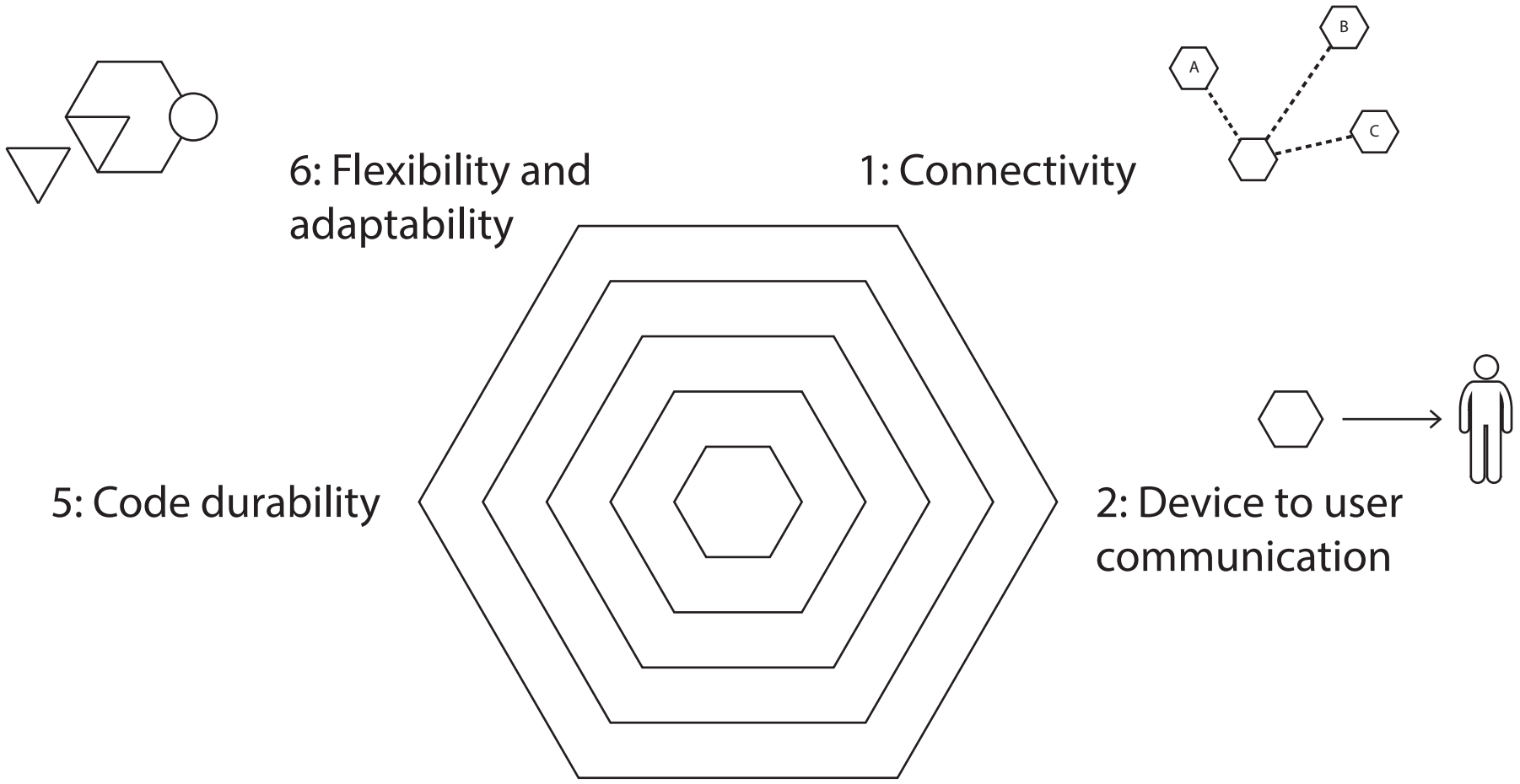
Evaluation


A
B
C
6: Flexibility and adaptability
1: Connectivity
5: Code durability
2: Device to user communication
4: Interaction complexity
3: User to device communication

