**The Integration of Social-Haptic Communication in Deafblind Interpreting and Educational Settings**
edited by Anna Cardinaletti and Laura Volpato

# Haptic Communication and Guide Dog

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**Abstract** In this essay, experiences with using haptic signals to support the use of guide dogs for people with deafblindness are presented. Learning from these experiences is vital to improve communication between a person with deafblindness and their guide dog. The essay describes data and activities, main findings and considerations of necessary preconditions for positive outcomes. The signals that were used are also illustrated.

**Keywords** Haptic communication. Guide dog. Deafblindness. Haptic signals. Interpreters for the deafblind.

**Summary** 1 Introduction. – 2 Data and Activities. – 3 Main Findings. – 3.1 Necessary Preconditions. – 3.2 Need for Different Types of Signals. – 3.3 Satisfaction and Benefits. – 4 Conclusion.

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## 1 Introduction

In this pilot project, we have tested the use of a series of haptic signals to support the use of guide dogs for people with deafblindness. More specifically, we have evaluated the function and outcome of training situations where a person with deafblindness simultaneously receives haptic signals from a provider and cues from a guide dog. In this project, the provider of haptic signals was professional interpreters for the deafblind. Learning from these experiences is important to improve communication between the person with deafblindness and their guide dog. We will argue that improved communication holds a potential to better the mobility and orientation in the everyday lives of people with these disabilities.

An important goal of the project was to facilitate the learning and strengthening of skills of the interpreter, the person with deafblindness and the dog, to strengthen the partnership between the latter two. The signals had to be easy to understand and use amongst the people close to the persons with deafblindness.

We will shortly exemplify the signals used, developed and tested in this project, along with a link to the webpage providing a full overview and catalogue. The signals included a mixture of signals from the Norwegian haptic platform and new signals established during the pilot project. The signals are described in the book *Haptisk kommunikasjon* (Bjørge, Øverås, Rehder 2013; also see the English version *Haptic Communication*, Bjørge et al. 2015) and in the App Haptics: Pocket edition.

The project is a result of a collaboration between the Eikholt National Resource Center for Deafblindness in Norway (called Eikholt from now), Hapti-Co, i.e., the company which developed the system of haptic signals in Norway (see Hagerupsen et al. in this volume), and guide dog schools.

## 2 Data and Activities

The data collected for the project consisted of dialogues, systematic observations and reflections with the participants with deafblindness. The data was generated using a process-evaluation design which meant that interviews and observations were conducted in a stepwise manner. The purpose was to gain insight into how the participants experienced and acted in certain situations or contexts. In the open interviews, the participants provided responses step by step.

In a later stage, we invited the participants to reflect on their experiences and describe the usefulness of the signals when practicing with their guide dog. To collect data in a qualitative good manner, we emphasized the development of a safe, trustful

and positive environment between the project managers and the participants.

### Pilot – Part 1

In the first part of the pilot, three participants with deafblindness, professionals from Hapti-Co and counsellors from Eikholt participated in a three-day workshop consisting of testing, observations and reflections. The testing began by observing and learning from the interactions between the interpreter, the participant and guidedog, without providing initial instructions. It unfolded in a city environment with trafficked streets and populated areas in the city centre. Subsequently, the parties discussed and reflected on the experiences that were generated, on what worked and what did not work, and what they should change or adjust later in the process.

### Pilot – Part 2

From the experiences in part 1, in part 2, we decided to change the surroundings; from the city to a smaller and quieter place at Eikholt, where the testing continued. An important reason was that the dogs became tired from practicing in a noisy city setting. Guide dog instructors from multiple guide dog schools participated. Further reflections and discussions were held after this second part of the pilot.

## 3 Main Findings

### 3.1 Necessary Preconditions

The first main finding from the project concerned necessary preconditions for the participant's experience of relevance and practical usefulness of haptic communication. One precondition that we discovered early in the process concerned clarifying the tasks and roles of the interpreter, the participant with deafblindness, and the guide dog. Having clear roles was important for functional communication. For example, in situations with physical obstacles, whilst the interpreter signalled the participant to stop, the dog began to move around the obstacle in accordance with dog training. Such mixed signals however resulted in confusion amongst all three parties and sometimes resulted in insecurity and uneasiness in the dog.

Another example was the need to clarify whose job it was to praise the dog for good behaviour. In some cases, the interpreter praised the dog instead of the participant with deafblindness. Instead, we emphasized that interpreters should signal to the participant when to reward and praise the dog for good conduct, thereby strengthening the partnership between the participant and the dog. Additionally, it strengthens the participants with deafblindness' perception of control and autonomy.

Furthermore, we discovered that the position of the interpreter on the right-hand side of the participant, approximately at arm's length, prevented the guide dog from being disturbed. We emphasised that the dog must guide, and the interpreter shall provide information about the surroundings and the dog's actions. Thus, there are several issues that should be clarified in advance in the cooperation between the different parties.

Another precondition was participant involvement. We learned that systematic participant involvement in all project phases was essential for understanding the need for different haptic signals. Involvement included collecting perspectives, experiences and feedback from each participant in the design process, to develop targeted and user-friendly solutions.

Essential aspects of participant involvement included:

- Co-design – Involving participants provided the opportunity for them to take part in the development of solutions and the design of the project.
- Prototyping and testing – Participating made it possible for the participants with deafblindness to experiment and provide feedback on what worked and not worked in real situations.
- Experimental learning – Learning based on practical experience and active participation constituted an important overall framework for the project. Learning through active engagement in practical tasks and situations, followed by reflection, facilitated the development of knowledge and skills.

