CAPTURE TIME

Recording in digital era

Ahmet Uslu

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ABSTRACT

The primary aim of this project is getting a complete understanding of photography's development process and looking into future, user-centered innovations.

Digital evolution changed the rules of product design. Products became a part of a complex system, consisting of a variety of different touch-points which also constantly extend. Photography and cameras are changing. Mobile phones, wireless connections and sharing platforms have a big impact on photography. Everything is getting connected to each other, both people and devices. How will digital photography adapt to this new world? How will people change their perception of images? Is it possible to design a camera considering all other systems around it? While designing a highly technological device, how can user-perspective be included in the design process?

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PIC 1 - JAMIE BECK

INTRODUCTION AND GOAL

AIM

The primary aim of this project is getting a complete understanding photography's development process and looking into the future, user-centered innovations.

The digital evolutions changed the rules of product design. Products became a part of a complex system, consisting of a variety of different touch points which also constantly extend. Photography and cameras are changing. Mobile phones, wireless connections, sharing platforms have a big impact on photography. Everything is getting connected to each other, both people and devices. How will the digital photography adapt to this new world? How will people change their perception of images? Is it possible to design a camera considering all other systems around it? While designing a highly technological device, how can early user perspective be included in the design process?

POINTS OF DEPARTURE FOR THE WORK

The area of work has been selected for being personally appealing to me. Photography has been a big part of my professional and personal life. My interest about photography started at a very early age. I always find an essence of magic behind the photography. How it captures a moment in people life and how it creates an experience flashbacks. Memories from our past are always hidden in our brains but can be activated through a series of memory triggers like smells, sounds or visual depictions. Photography is a perfect example of visual representation of memories and I have always enjoyed the fact that people are fascinated by photos and how they save their memories and past experiences within a piece of paper or digital screens.

Parallel to the technological advancements, just like everything else photography has been constantly changing. Before I start my project I would like to tell the reader about the kinds of evolutions which have inspired me to work on this project. First of all I recently start shooting time lapse photography and I am impressed about the possibilities it grants us. Of these genera, I have especially enjoyed the work of New York fashion photographer Jemie Beck. Beck combines a series of images, using the animated GIF format to show a motion inside a static environment. (Pic 1). Technological advancements promise to shift the overall paradigm of technical capabilities. Lytro cameras (Pic 2) and a concept project WVIL (Pic 3) showed me there are much more possible innovations ahead in the field of photography.

PIC 2 - LYTRO CAMERA

PIC 2 - WVIL CAMERA CONCEPT

INTRODUCTION AND GOAL

METHODS

Reading
Scenario cards
The blank model concept
User tests
Interviews

DELIMINATION AND PREQUISIT

Delimitations

- Detailed technological details of the concept
- Prototyping and implementation
- Financial details
- Influences of a brand

Prerequisites

- Intermediate level of knowledge about photographic theory
- Form studies of the concept
- User tests

BACKGROUND

READING

Initial research is based on reading about both photographic theories and predictions about future photography. The primary focus has been on digital photography and the consequences of transformation. Also this part consists of insight creation.