1: Connectivity

The design can easily interact with other (smart) devices

a. Integration support
b. Completeness of exchanged information (information, control)

2: Device to user communication

The design communicates to the user through multiple types of information (v/p/t/s)

a. Direct from interface
b. Alternative settings and means
c. External other devices

3: User to device communication

The user can communicate to the design through many types of methods (v/p/t/s)

a. Direct from interface
b. Alternative settings and means
c. External other devices

4: Interaction complexity

Interactions are simple, straightforward, and clear to the user

a. Steps
b. Function allocation variation
c. Duration

5: Code durability

Code is maintainable and reliable

a. Structured and properly labeled code (readable, maintainable, accessible)
b. Stable connection to other devices to allow complete interaction

6: (Optional) Flexibility and adaptability

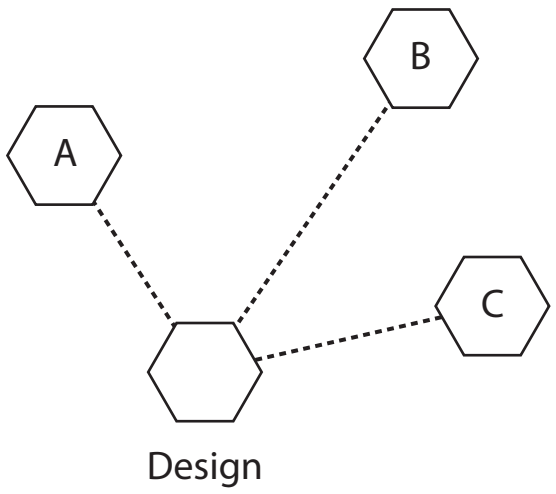
Flexible interfaces are supported by the design

a. Integrated settings in the design allow different alternatives for the communicated information types and/or interaction methods
b. Open access for tinkering allow users to make changes to allow different communicated information types and/or interaction methods

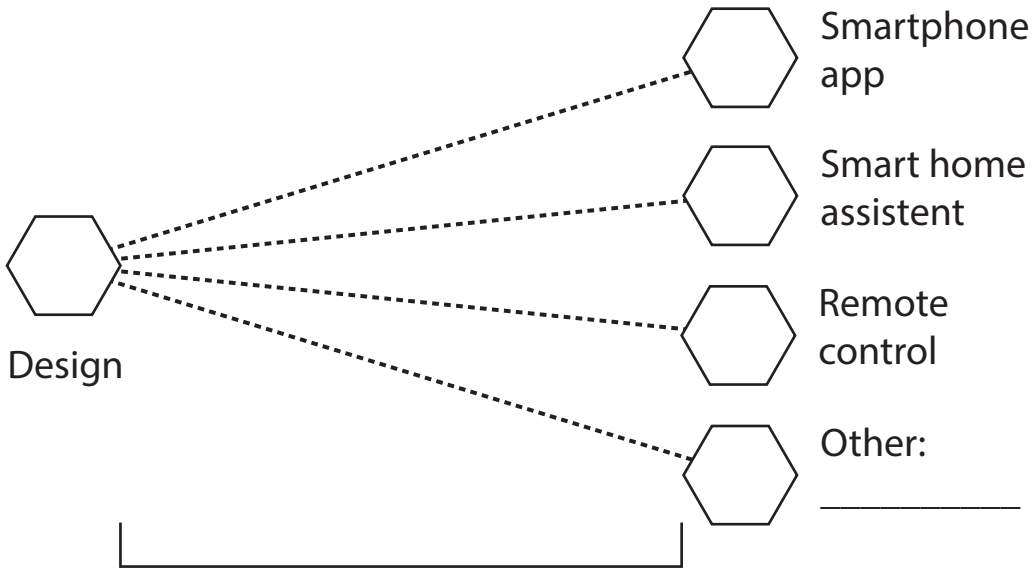
1: Connectivity

The design can easily interact with other (smart) devices

a. Integration support
b. Completeness of exchanged information (information, control)



