than half of the hearing participants (38) gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 6, the other deafblind respondent rated use case setting 10 a 7.4

Use case setting 11

a) *description*

11. communication during formal moments:

The SignON app translates or subtitles:

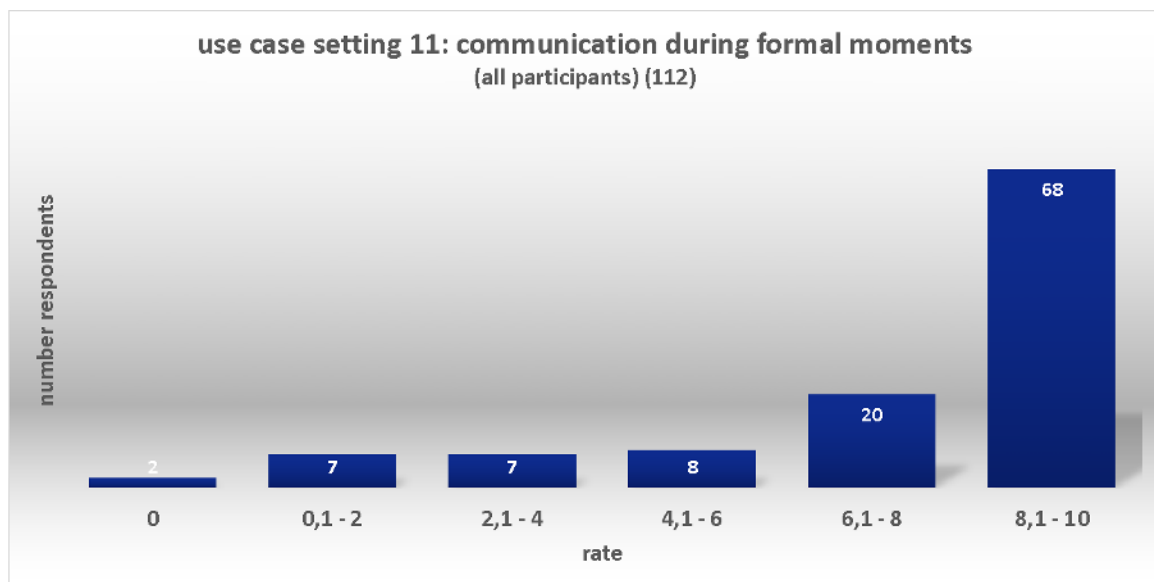
- meetings in the context of your work;
- courses (physical/online) that you follow;
- lessons at school.

b) general results

In total, 112 respondents assessed the use case setting “communication during formal moments”. 2 respondents rated this use case setting a 0. A quarter of all respondents gave a score between 4 and 6.1

More than half of all participants (68) rated this use case setting an 8.1 or more.

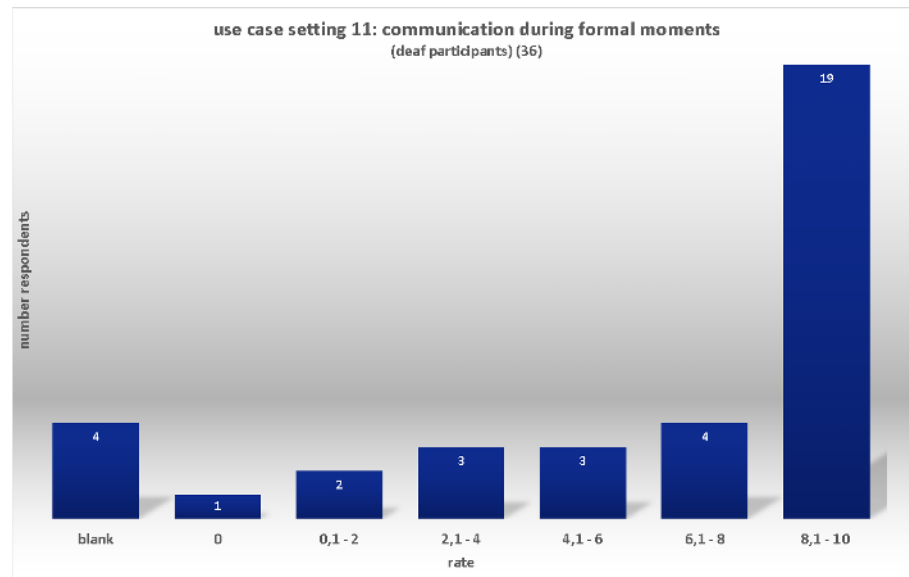
The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.



c) results per respondent group

i) deaf participants

In total, 36 participants of the survey identified themselves as deaf. 4 of them didn't assess use case setting 11. 1 of them rated this use case setting a 0. In the score category of 8.1 – 10 were founded more than half of the responses (19).