BACKGROUND

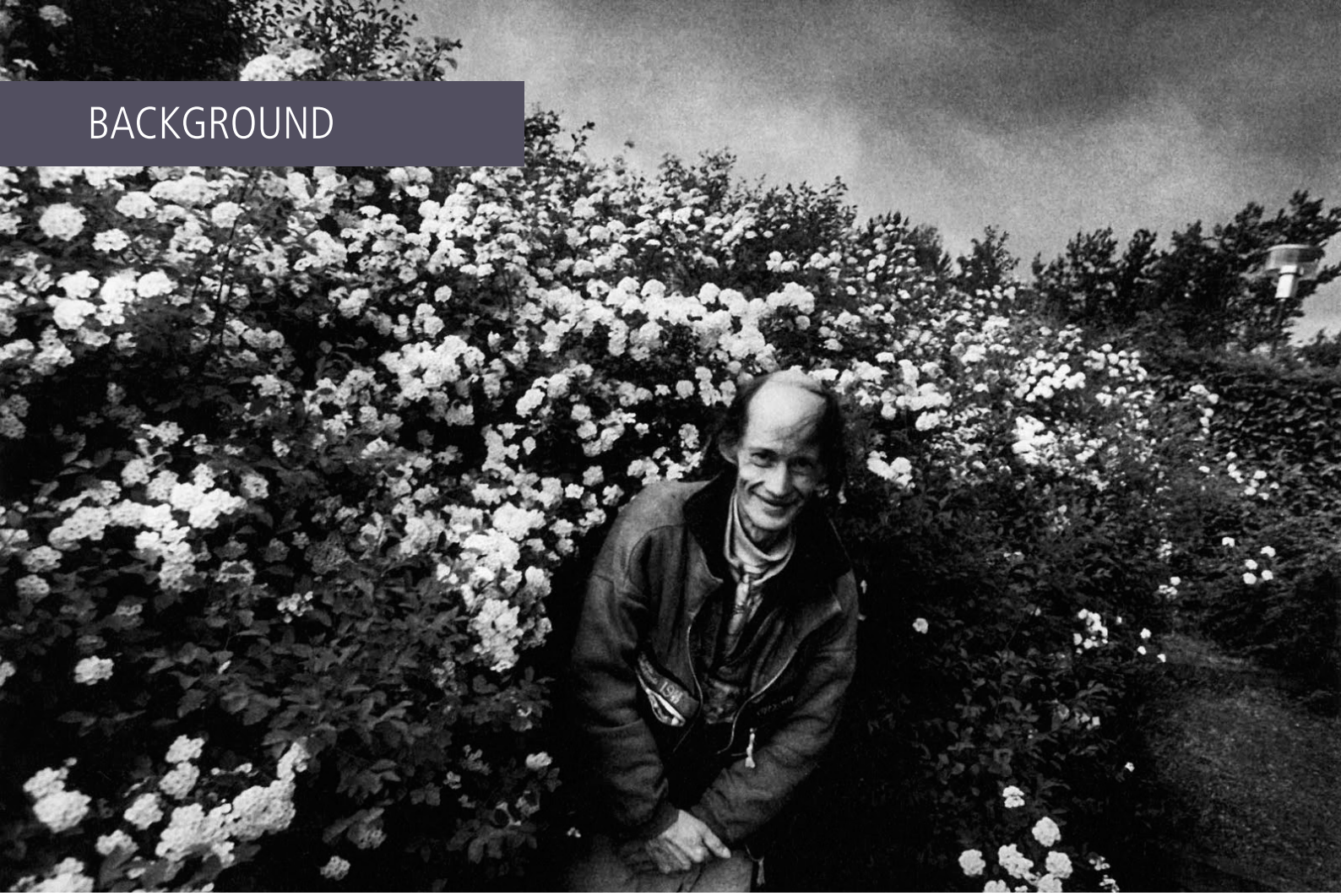


FOTO: ANDERS PETERSEN

PHOTOGRAPHY AS AN ARTISTIC EXPRESSION

When it comes to photography as an artistic expression, digitalization created a new dimension in this area. As Peter Wiebel mentioned in his text, technological movements within the area of photography consisting video and media, created a new platform for expression. He called it 'User Art' and explained it:

"The ultimate effect of all this is to emancipate the observer, visitor and viewer. The very terms 'user innovation' or 'consumer generated content' bear witness to the birth of a new kind of democratic art in which everyone can participate. The platform for this participation is the Internet, where everyone can post his or her texts, photos or videos. For the first time in history there is an 'institution', a 'space' and a 'place' where the lay public can offer their works to others with the aid of media art, without the guardians of the criteria." (Wiebel, 2011, p 138)

This is one of the most important insights I found. It is the centre of my thesis. It is obvious that future of media and art will be accessible to everyone and will be on a public platform. Success of social media and effects of our daily life is perfect proof of this theory. Some platforms like "Deviantart", "Vimeo" and "Flickr" are great examples of these platforms.

