

# Prototype 1 & 2

## Concept & Evaluation

With these prototypes the aim was to test some of the aspects and properties the final concept might have had.

What I wanted to test was:

- what kind of grip and shape are able to engage the most with the users.
- which interaction works in term of mechanisms (ex. squeezing, rotation, clicking, pressing, moving, sliding,...).
- what is the preferable texture in an ergonomic perspective.
- what body action should be required by the users (fingers/palms)
- which characteristics catches other pedestrian attention (visual/sound)
- which interaction between the direct user and the device works best (passive or active)



1. Overview of the prototype with which the mechanism of squeezing with the hand's palm has been tested



2. First prototype with anthropometric reference and user handle



3. Overview of the prototype with which the mechanism of triggering with the fingers has been tested



4. Second prototype with anthropometric reference and user handle

# Prototype 3

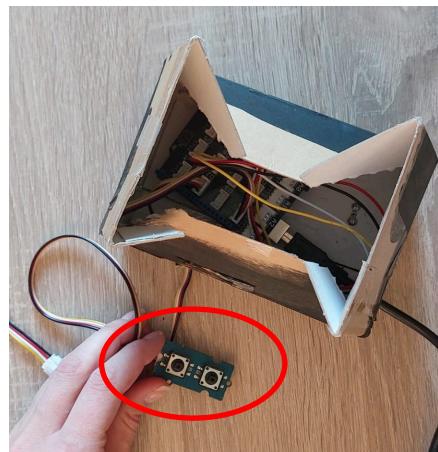
Concept & Evaluation

## Gait supporting device with vibrational live feedback

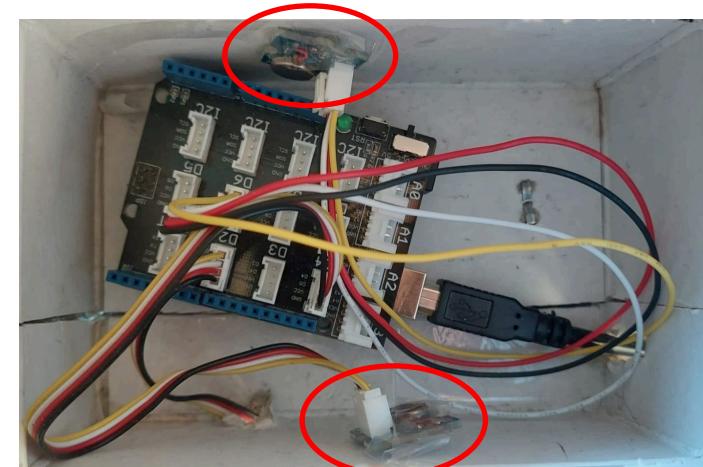
This low-fi prototype has been attached to the phone's cover of the participants. The users have been asked to walk around while using the phone. Through the controller the vibrational sensors, one on the left and one on the right, were activated by the conductor of the test (me) to send some sort of information to the phone user. In the next page the results of the evaluation are visualized. The functions of the device for the E1 & E2 have not been explained while the participants of E3 & E4 where aware of what the device was trying to communicate to them.



1. Overview of the prototype



2. Button controller for the vibration of the left and right motor



3. Inside of the prototype with the two vibration motor

### Insight

- The participants weren't paying any attention to the environment around because too focused on trying to understand what the vibrations were communicating to them
- The vibration can be easily misinterpreted as a phone notification (texts, calls,...)

See appendix p. 106 for details

# Evaluation prototype 3

Concept & Evaluation



	Predictable	Engaging	Create consciousness	Communicative	Playful
E1					
E2					

E1 & E2 with four different participants, by maintaining the same role for the whole session (1 phone user, 1 pedestrian) no switching role

	Predictable	Engaging	Create consciousness	Communicative	Playful
E3					
E4					

E3 & E4 with the same two participants but two separate session of testing by switching roles in between

