3. Context Inquiry

Interactive Shopping Window

Deliverable 3: Context Inquiry
analysis of existing situation, experience or technology

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3.1 2D vs. 3D – a few thoughts

During my research I cam across the question if I should build a 2D or 3D interface for my application. Here a few thoughs I had.

Advantages of a 2D interface
The 2 dimensional applications are very common. Most of the graphical user interface have been designed as 2D. Users can deal with such systems using common input devices like mouse and keyboard.

Disadvantage
If a spatial input is used but the interface remains flat, it can be confusing for users. A transmitted thinking is required.

Advantages of a 3D interface
If a 3 dimensional representation of a user interface will be used, users will fall back to 3 dimensional gestures. This makes sense if a spatial input of such a system is used. Using a 3 dimensional interface together with a spatial input device will be easy for users to understand because the user can see what he is doing.

Disadvantage
Is a interfaces designed in 3D and controlled by 3D gesture it will be relatively quickly tiring. 3D interfaces are often slower to reach a goal.

Further reading
http://www.useit.com/alertbox/981115.html

3.2 Accessibility in Gestural Controlled Applications

While designing a gestural interface we always need to consider people with physical limitation and handicapped people. When we design an application mainly based on hand gestures, we need to think about how people with limited handmovement possibilities and how they can use the system. It is important that such systems use a small number of gestures all of which should be easily to perform.
But not only will a gestural interface be harder for certain people to use, it can also be easier if a person has problems with small movements and therefore with mouse and keyboard. Especially when the gestures need to be performed with bigger movements.

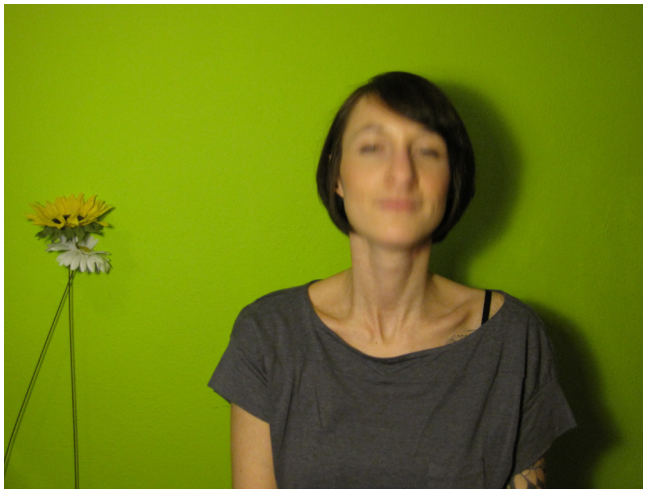
Further reading: Dan Saffer, Designing Gestural Interface 978-0-596-51839-4 Page 44

3.3 Daily Gestures to Controll Applications

Our daily life is filled with gestures. Our gesture lexicon has many different gestures for different situations. Some of this gestures are the same all over the world, some totally different depending on the culture we live in.

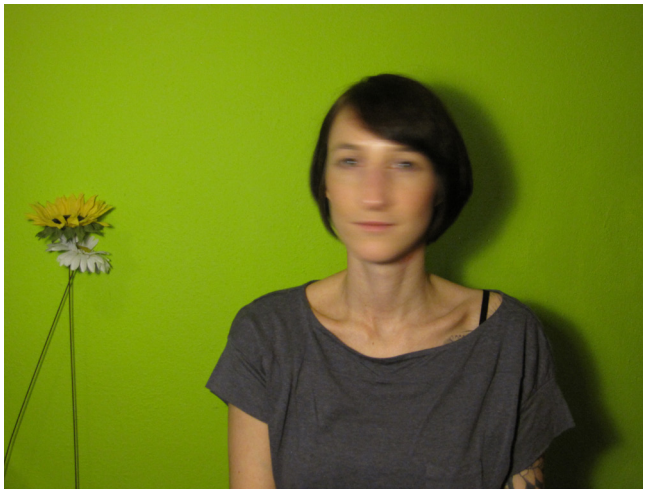
In a few example I want to show different gestures and what they mean for our culture here in Switzerland. This examples are all gestures which could be used to control an application.