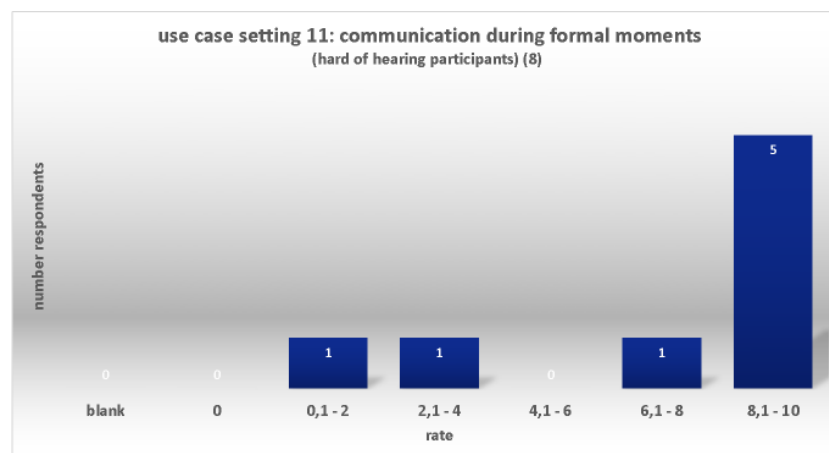


ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 11. None of them rated a 0.

1 hard of hearing participants gave a score between 0 and 2.1, 1 between 2 and 4.1 and 1 gave a score between 6 and 8.1

More than half of the hard of hearing participants (5) rated this use case setting an 8.1 or more.

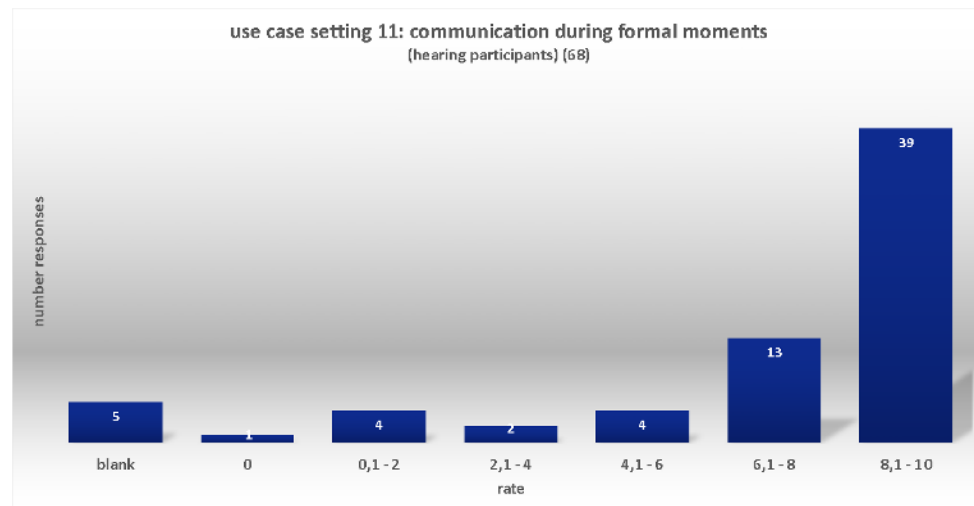


iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 5 of them didn't assess use case setting 11.

1 of the hearing participants rated this use case setting a 0. A quarter of the hearing respondents gave a score between 4 and 8.1

More than half of the hearing participants (39) gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 3.9, the other deafblind respondent rated use case setting 11 a 6.

Use case setting 12

a) *description*

12. communication during informal moments:

The SignON app translates or subtitles conversations between you and:

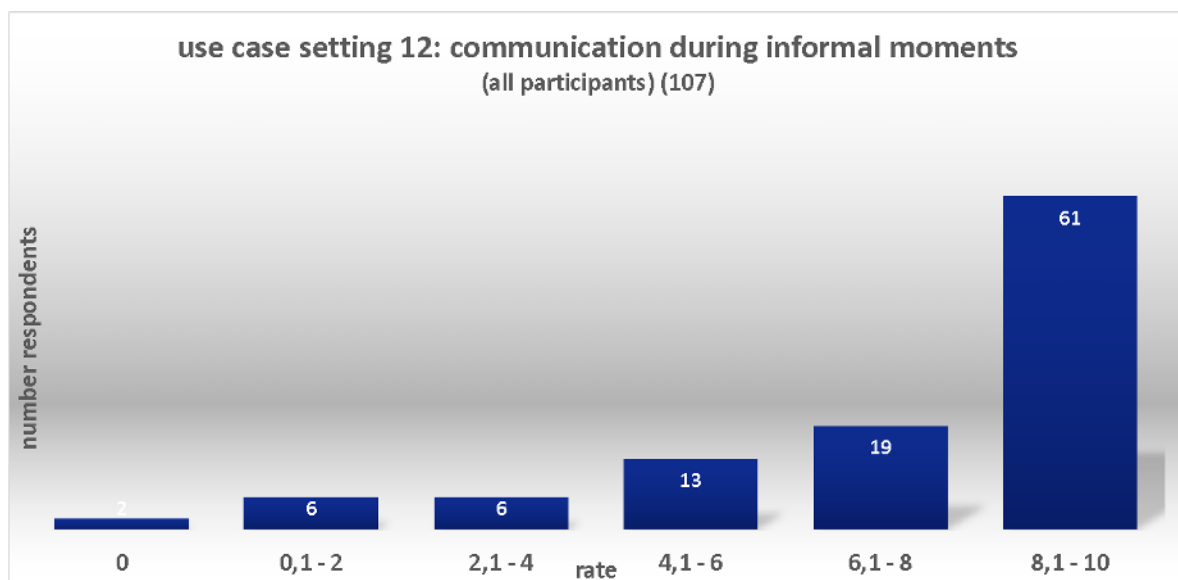
- your colleagues at work during breaks;
- your fellow students/course participants during a study program;
- your fellow students at school.

b) *general results*

In total, 107 respondents assessed the use case setting *“communication during informal moments”*. 2 respondents rated this use case setting a 0. Almost a third of all respondents gave a score between 4 and 8.1

More than half of all participants (61) rated this use case setting an 8.1 or more.