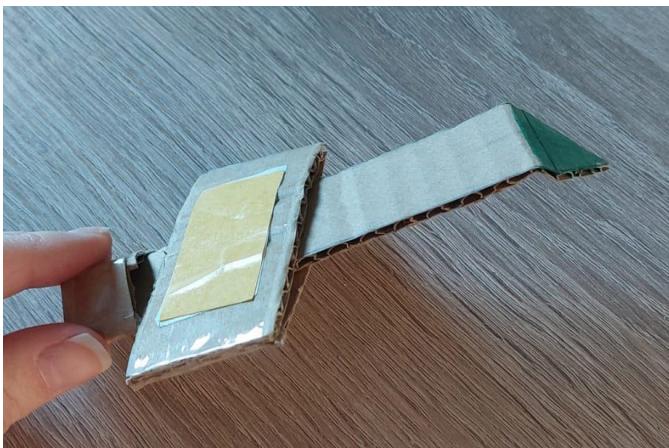
See appendix p. 95 for evaluation plan and from p. 106 for results

# Prototype 4

Concept & Evaluation

## Manually controlled direction indicator device

This low-fi prototype has been attached to the phone's cover of the participant. The user has been asked to walk around while using the phone and at the same time to move the pointer left or right if he/she had the intention to move in one of these directions or had the feeling of being doing it. The other pedestrian didn't have any direct interaction with the prototype.



1. Overview of the prototype



2. Indicator for other pedestrian



3. Mechanism for the movement of the indicator

### Insight

- The mechanism, compared to the Prototype 3, was more engaging for both the user and the stakeholders
- More visibility of the device is needed
- The direct user feels that he is communicating with others even though doesn't have a live feedback

See appendix p. 111 for details

# Evaluation prototype 4

Concept & Evaluation

 Phone user  Other pedestrian

	Predictable	Engaging	Create consciousness	Communicative	Playful
E1	 	 	 	 	 
E2	 	 	 	 	 

E1 & E2 with four different participants, by maintaining the same role for the whole session (1 phone user, 1 pedestrian) no switching role

	Predictable	Engaging	Create consciousness	Communicative	Playful
E3	 	 	 	 	 
E4	 	 	 	 	 

E3 & E4 with the same two participants but two separate session of testing by switching roles in between

See appendix p. 95 for evaluation plan and from p. 111 for results

# Prototypes insights

Concept & Evaluation

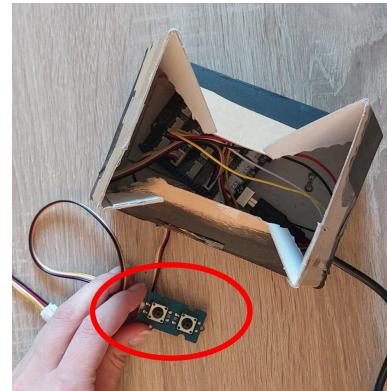
- 1 The functionality of the device should be pretty intuitive for both the direct user and for the stakeholders of the interaction
- 2 The presence of an active interaction with the mechanism of the device by the user has a positive impact on:
  - creating consciousness on the phone user about the surrounding environment
  - the engagement of the stakeholders
- 3 The visibility of the device it is essential for a successful interaction
- 4 The activation of the mechanism of the device with the fingers might be not the optimal interaction while the palm of both hands is often not used
- 5 In the E3 and E4 of both the third and forth prototype it is noticeable a relevant improvement in terms of rating from the participants. This is due to the fact that those two evaluation has been done by making the participants play first the role of the phone user and then the role of the stakeholder. They were then more aware and conscious of the functionality of the prototypes

# Prototype 3

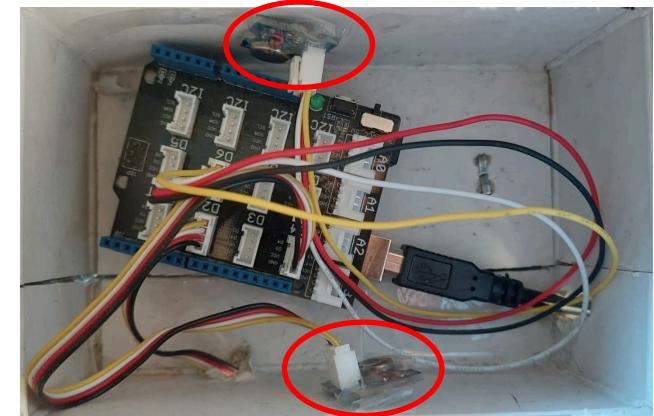
## Gait supporting device with vibrational live feedback