Gesture: YES



If someone shakes the head up and down it means that this person agrees to something.

Gesture: NO



If someone shakes the head left to right and right to left it means that this person disagrees to something.

Gesture: OK

Putting a thumb up is interpreted in Switzerland as a positive feedback.

Gesture: NOT OK

Pointing down a thumb will be interpreted as not OK in Switzerland. Mostly this gesture will be performed with a small movement

Gesture: SILENT

A raised finger will be intepreded as a gesture to display silence. Often combined with a “sschh” sound.

Gesture: LOUDER

If the hand cupps the ear it displays that the user thinks its to silent. It should display that the sound needs to be increased.

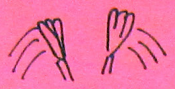
Gesture: WAVING

Waving with one hand is mainly used to say good bye and sometimes to welcome someone.

Gesture: POINTING

Pointing is the most natural gesture to show what one wants.

Clap

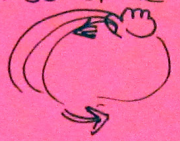


Shh... Gesture for making something silent

Hää - Gesture for making something louder

Click

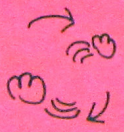
Circle Movement in 3d Space



Wave Gesture

Change of distance

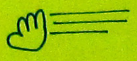
Two Hand Spin



Pick up

Shaking

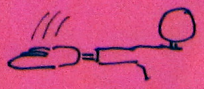
SWIPE



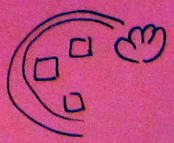
Circle

Pointing to something

Touch



Select by circle something



3.4 Interactions in a Digital System

When we think about interactions in digital systems we can divide it in three areas:

Digital Manipulation

Whenever we press a button, drag a scrollbar or move an object in our graphical user interface we manipulate a digital system. Our language involves different patterns like single click
double-click, press and move, release and roll over. All this patterns are performed by a mouse, keyboard or similar device.

Gestures in 2D

Most touchscreens and modern trackpads allow gestures to manipulate a software. From flicking album covers with one finger to zooming and scrolling with two fingers we got used to many different gestures. Especially since Apple released the iPod Touch and iPhone we got familiar with simple gestures with our fingers.