A. Compatible devices



	No support	Yes, for some	Yes, for all

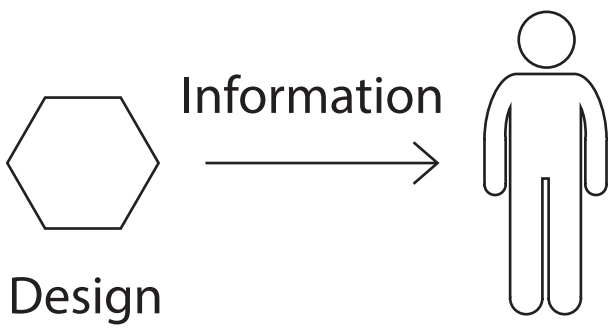
B. Information communicated to compatible devices

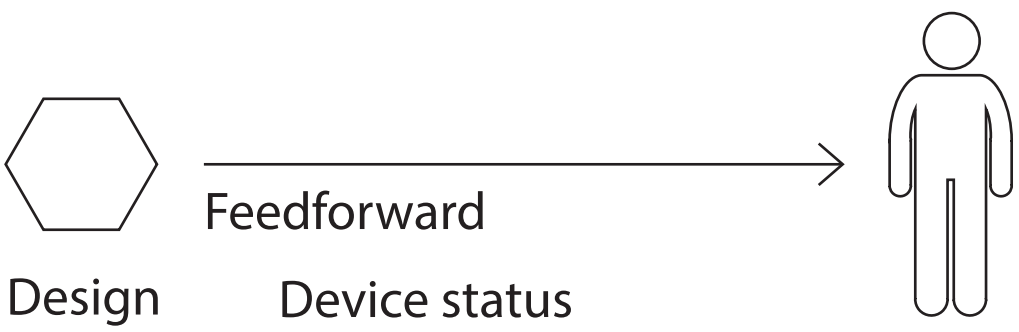
	None	Partial	All
Device status			
Control options			
Notifications and errors			

2: Device to user communication

The design communicates to the user through multiple types of information (v/p/t/s)

a. Direct from interface
b. Alternative settings and means
c. External other devices





What is the design doing at this moment?

(Interface) functions

What can the device do, and how can the user interact with the device?

Notifications and errors

What information about status changes and errors is communicated?

Visual feedforward is communicated through (digital) static or interactive elements like colors, icons, text, and lights.

Physical feedforward is communicated through mechanical characteristics like the design's shape, physical state, present (interface) elements, and location of (interface) elements.

Tactile feedforward is communicated through the embodied characteristics of physical elements like the texture, shape, and size.

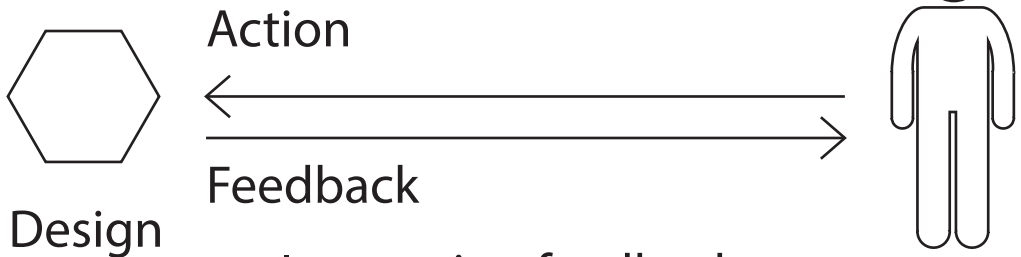
Sound feedforward is communicated through the inherent and augmented sounds of the device like jingles, speech and voice descriptions, and operational noises.

Visual feedback is communicated through changes in (digital) (interface) elements like colors, icons, text, and lights.

Physical feedback is communicated through direct or indirect changes of mechanical characteristics like the design's shape, physical state, movement of (interface) elements, and location of (interface) elements.

Tactile feedback is communicated through haptic responses from the embodied or digital characteristics of (interface) elements like clicks, mechanical resistence, vibration, and operational haptic information.