Overview of the prototype



Button controller for the vibration of the left and right motor



Inside of the prototype with the two vibration motor

## Test session



1. Set up of the device and explanation of the task



2. Actual test in action and observation of the participants behaviour



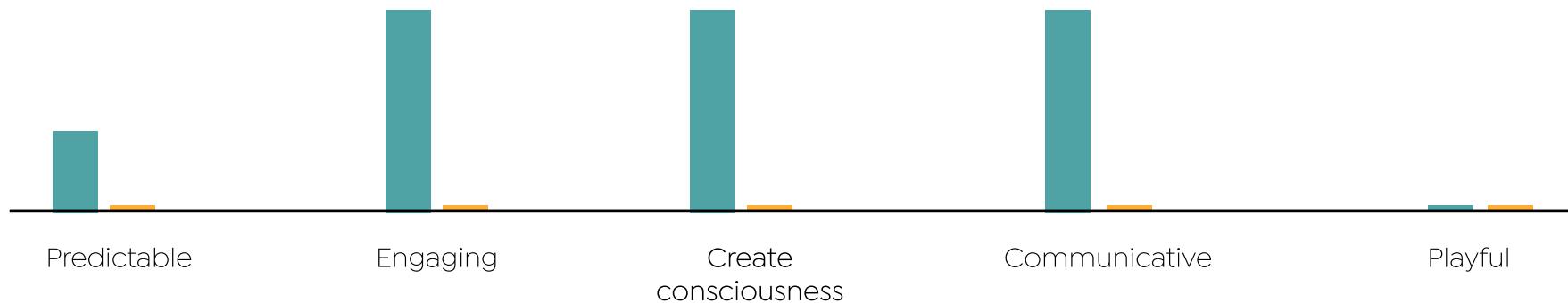
3. Discussion and comments about the test. Evaluation of the prototype by both the participants

# Evaluation 1

■ Phone user  
■ Other pedestrian

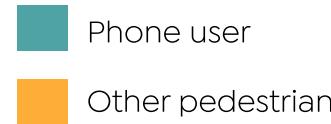
This test has been made without informing the participants about the function of the device. Both the pedestrian with the phone (which is then using the device) and the pedestrian without the phone had to figure it out themselves during the test.

## Vibration prototype



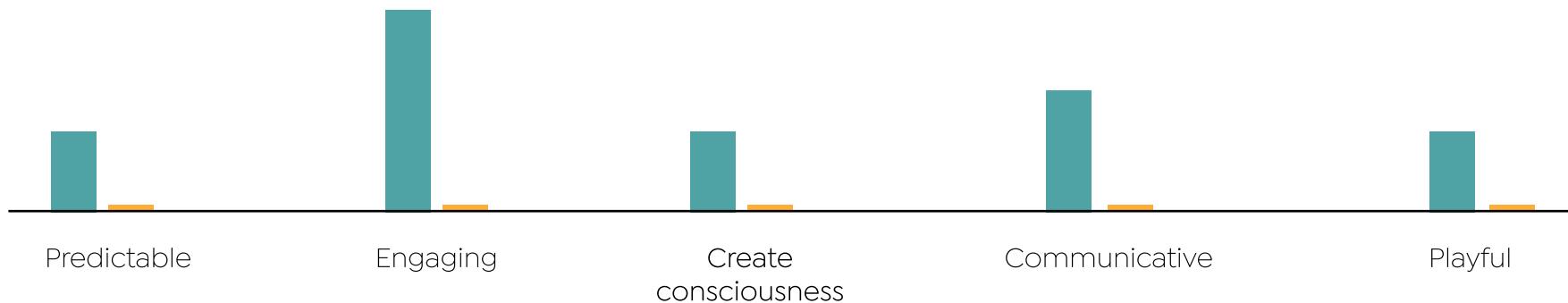
1. The other pedestrian was not at all aware of what was going on for the phone user
2. Phone user was more aware about the outside of his phone, he had the feeling that something was happening
3. The pedestrian with the phone was not really sure what the device was communicating but he had the perception that the device was telling him something
4. The vibration is not really playful

# Evaluation 2



This test has been made without informing the participants about the function of the device. Both the pedestrian with the phone (which is then using the device) and the pedestrian without the phone had to figure it out themselves during the test.