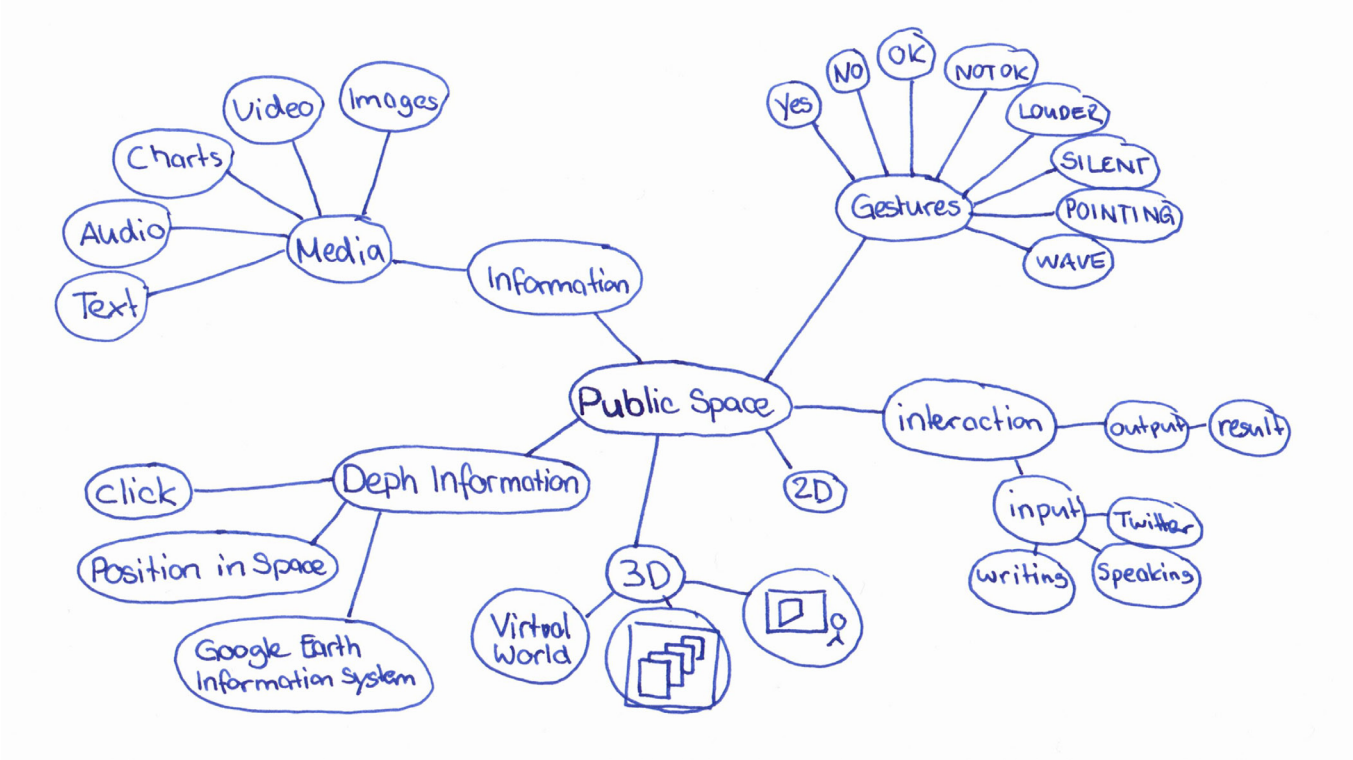
Gestures in 3D

After Nintendo launched the Wii controller many people got used to interact with gestures in a 3D space. New gestures in a spatial interface were used like shaking, turning or spinning. Gestures with the hole body became popular for the broad variaty of people since Microsoft launched the Microsoft Kinect. Currently such systems are mainly developed for gaming, exhibitions or experiments but in the near future such systems will become more popular even. Having a 3D gesture input will make it easier for people to learn a system because they can use there normal gesture to interact with it.

Further readining:

Bachelor Thesis TWYE Fabian Kuhn Page 16-18

3.5 Concept Direction



During my research process I decided to focus on public space. I was thinking of what media I could use and what gesture might be interessting. I tried to think about an interaction between the system and the user. Using depth information is an interesting aspect on which I want to focus.

3.6 Research Shopping Windows

Since the 19 th century, when shop windows became popular, window shopping evolve into a common phenomena in our culture. It is inexpensive, engaging and enjoyable. Window Shopping is performed by walking through the shopping district or shopping-mall without the purpose of buying something specific. Its done mainly to pass time or get inspiration.
The latest trend in shopping window design is interaction. Technologies like touch screen or camera tracked movements with projections are used to engage shoppers to stop at the window. Future trends will lead to window shopping with an actual purchase.
Here are a few examples of interactive shop windows

Iwindow Interactiv shopping window
Source: http://blog.clickz.com/Elle%201.jpg

Traditional Shooping Window
Source: http://www.flickr.com/photos/timrich26/2887516514/

Eye-Click
Source: http://www.signageinfo.com/2010/08/eyeclick-unveils-new-interactive-window-technology/

3.7 Behaviour of People in Front of Shopping Windows

How do people behave in front of a shopping window? Can we distinguish which person is a window shopper and how will actually buy something? How do people stand in front of the window and what are they actually doing?