BACKGROUND

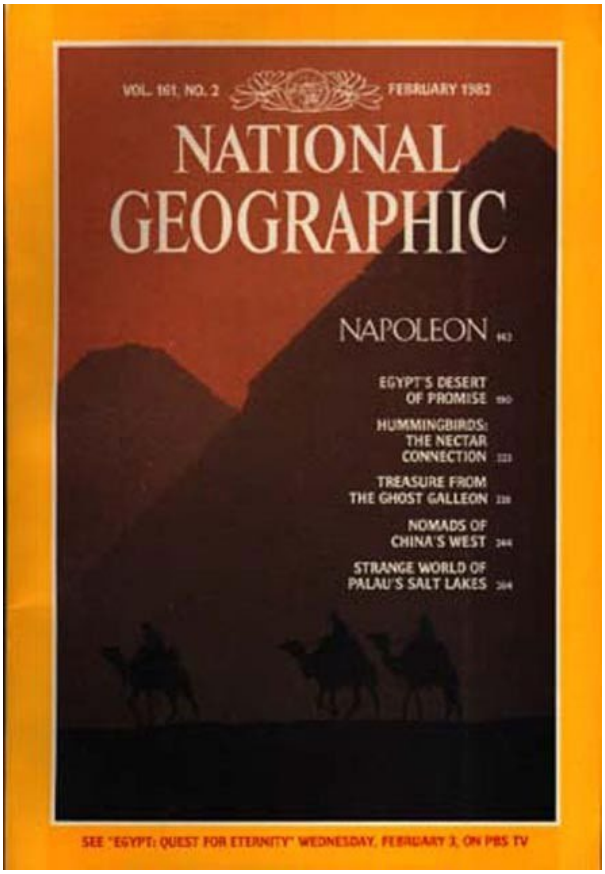
PHOTOGRAPHY FOR DOCUMENTING PURPOSES

"No one expects advertising photographs to represent a true reproduction of the original. In news reporting, however, this expectation in based on a social and journalistic consensus – which seems to be threatened by new technical developments such as digital photography"(Coy, 1996, p 68).

FOTO: JOE ROSENTHAL

As soon as we start talking about the purpose of documenting, like photo journalism, the main discussion is around the untraceable photo manipulation with the digital photography. Converting chemical traces on a negative to binary codes stored in our computer comes with consequences. When an image signified by a series of numbers, it get so easy to change this numbers and leave no evidence behind. In commercial photography like advertisement photos we already lost our faith of seeing untouched images. But still many photographers and journalists believe realist representation of real life is a vital part of photography.