## Vibration prototype



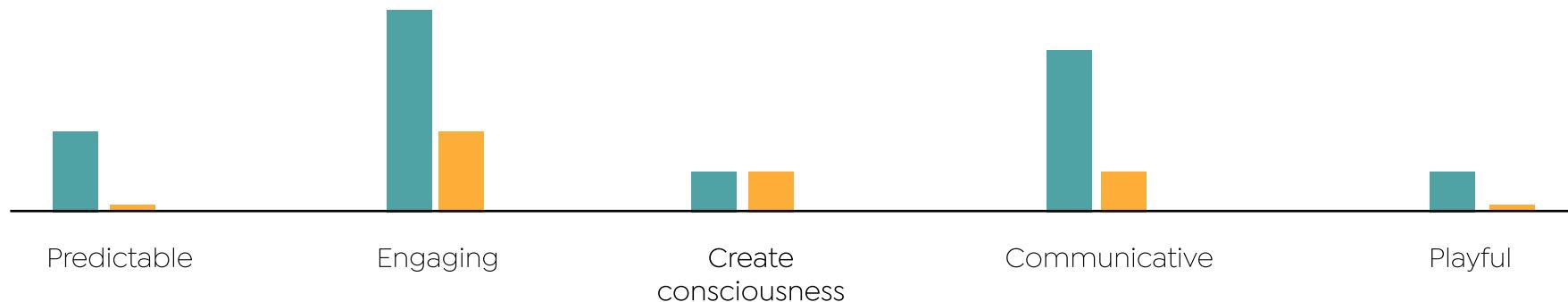
1. The vibration doesn't work that well in combination with the phone because there could be some misunderstanding in the information and a conflict of notification. The pedestrian with the phone wouldn't be sure if the vibration comes from the device or from the phone system.
2. It didn't create consciousness for the pedestrian that was using it because she was focusing more on the mechanism and to try to understand what the device was trying to communicate to her than on the environment
3. The pedestrian with the phone had the feeling that she was trying to communicate with the other pedestrians but had no clue and did not have the feeling that the communication went through.

# Evaluation 3\_Switching roles

■ Phone user  
■ Other pedestrian

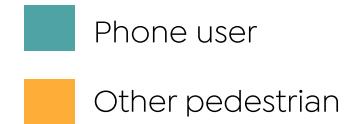
This test has been made after informing the participants about the function of the device. Both the pedestrian with the phone and the pedestrian without the phone knew what was going on during the test. They don't only knew that the functions but one at the time they played the two different roles. This helped them to know the device and the mechanism of it.

## Vibration prototype



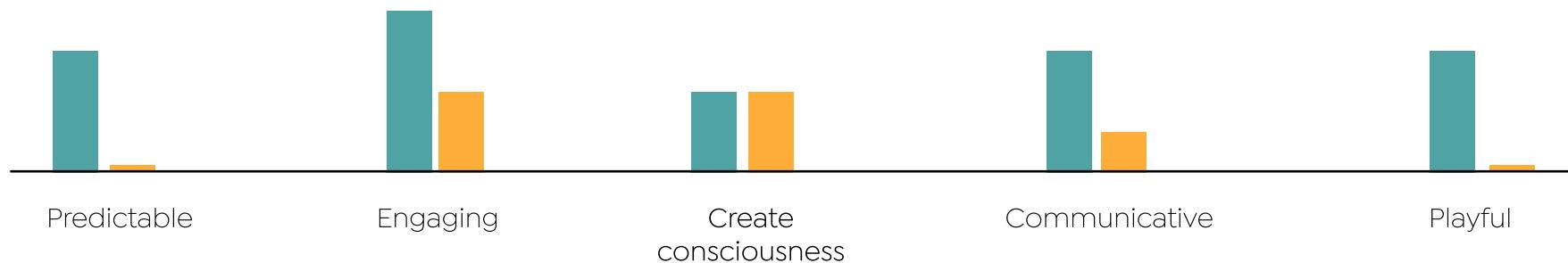
1. Knowing the device helped the pedestrian without the phone to feel more engaged, also the consciousness and the communicability of the device increased a bit but still not enough to consider the score satisfactory