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.

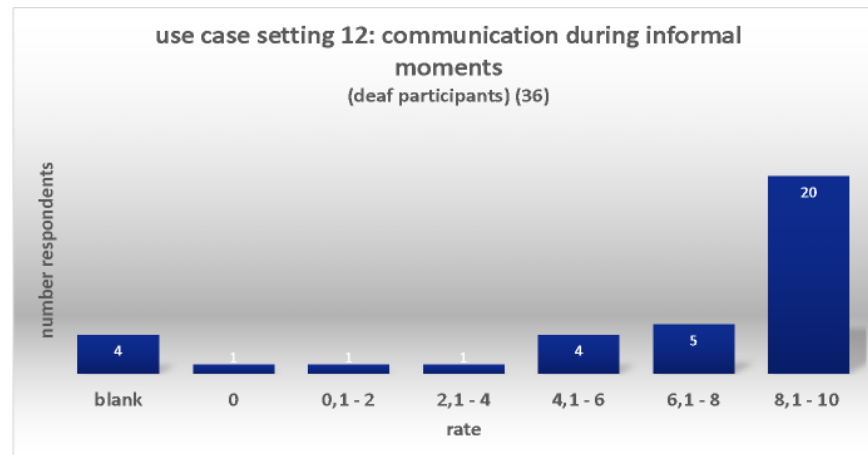


c) *results per respondent group*

i) *deaf participants*

In total, 36 participants of the survey identified themselves as deaf. 4 of them didn't assess use case setting 12. 1 of them rated this use case setting a 0. A quarter of the deaf respondents gave a score between 4 and 6.1

In the score category of 8.1 – 10 were founded more than half of the responses (20).

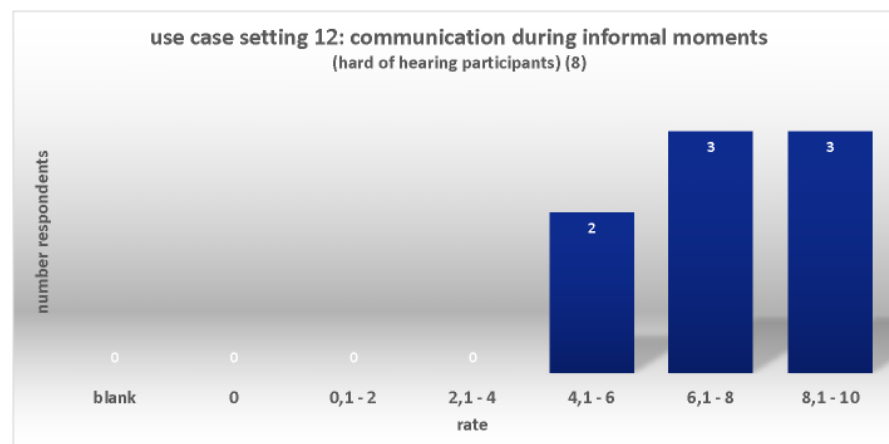


ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 12. None of them rated a 0.

2 hard of hearing participants gave a score between 4 and 6.1 and 3 gave a score between 6 and 8.1

Less than half of the hard of hearing participants (3) rated this use case setting an 8.1 or more.

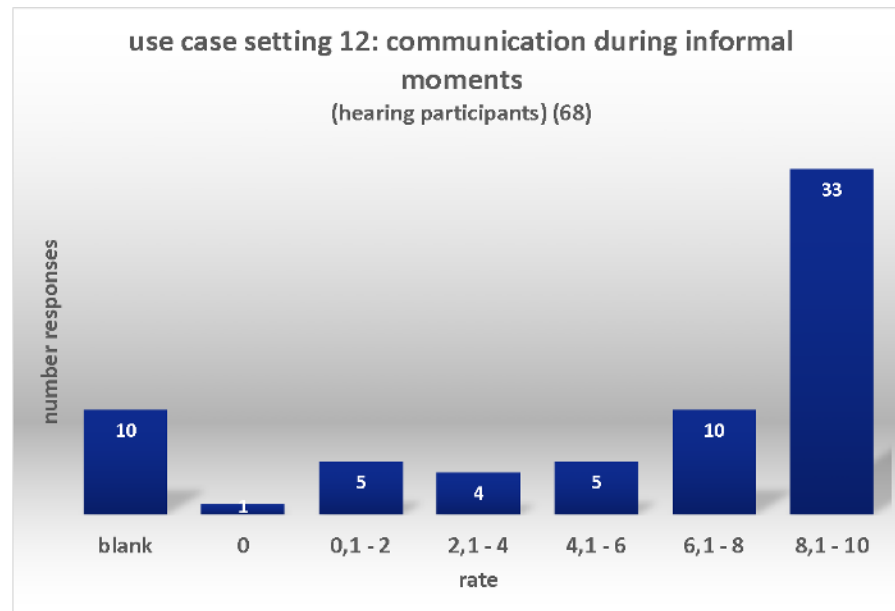


iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 10 of them didn't assess use case setting 12.

1 of the hearing participants rated this use case setting a 0.