To get answers to this question I went to the Bahnhofstrasse in Zurich and observed and photographed pedestrians walking through the shopping street.
Many people in different ages where walking along the windows. Some very slow, others very busy. A small number stops at certain windows and look at them. While the shoppers look at the window, they are only focusing on it. They don't move when other people pass them. Usually they stand still or point at certain objects if someone is with them. One important part for the attraction of a shop window is the location. At places where people wait, many will look closely at the shopping windows and its content. Such places are next to a tram station or next to a pedestrian crossing. More remote shopping windows get less attraction except they show interesting things to certain people.
People in front of shopping windows behave different. Some just stand there and look at the content, others move constantly to see the objects from different angles, others are on the phone and don't actively look at the objects and some people point at objects. If a shop offers outside of the window products people will likely take it in there hands and look at them closer. It seems that quite many then will enter the shop afterwards.

Some people just stand in front of the shopping window

Talking on the phone and look at shopping windows is a common phenomena.

People spend more time in front of the store if they can actually touch the product. In this case people read in the books in front of a book store.

The colors and the design is an important part for a shopping window to attract people.

If a shopping window is designed different then others people will stand in front of it for a long time.

Shopping Windows with a different approach attract more people to look whats inside.

3.8 Shopping Sequence

In my research I looked at peoples shopping behaviour. As a usecase I used a book store. I was investigating how shoppers behave and how much time they spend on certain taks in a shop.

3.9 Acceptable Gestures in Public Space

Using gestures to control a digital system in public can be very uncomfortable for many people. Especially if the gestures involves huge movements. Because gestures are different depending on the situation a person is in, I want to only focus on gestures for users in front of shopping window.
To see what gesture is acceptable in public space I let a person perform certain gestures in front of a shopping window in a busy street. I wanted to know what action where fine for her and what she thinks was not acceptable for a gesture in public space.

I know that it will be different if actually something happen if a person performs in front of a window. However, I believe that using comfortable gestures for people in public space will make the system more acceptable.

One interesting part I found out is that big movements are not very comfortable in public space because the people feel silly performing them. On the other hand many interactive shopping window use this big movements and people perform them. I assume that this is because such systems are new and people want to try them. For the future I believe it will go back to small gestures.

Many shopping window reflect the sunlight. Its a common gesture for window shopper to raise the hand to the forhead and go very close to a window to see more of its content.

Passing by at a shopping window and look at its content is a common behaviour. It is the point where people decide if they want to have a closer look or not.

Having a closer look is very common and could be seen in the behaviour of many people.

To point at something is a normal gesture if a person in front of the shopping window is not alone and want to show something to the other.

Waving one or two arm in front of a shopping window is an uncommon gesture if there is no interactive system which can be controlled. People felt silly doing it. If an interactive system is in place, this gesture will become more natural as seen on http://www.youtube.com/watch?v=RX1aCvtevCM

3.10 What gesture can be performed in public

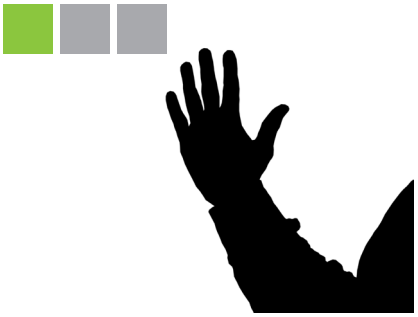
To rate the gestures and behaviour I built a small set of gestures and possible position of the body. I asked my self, what is acceptable in public space. What hand or finger position would people use. How far would they go in hole body movements. After this research I rated them and added three categories to it.

Green: Totally acceptable and fine to use and perform in public space

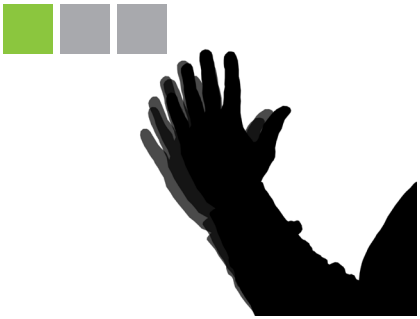
Orange: OK, but it depends on the situation. Mostly only OK if an interactive system gets controlled with it.