# Evaluation 3\_Switching roles



This test has been made after informing the participants about the function of the device. Both the pedestrian with the phone and the pedestrian without the phone knew what was going on during the test. They don't only knew that the functions but one at the time they played the two different roles. This helped them to know the device and the mechanism of it. One was then playing the role of the Leader and the other the follower and vice versa.

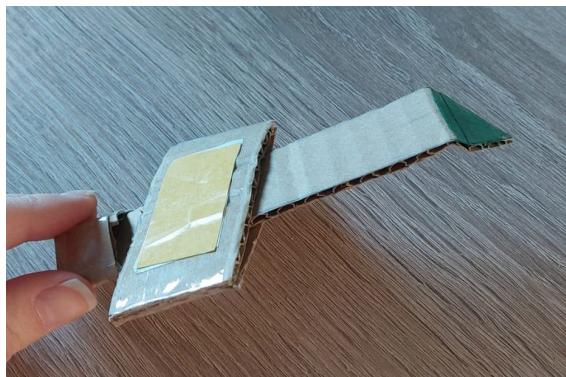
## Vibration prototype



1. This shows that once the role have been switched some parameters increased a bit compared to the first half of the test. For sure communication to the participants the functions of the device helped them.
2. The results still show that the use of this kind of technology it is not optimal because doesn't rebalance the interaction but the results even if not with great success are still visible only in the pedestrian with the phone side

# Evaluation

## Direction prototype



Overview of the prototype



Indicator for other pedestrian



Mechanism for the movement of the indicator

## Test session



1. Set up of the device and explanation of the task

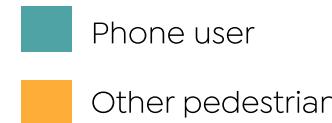


2. Actual test in action and observation of the participants behaviour



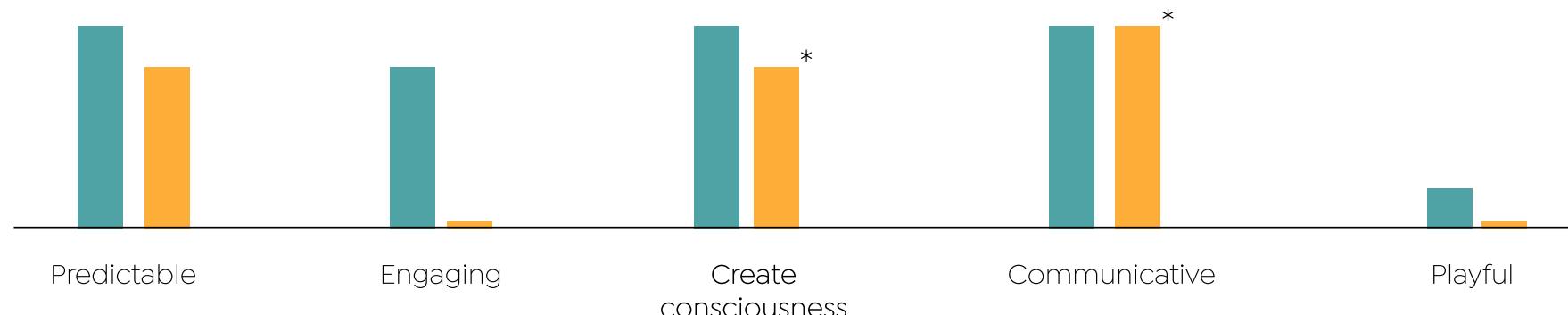
3. Discussion and comments about the test. Evaluation of the prototype by both the participants

# Evaluation 1



This test has been made by telling the pedestrian with the phone to move and engage with the mechanism while walking around and performing tasks on his phone. The phone's user have been told that his aim was to control the mechanism by moving it right or left depending on whether he was going to move or he had the perception that he was right or left, at the same time do tasks on his phone. While the pedestrian without the phone was not informed about what to expect from the test.