Almost half of the hearing participants (33) gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 5.6, the other deafblind respondent rated use case setting 12 an 8.1

Use case setting 13

a) *description*

13. communication in public places:

- when you are waiting on the platform in the train station, the announcement is made that the train will depart from another track. The SignON app translates this information into Flemish Sign Language;

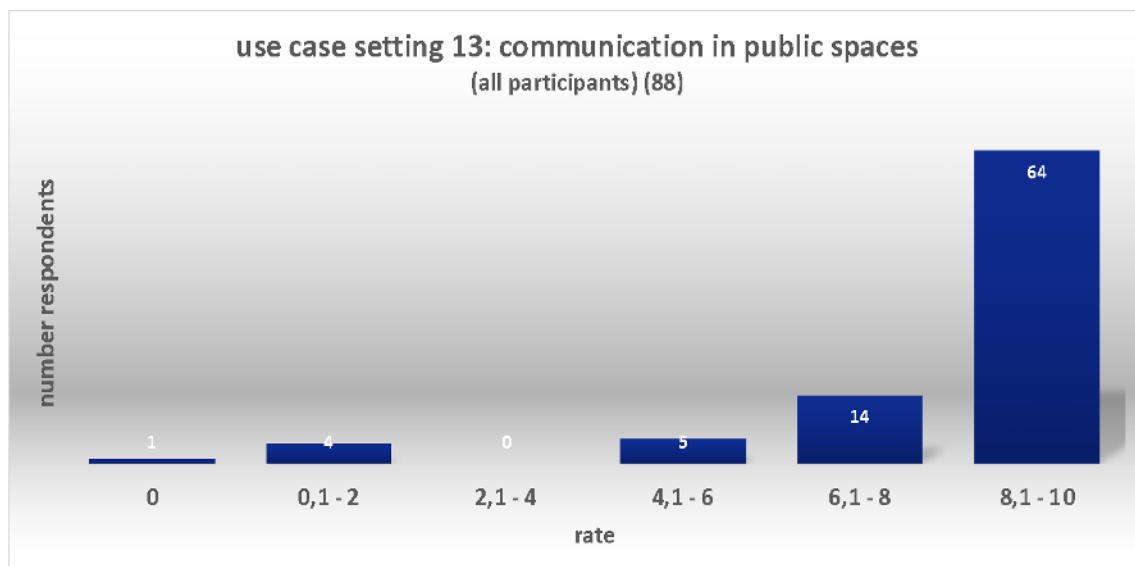
- when you are at the airport, the SignON app translates the announced departure and arrival information into Flemish Sign Language;
- on the train, the SignON app translates the arrival place and time of the train announced by the conductor into Flemish Sign Language.

b) general results

In total, 88 respondents assessed the use case setting “communication in public places”. 1 respondent rated this use case setting a 0.

Almost three-quarters of all participants (64) rated this use case setting an 8.1 or more.

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.

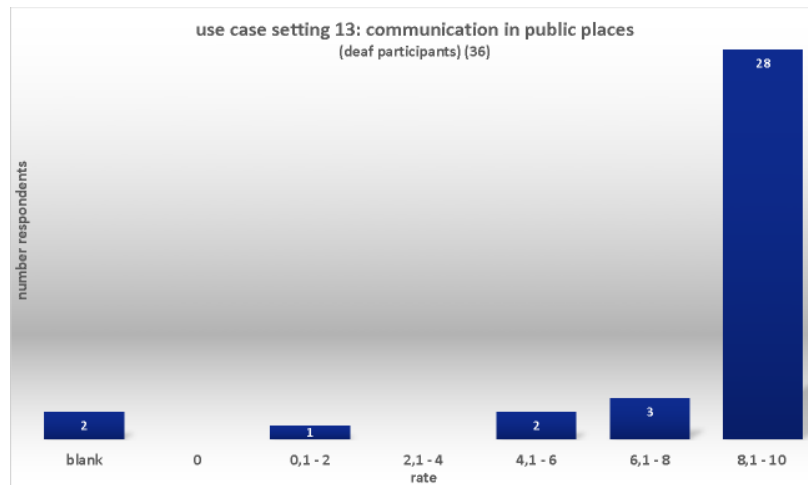


c) results per respondent group

i) deaf participants

In total, 36 participants of the survey identified themselves as deaf. 2 of them didn't assess use case setting 13. None of them rated this use case setting a 0. 5 deaf respondents gave a score between 4 and 8.1

In the score category of 8.1 – 10 were founded more than three-quarters of the responses (28).

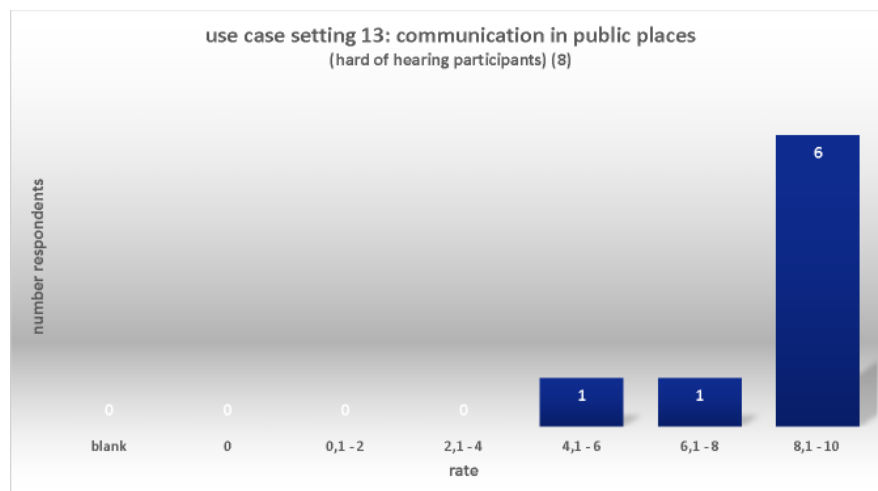


ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 13. None of them rated a 0.