## 3.2 Need for Different Types of Signals

The second main finding from the project was that participants needed to receive a variety of signals to gain information on the behaviour of the dog and information of the surroundings. In turn, this made it possible for them to move safely from one place to another. These signals entailed a mixture of signals from the Norwegian haptic platform and new signals established during the pilot project. The signals included:

- Signals of directions, e.g., touching on the shoulder or arm to indicate whether the receiver of the haptic signal shall turn left, right, or move straight ahead.
- Stop and start signals, e.g., a short firm touch to signal stop and a light repetitive touch to signal start.
- Signals on obstacles, e.g., a gentle touch to warn about a minor obstacle or a more intense touch to suggest a major obstacle.
- Signals of navigation, e.g., signal on approaching a pedestrian crossing by holding the thumb against the palm, spreading the other four fingers and guiding these with the fingertips over the receiver of the haptic signals back. The pedestrian crossing is placed in the previously indicated path and direction.
- Dangerous situation signals, e.g., making a cross sign on the back of the receiver.
- Signals of positive feedback, e.g., the signal DOG is placed on the receiver's back, then a stroke is given with both hands, every other time, with a flat hand on the receiver's back. The signal DOG is given by placing a claw hand on the receiver's back, moving the fingers slightly inwards twice.
- Contextual signals or cues, e.g., the signal DOG given at the top of the receiver of the haptic signals upper arm says that the following signals apply to other dogs and not the participant's own guide dog.

To illustrate signals graphically, here are two examples:

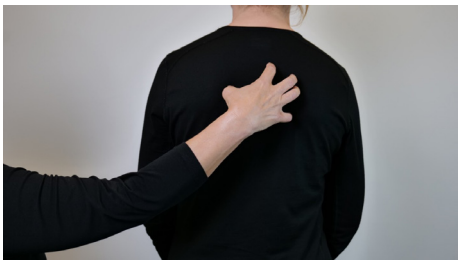

**Figure 1**
The signal DOG given on the receiver of the haptic signals back says that it applies to the receiver's dog in particular. Claw hand moving the fingers slightly inwards twice (source: the app Haptics: Pocket Edition; copyright: Hapti-Co)

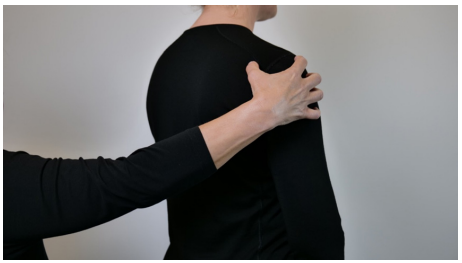

**Figure 2**
The signal DOG given at the top of the receiver of the haptic signals upper arm says that the following signals apply to other dogs. Claw hand is placed at the top of the receiver's upper arm, moving the fingers slightly inwards twice (source: the app Haptics: Pocket Edition; copyright: Hapti-Co)

A full overview and catalogue of the haptic signals can be found at the following webpage: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.eikholt.no%2Fapp%2Fuploads%2F2023%2F09%2FHaptic-communication-and-guide-dog.docx&wdOrigin=BROWSELINK.

For more information on the app Haptics: Pocket Edition, please go to the following webpage: https://www.eikholt.no/en/articles/eikholt-takes-over-the-haptics-pocket-edition-app/.

### 3.3 Satisfaction and Benefits

A third and important finding includes the participants' satisfaction and benefits from taking part in the project. The participants were highly satisfied and found the signals easy to understand. Furthermore, they benefited in the sense that the guide dog and the haptic signals from the interpreter created a sense of security. As some of the participants explained:

> "The signals the interpreter gave me along the way gave me a lot of security. Everything that happened around me with the traffic, especially with cars! Then noise from the surroundings, especially with the Roger pen. The haptic signals for curbs up and down, and stairs, gave me the opportunity to give the right command to the dog".

> "It was very nice to be told about crossing roads in advance, especially in a place I'm not familiar with".

> "Great description of what was in the aisles and places in the shopping centre. Then I got more overview and control".

> "Received a signal that there were small dogs on the right, and that we could go to the left, so we avoided a situation where the dog barked and had to show who was the biggest".

Another issue involved an increased sense of control with the dog when receiving haptic signals. One participant said:

> "The timing of the signals is important for me to be able to command my dog. It's very important for the job to flow, to get flow in walking and stopping".

The ability to differentiate and make decisions when the signal from the interpreter and the dog collided was also underlined as a vital learning outcome:

> "We went towards the front door; there was an obstacle. The interpreter signalled it as danger; I chose to ignore the signal and trusted the dog. The dog handled the situation, and then I had an eye-opening experience. I can receive signals but can choose to use them or not. In that way, I also get to check whether the dog is doing the right thing".

## 4 Conclusion

In the current pilot project, we have tested haptic signals to support the use of guide dogs for people with deafblindness. The purpose was to improve communication and partnership between the people with deafblindness and the guide dog and ultimately facilitate mobility and orientation in their everyday lives. The findings included preconditions for succeeding with the project, the need for different types of signals and participants' satisfaction and benefits. We also provided a link to a catalogue of haptic signals published on the webpage of the Eikholt National Resource Centre for Deafblindness.

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