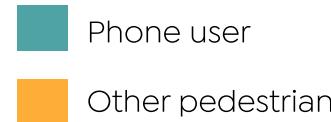
## Direction prototype



\*the score given by the other pedestrian was justified by this sentence “If i know the product then i would know what it does”

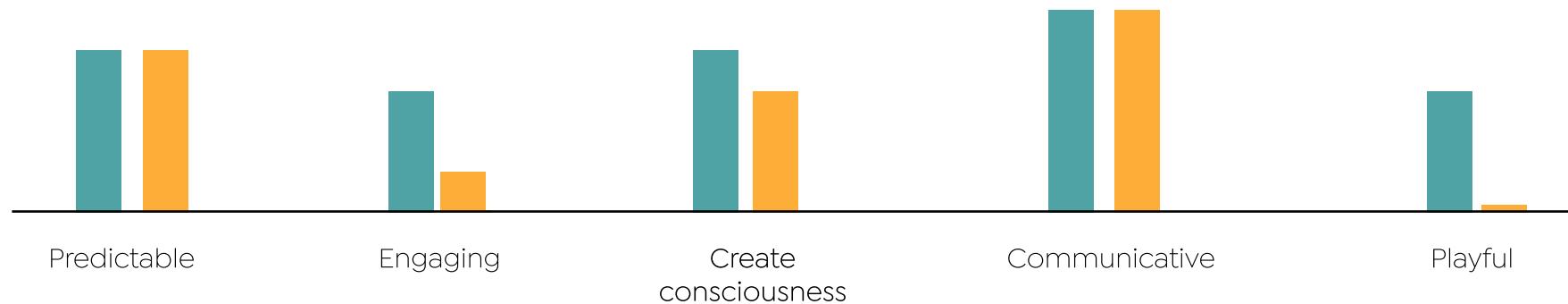
1. The fact that you control it yourself make it predictable
2. The arrow pointer made it predictable for the other pedestrian
3. For the phone user it was engaging but not completely. He wasn't sure he was doing it correctly
4. It wasn't engaging for the other pedestrian at all
5. It was creating a lot of awareness in the phone user
6. The phone user had the perception that the device was communicating more towards himself than to the others. He had no feedback about the other pedestrians understanding
7. A bit more playful than the other prototype

# Evaluation 2



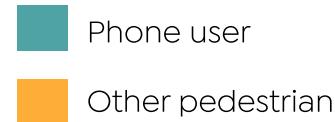
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## Direction prototype



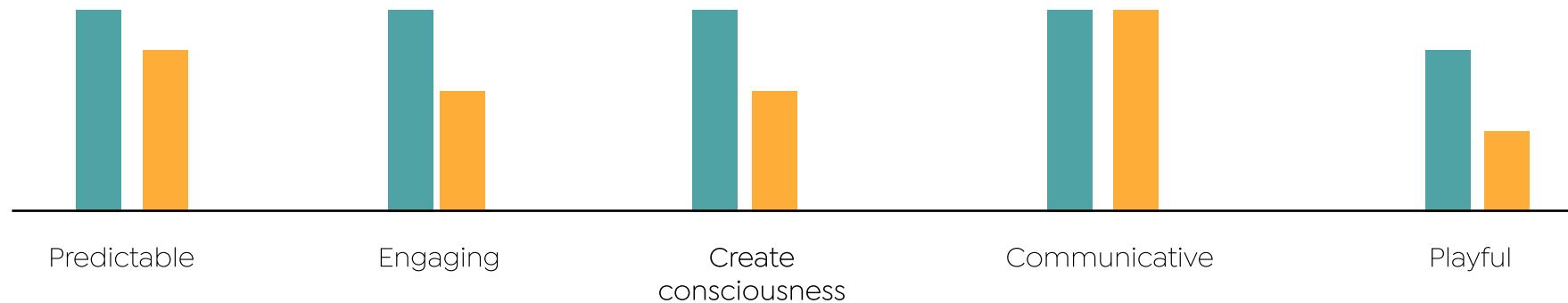
1. Pedestrian with the phone using the device “I really had to pay attention on what I was doing and where I was moving in order to control the device and the task on the phone and it made me more aware of my body movement in the environment”
2. It can be made more playful by thinking of different shapes but the idea of moving and interaction with it make it already pretty engaging for the pedestrian with the phone
3. The **pedestrian with the phone felt like she was communication with the others even without having a live feedback of it** but the experience was satisfactory already
4. It is predictable and communicative for the pedestrian without the phone but it could be even more if more visible.