2 hard of hearing participants gave a score between 4 and 8.1

Three-quarters of the hard of hearing participants (6) rated this use case setting an 8.1 or more.

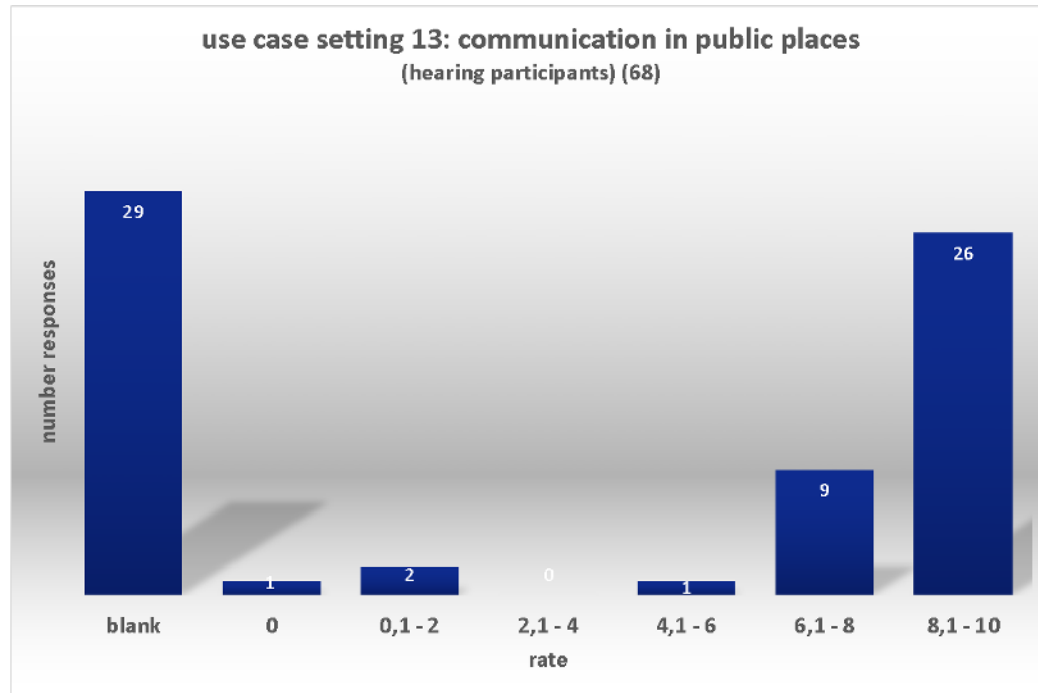


iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 29 of them didn't assess use case setting 13.

1 of the hearing participants rated this use case setting a 0.

Less than half of the hearing participants (26) gave a score of 8.1 or more.



iv) deafblind participants

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 7.9, the other deafblind respondent rated use case setting 13 a 10.

Use case setting 14

a) description

14. News on TV in VGT:

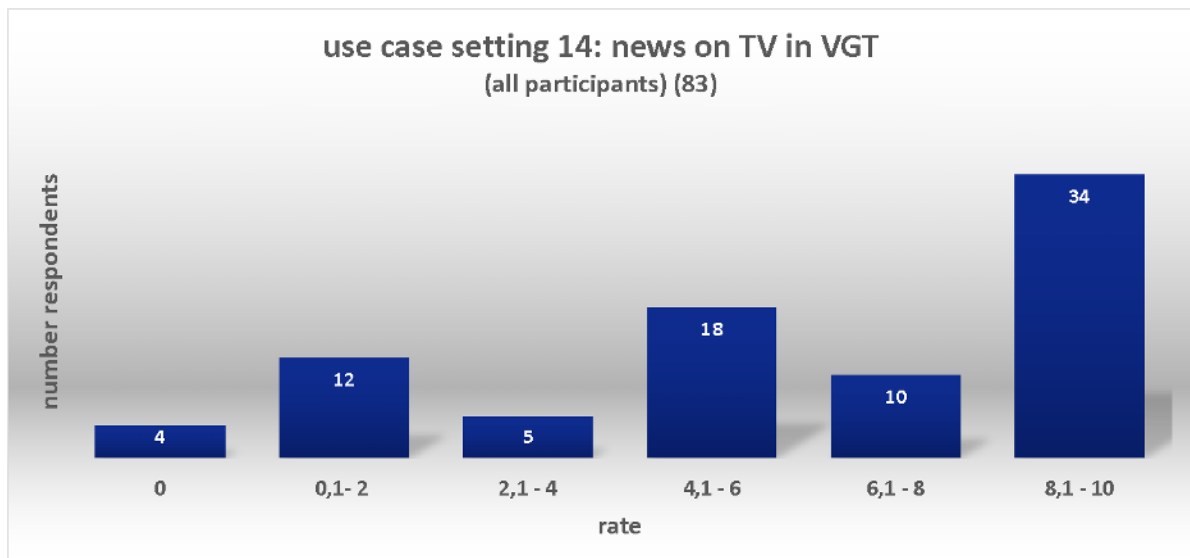
The SignON app translates the daily news on tv into Flemish Sign Language. In this way, you can follow the news via the SignON app.

b) general results

In total, 83 respondents assessed the use case setting “news on TV in VGT”. 4 respondents rated this use case setting a 0. Two-fifths of them gave a score between 0 and 4.1

Less than half of all participants (34) rated this use case setting an 8.1 or more.