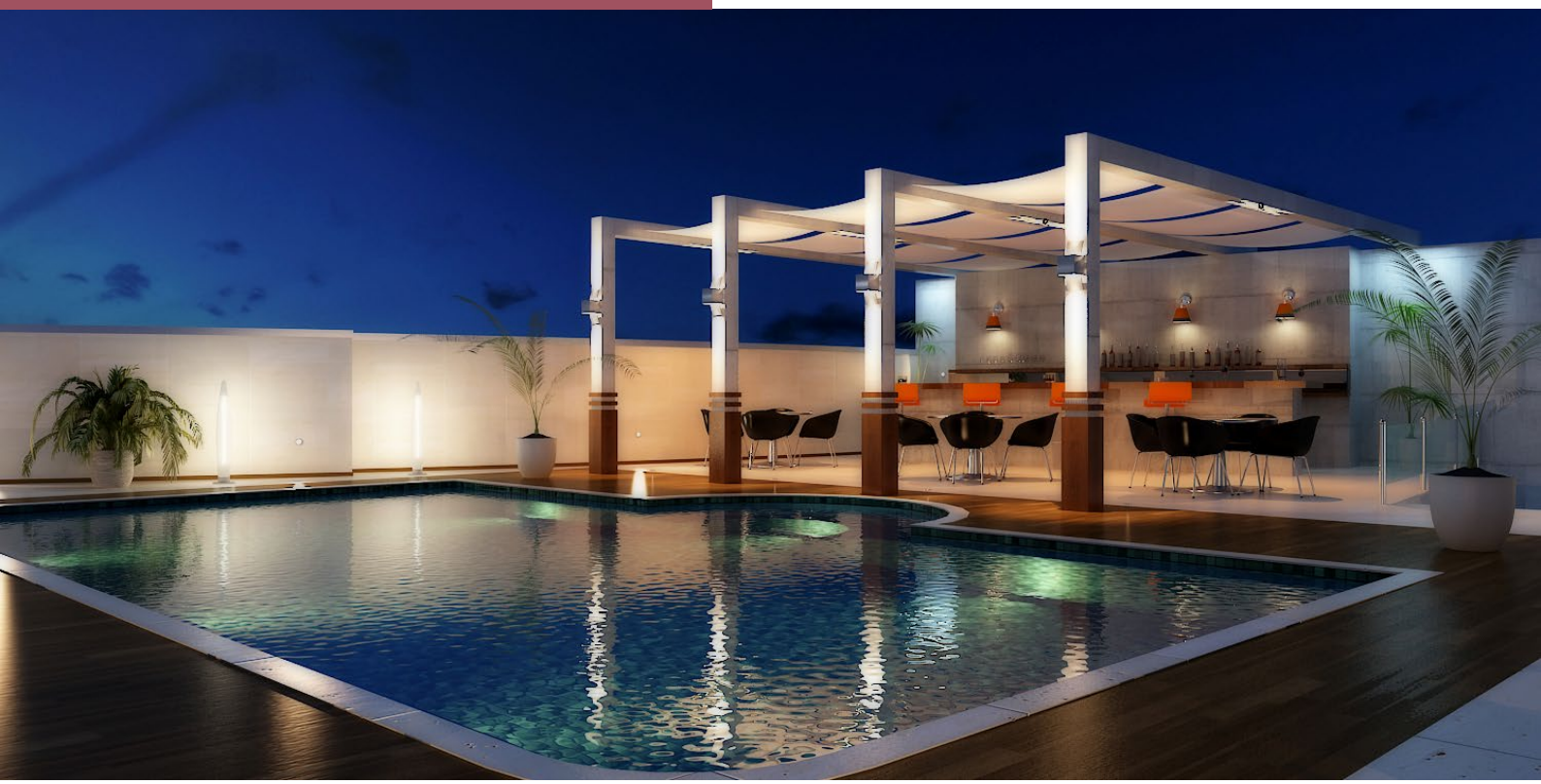
National Geographic magazine is one of the oldest and most famous nature photojournalism sources. They have a high credibility and trust among society. But In 1982, National Geographic February issue had done something different. They used the Pyramids of Giza for their cover, but they moved digitally one of the pyramids close to other one to fit their vertical cover design (pic. 3). The change made not an essential difference but just a slight replacement but it created a public scandal followed by complains from the photographer Gordon Gahan. People started to ask questions about the credibility of the magazine. Even it was criticized in some of the newspapers like "The Australian" by Kerri Elgar. But there was also another trivia about the cover which has never become a big deal comparing to the digital manipulation. While Gordon Gahan was setting up his equipment, the camel train had already walked away from the frame. Eventually to capture his 'perfect' moment, he paid the camel riders to walk again on his stage. So this photo was also a set up image. And this method has been a part of the photography since from the very beginning. How it is possible to compare these two different 'manipulating' methods? Which one had more impact to the photography? Is it still a problem in contemporary photography to keep track of the untouched images?