# Evaluation 3\_Switching roles



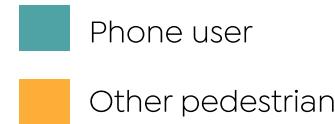
This test has been made by telling the pedestrian with the phone to move and engage with the mechanism while walking around and performing tasks on his phone. The phone's user have been told that his aim was to control the mechanism by moving it right or left depending on whether he was going to move (or he had the perception to move) right or left, at the same time carry out tasks on his phone. The pedestrian without the phone was also informed about the function of the device. In addition the roles have been switched and both the participant where at one time the leader and another time the follower.

## Direction prototype



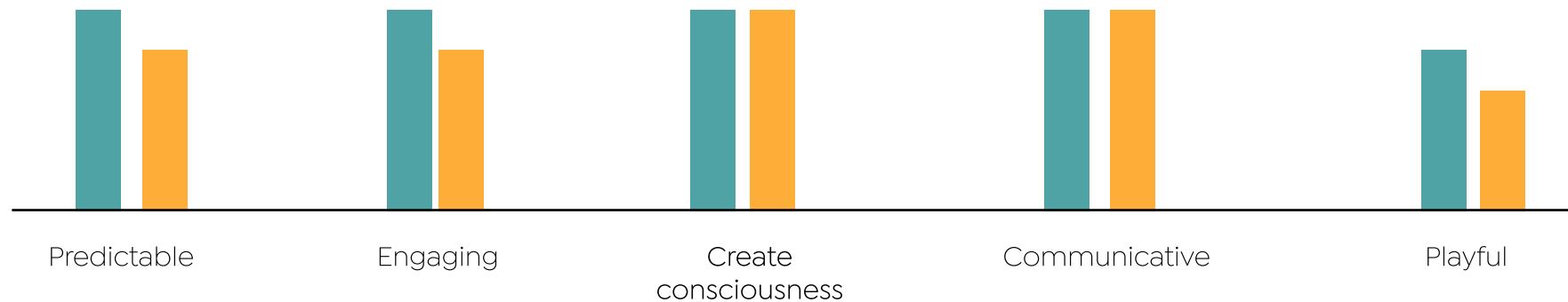
1. The score already improved by informing the participant about the functions of the device. Is results derives from the first half f the test, in the next slide the situation improved even more due to the fact that the roles where switched and this helped to rise the consciousness and the engagement for the other pedestrians.

# Evaluation 3\_Switching roles



This test has been made by telling the pedestrian with the phone to move and engage with the mechanism while walking around and performing tasks on his phone. The phone's user have been told that his aim was to control the mechanism by moving it right or left depending on whether he was going to move (or he had the perception to move) right or left, at the same time carry out tasks on his phone. The pedestrian without the phone was also informed about the function of the device. In addition the roles have been switched and both the participant where at one time the leader and another time the follower.

## Direction prototype



1. The scores for most of the qualities increased by letting them know the function and by making them play the Leader role or the Follower role like in a dance.
2. They both knew what was going one and what to expect from the other. The device could be a little bit more engaging and predictable for the other pedestrian to make the interaction balanced for both sides.