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.

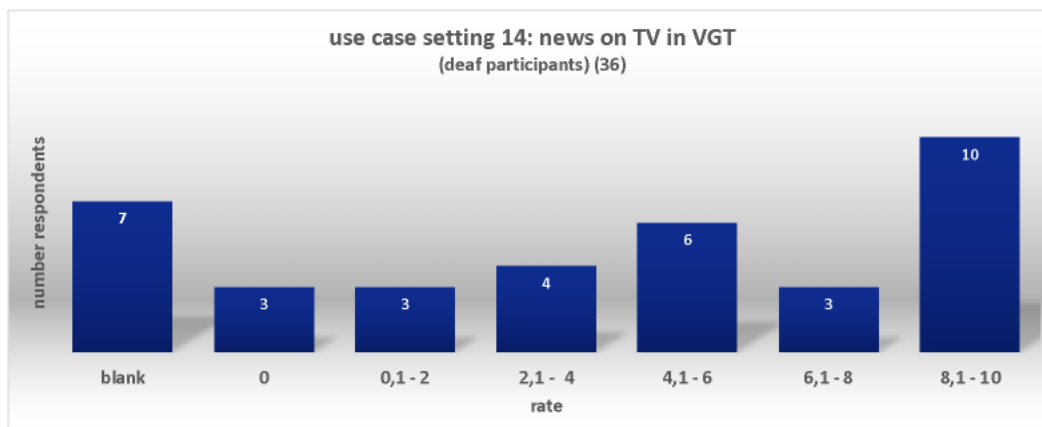


c) results per respondent group

i) deaf participants

In total, 36 participants of the survey identified themselves as deaf. 7 of them didn't assess use case setting 14. 3 of them rated this use case setting a 0. 9 deaf respondents gave a score between 4 and 8.1

In the score category of 8.1 – 10 were founded less than a third of the responses (10).

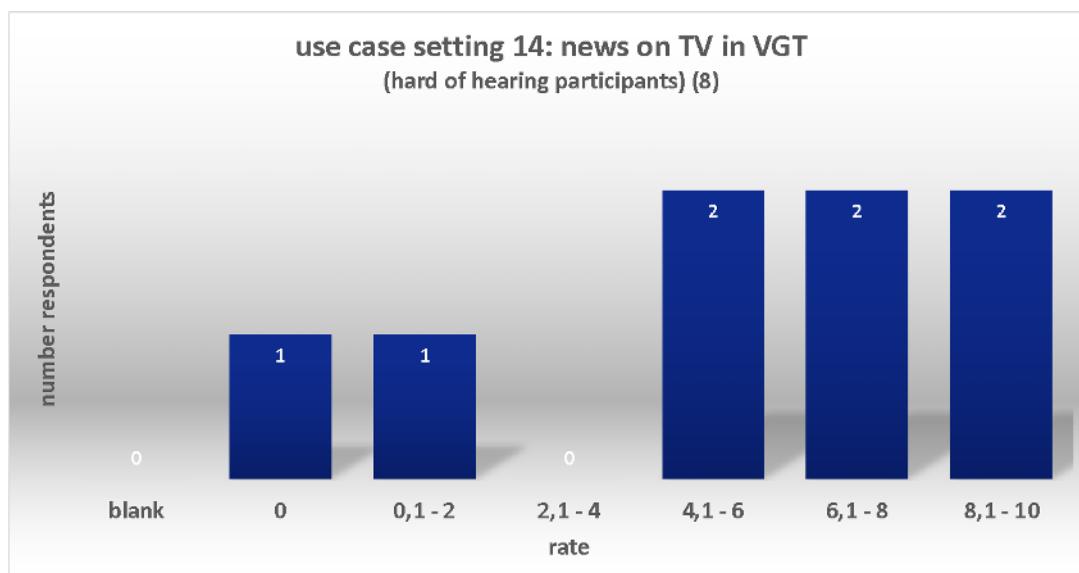


ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 14. 1 of them rated a 0.

Half of the hard of hearing participants gave a score between 4 and 8.1

A quarter of them (2) rated this use case setting an 8.1 or more.