Sound feedback is communicated through inherent and augmented audio responses like jingles, speech and voice descriptions, and operational noises.



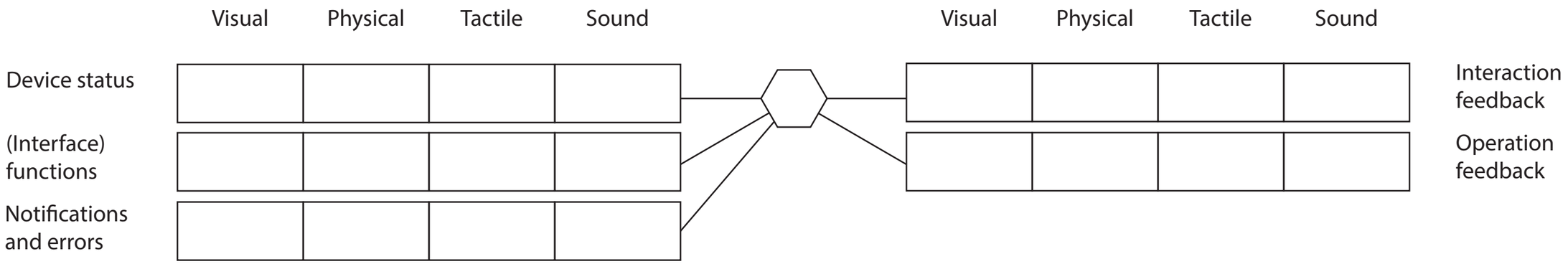
Interaction feedback

Responses to communication with the device interface.

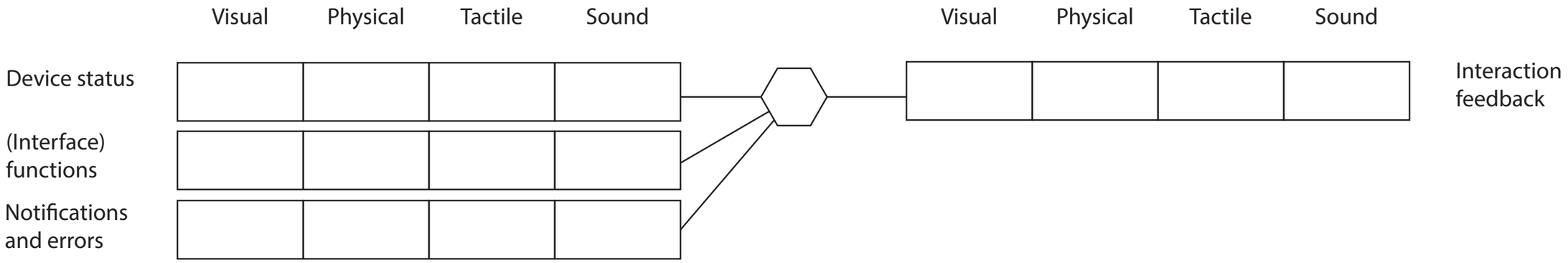
Operation feedback

Information observable by the user when a task is executed.