Red: Not OK. People do not like to perform it because its offensive or makes them look silly

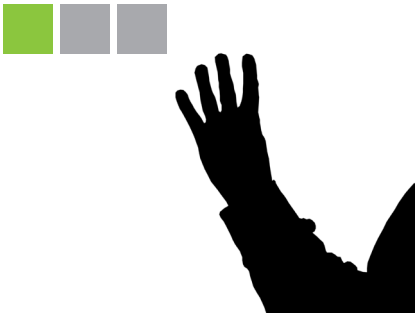
Indexfinger up
Common gesture to display that one has an idea



Hand up
Gesture to display „stop“



Wave with hand
Performed to say „hello“ or „good bye“



4 fingers up
Mostly used to display the number 4

Thumb and little finger up
Gesture wich could be offensive for certain people

Indexfinger and little finger up
Common gesture in the rock scene to display respect

Indexfinger, thumb and little finger up
Common gesture in the rock scene to display respect

Middlefinger up
Gesture to display dislike of someone. Very offensive

Fist
Context depended gesture. Can display violance or grabbing something

Pointing with Indexfinger
Performed to show something to someone. If used to talk about a person it can be offensive

One Foot
Performed wile walking, playing, dancing

One Foot
Performed wile walking, playing, dancing

Spinning
Performed wile dancing, games. It can feel silly for certain people in public space

Jumping
Jumping will look for most people silly in public space

Pointing (close)
Pointing at something close to a person is a common gesture in public space especially in shopping windows

Pointing (up)
Pointing at an object is a common gesture

Waving with two hands
Big gestures can make a person look silly

3.11 Technologies of Interactive Shopping Windows

Interactive shopping windows use different technologies. Currently the most common are touchscreen technologies. Many examples us this technology because its already well established. Newer touch-screens use multi-touch which improves the user experience. Using a depth sensing camera or multi camera tracking setup is the latest trend in interactive shopping windows. Shoppers will not need to touch anything and can use their hands to control the information displayed on the shopping window. New technologies allows multiple users and 3D gesture tracking. With such a system in place window shopper can look at products and turn them in any direction using simple gestures. Whenever there is a user and the system knows what the user is looking at, it can track this information. Using this information in an analytics system can give valuable information of which product is looked at most and for how long. This technology would allow to take a picture of each person who looks at a product and store this information together with the products the person looked at.

Further reading
http://www.sciencedaily.com/releases/2011/01/110114155245.htm
http://www.gizmag.com/3d-interactive-shop-window-displays-in-the-works/17617/

3.12 Possible In-Window Purchase

When we design the next generation of shopping windows its important to think about the additional value. Not only will people be more attracted to such systems, it can also be sales driven. If we add a shopping possibility to this window customers can buy the products even when the shop itself is closed. To establish an easy connection between the shopping window and an online store we have a few possibilities.

Order form
Having a order form directly integrated in the system can make it easier for people to order a product. There will be no additional device needed to order a product.

Video Order
Shoppers will record their adress on video using a camera and a microphone build into the shopping window. This way no additional device is needed for the shoppers.

Order using SMS
Nearly everybody owns a mobile phone. Beeing able to use text message from a mobile phone is a convenient and common possibilty to order a product.

QR Code
The QR(Quick Response) Tag, was developed by a Japanese company in 1994. Its a 2dimensional code to store information. Most smart phones have the possibility to read QR codes. Using a QR code in the description of the product makes it easy for the user to order it online. One advantage of such a system is that the order address or payment option not directly will be handled in the shopping windows which makes the order process more secure and private.

QR-Code which contains the URL: www.michaelfretz.com

3.13 Conclusion

Trough the methodology of observing shoppers and their behaviour in front of shopping windows as well as trying different gestures in public space I gained a deeper aknowledge of my desired user group.

Knowing that some gestures in public space are not acceptable is important when designing gestural interaction. Most gestures we can use for interactive shopping windows need to be easy to learn as the person who will use such a system doesn't want to learn it first.

It's important, that a shopping window uses a catching entry point. The more unique a shopping window is, the more people will look at it closer.

Having the possibility for users to look at the object in a more detailed way will increase the possibility that the user will buy something. Offering a order or buy option in the shopping window can make it possible to sell products even when the shop is closed.