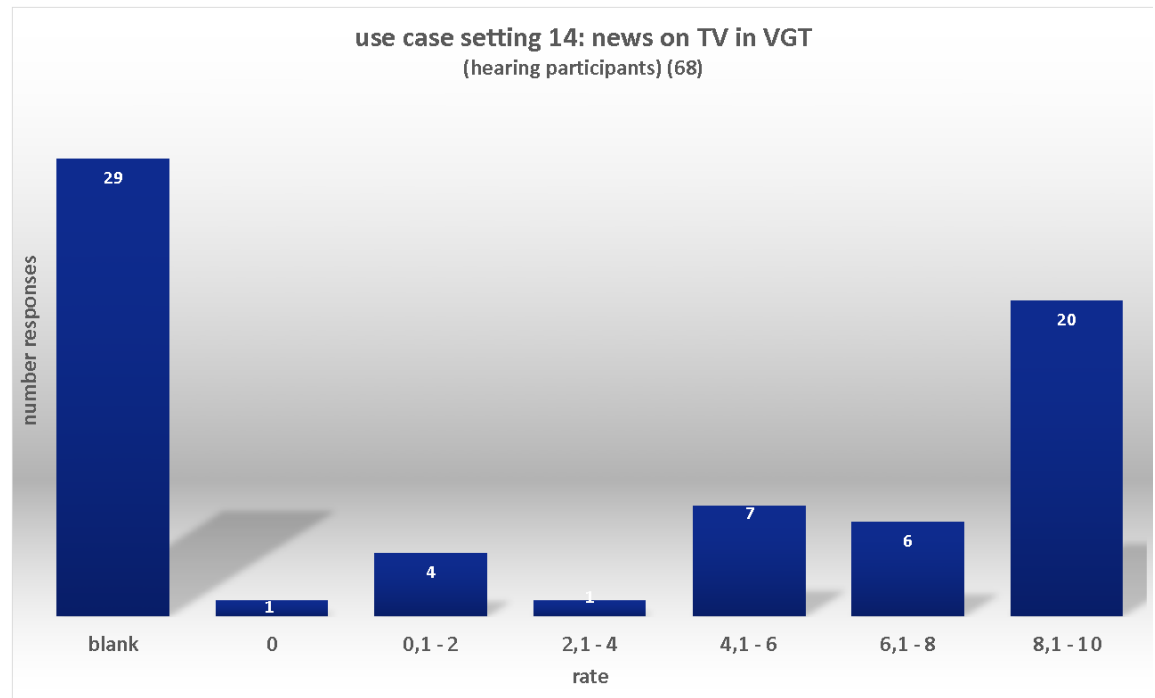


iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 29 of them didn't assess use case setting 14.

1 of the hearing participants rated this use case setting a 0.

Less than a third of the hearing participants (20) gave a score of 8.1 or more.



iv) deafblind participants

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 1.9, the other deafblind respondent rated use case setting 14 a 5.9.

Use case setting 15

a) description

15. crisis communication on TV in VGT:

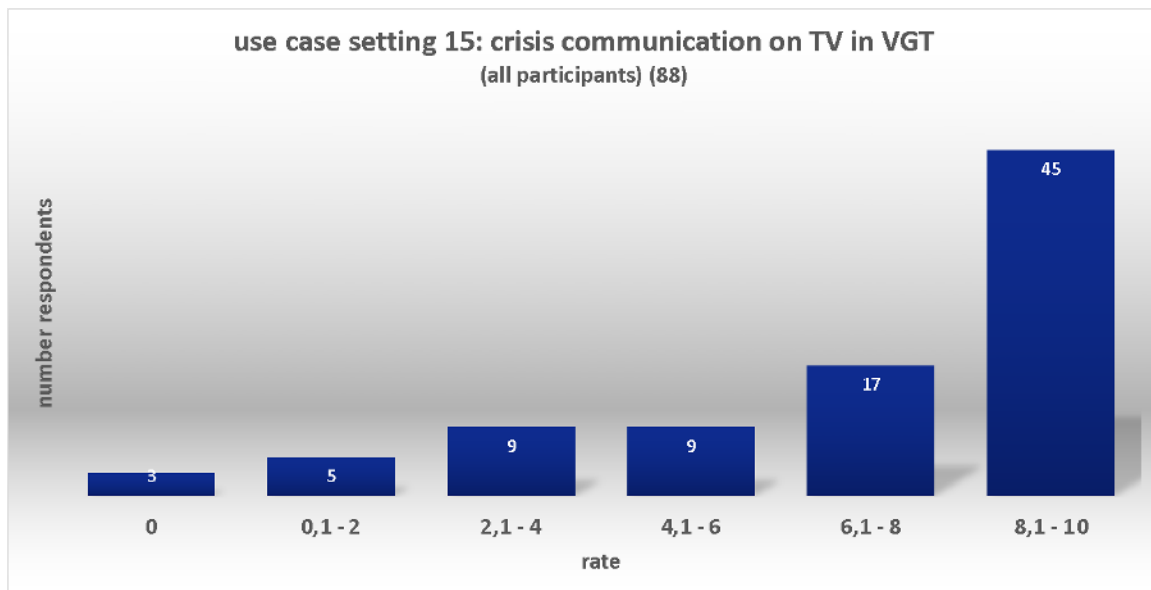
The SignON app translates crisis communication on TV (e.g. press conference about emergency situations) into Flemish Sign Language. In this way, you can follow the crisis communication via the app.

b) general results

In total, 88 respondents assessed the use case setting “*crisis communication on TV in VGT*”. 3 respondents rated this use case setting a 0. Almost two-fifths of them gave a score between 6 and 8.1

More than half of all participants (45) rated this use case setting an 8.1 or more.

The chart below shows on the x-axis the different score categories and their lower and upper limits. On the y-axis, the number of participants is indicated.