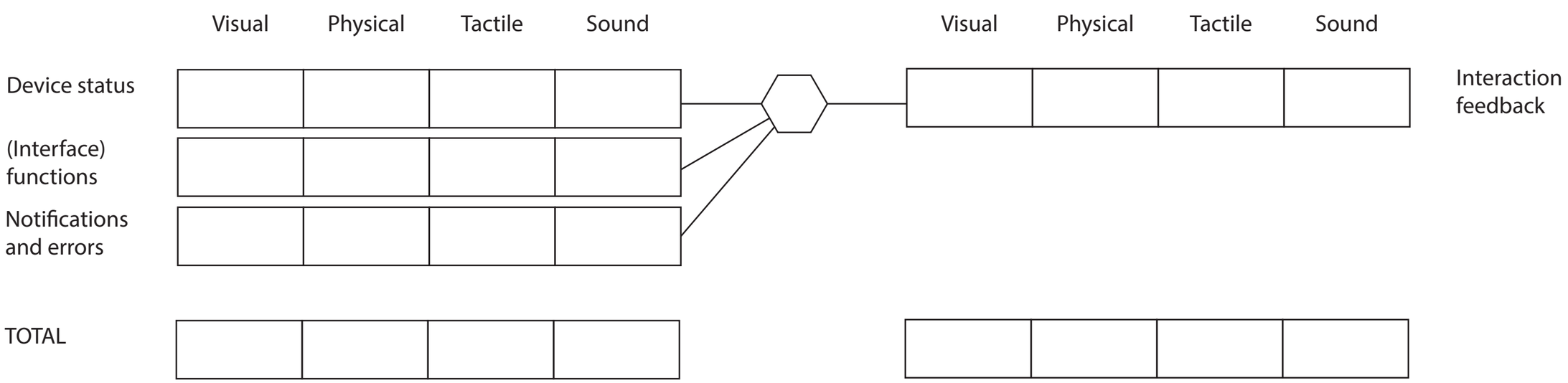
A. Direct from interface



B: Alternative settings and means (device remote control, enabling settings)



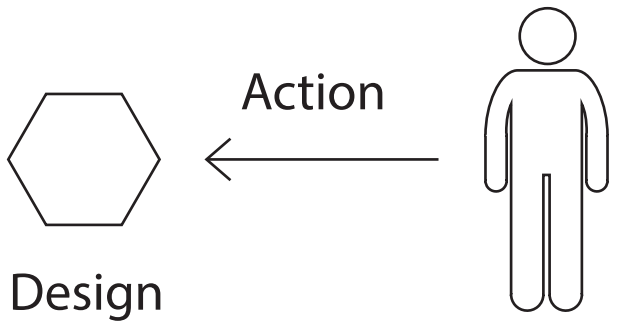
C: External other devices (smart home dock, smartphone app, external remote)



3: User to device communication

The user can communicate to the design through many types of methods (v/p/t/s)

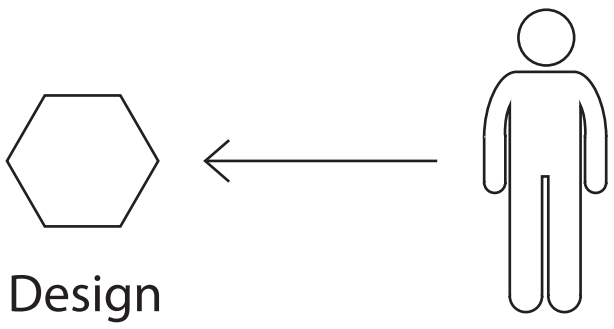
a. Direct from interface
b. Alternative settings and means
c. External other devices



Actions	Examples	Feedback types
Two-dimensional	Tapping touchscreen items, touchscreen gesture commands, tapping/touching smooth areas	Visual, (haptic), (sound)
Embodied	Pressing buttons, twisting dials, moving parts, placing parts	Physical, haptic, (visual), (sound)
Hands-free	Speech commands, gestures, prescence	Any

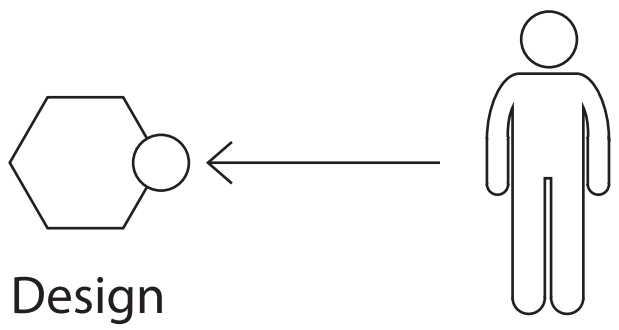
A. Direct from interface

	Visual	Physical	Tactile	Sound
2D				
Embodied				
Hands-free				



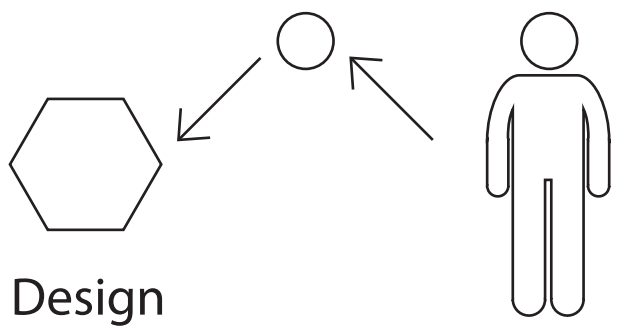
B: Alternative settings and means (device remote control, enabling settings, etc.)

	Visual	Physical	Tactile	Sound
2D				
Embodied				
Hands-free				



C: External other devices (smart home dock, smartphone app, external remote, etc.)

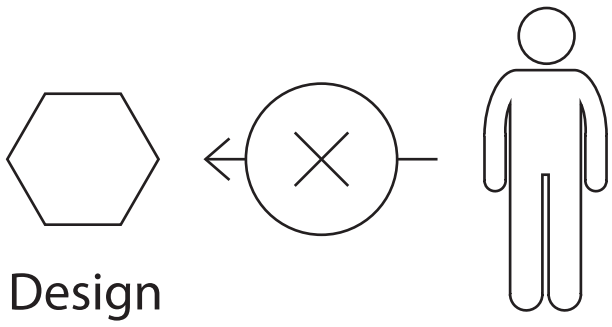
	Visual	Physical	Tactile	Sound
2D				
Embodied				
Hands-free				
TOTAL				



4: Interaction complexity

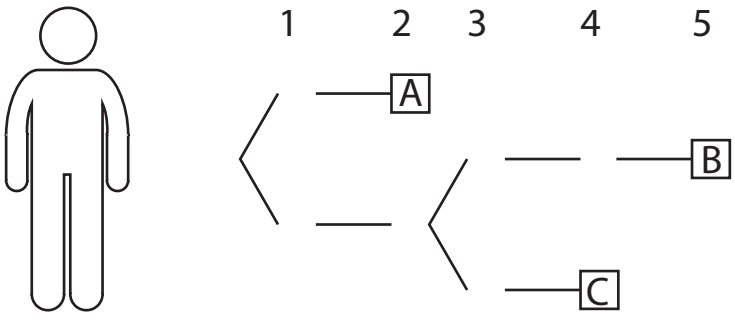
Interactions are simple, straightforward, and clear to the user

a. Steps
b. Function allocation variation
c. Duration



Steps

Number of steps needed to execute actions.



Function allocation variation

Changes in functionality of interface elements, like the meaning of a button press, the appearance or disappearance of menu items on a touchscreen, etc.

Duration

Duration if interaction in seconds.

Core tasks of the device analyzed

	Task A:	Task B:	Task C:	Task D: .....
Steps				
Function allocation variation				
Duration				

1 2 3 4 5 6 7 8 9

5: Code durability

Code is maintainable and reliable

a. Structured and properly labeled code (readable, maintainable, accessible)
b. Stable connection to other devices to allow complete interaction

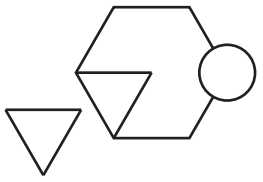
Judge the durability of the design's code

	Low	Medium	High
Clarity			
Labeled items %			
Consistency			
Commented			
Maintainability			
Reliability			
Connection stability			

6: (Optional) Flexibility and adaptability

Flexible interfaces are supported by the design

a. Integrated settings in the design allow different alternatives for the communicated information types and/or interaction methods
b. Open access for tinkering allow users to make changes to allow different communicated information types and/or interaction methods



Integrated settings allow (refer to: examples 1,2)

	Visual	Physical	Haptic	Sound
Device status				
Interface functions				
Interaction feedback				
Notifications and errors				
Control method				

Device supports tinkering

	Yes	No
Non-invasive		
Mildly invasive		
Very invasive		
Total:		