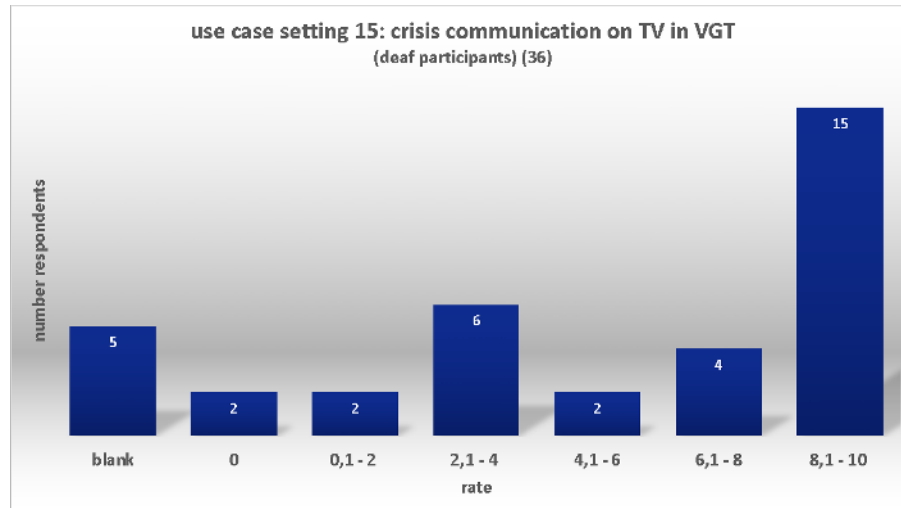


c) results per respondent group

i) deaf participants

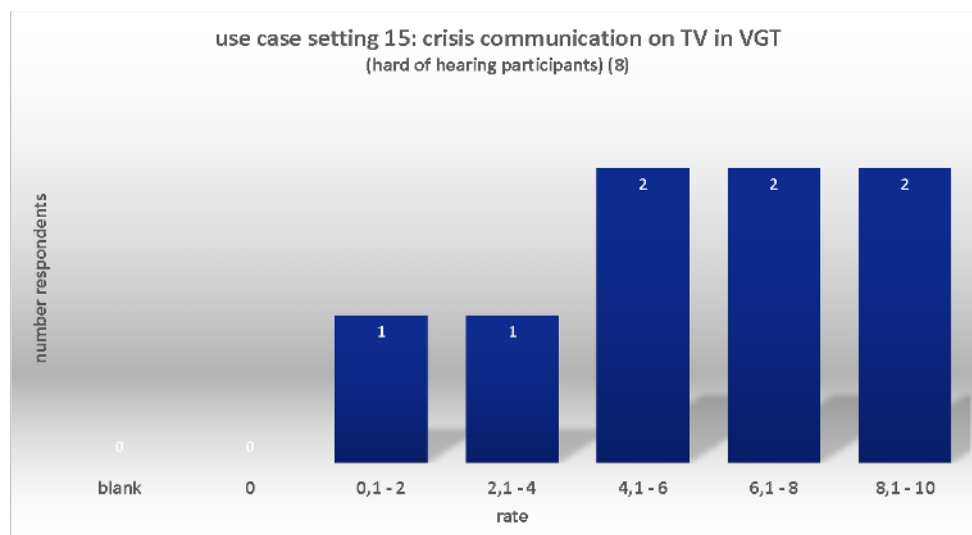
In total, 36 participants of the survey identified themselves as deaf. 5 of them didn't assess use case setting 15. 2 of them rated this use case setting a 0. Almost a quarter of the deaf respondents gave a score between 0 and 4.1

In the score category of 8.1 – 10 were founded two-fifths of the responses (15).



ii) *hard of hearing participants*

In total, 8 participants of the survey identified themselves as hard of hearing. All of them assessed use case setting 15. None of them rated a 0. 2 hard of hearing participants gave a score between 4 and 6.1, 2 between 6 and 8.1 and 2 rated this use case setting an 8.1 or more.

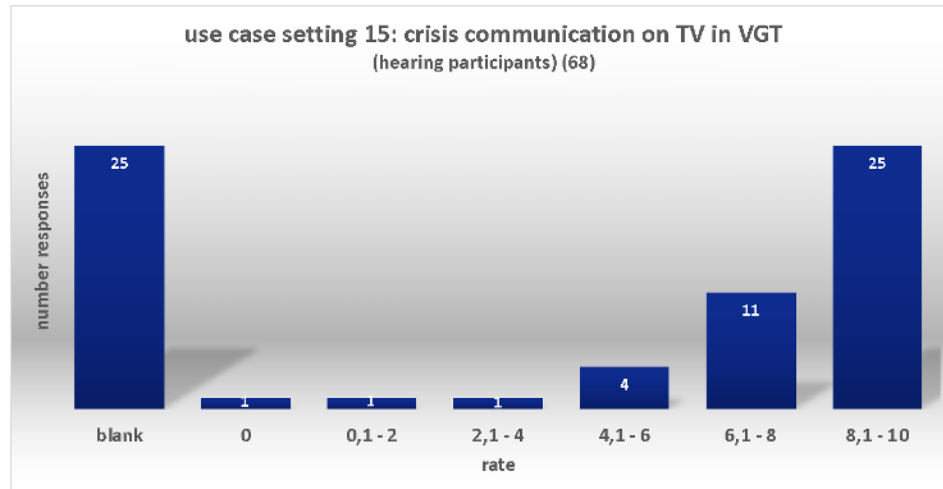


iii) *hearing participants*

In total, 68 participants of the survey identified themselves as hearing. 25 of them didn't assess use case setting 14.

1 of the hearing participants rated this use case setting a 0.

More than a third of the hearing participants (25) gave a score of 8.1 or more.



iv) *deafblind participants*

In total, 2 participants of the survey identified themselves as deafblind. Because of this limited number, their rates are not shown in a separate chart.

One participant gave a score of 3.4, the other deafblind respondent rated use case setting 15 a 10.