NATIONAL GEOGRAPHIC,
1982 FEBRUARY ISSUE

BACKGROUND

PHOTOGRAPHY FOR DOCUMENTING PURPOSES



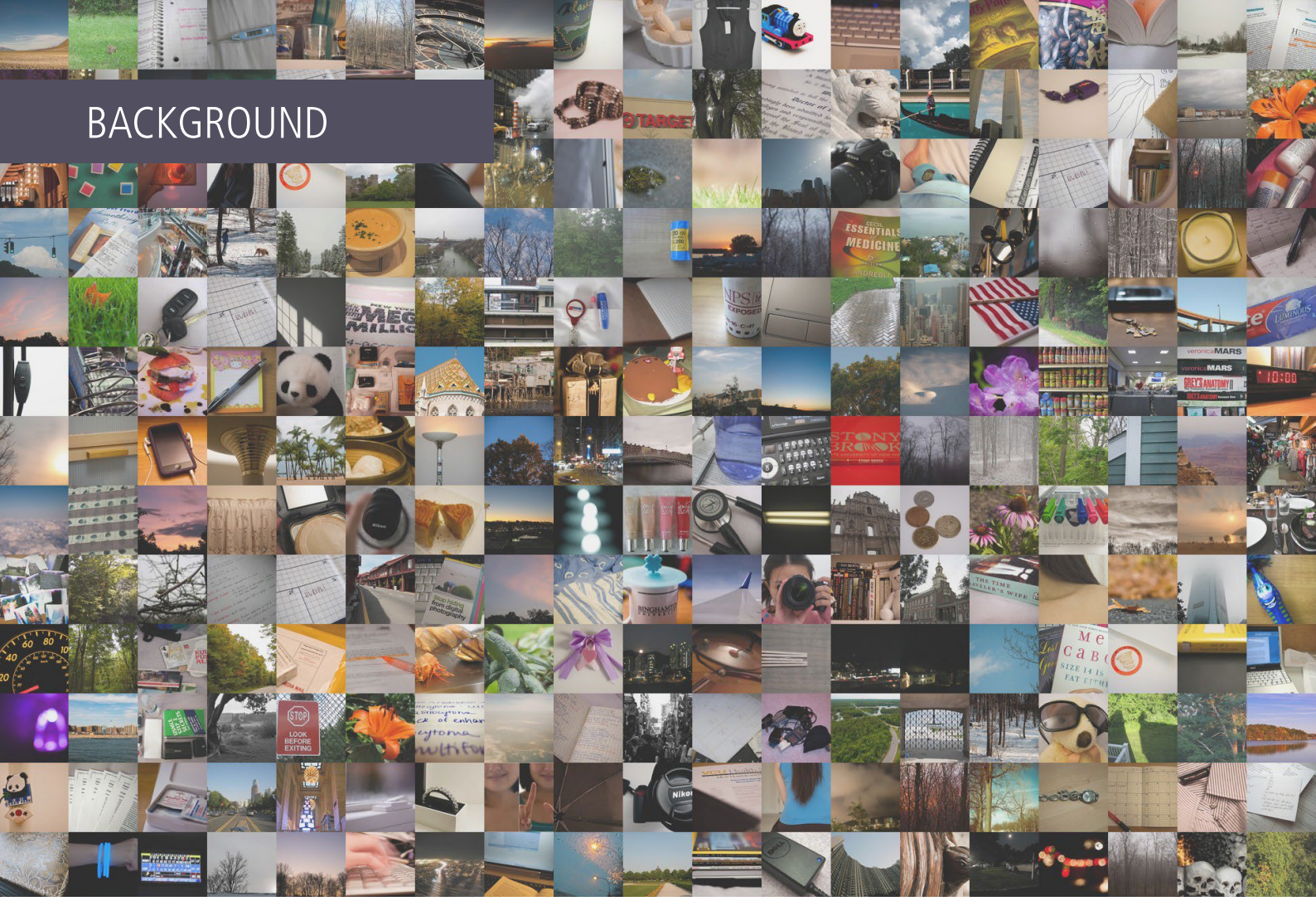
COMPUTER RENDER BY AHMET USLU

During my research I interviewed several photographers and analysed the descriptions they wrote about their own work, almost all of them feel obligated to mention that they are not using any photo manipulation technics in their works. If they use an analog camera even if it is not relevant they are mentioning it as a proof of reality (Nick Brandt, On This Earth, A Shadow Falls). But beyond these discussions as a personal comment, I believe this is a conservative approach, a resistance to the speed of change. Some photographers and critics already start discussing about the place of computer generated images. Lev Manovich discussed this in his text about this subject

"3d computer graphics can also be thought of as digital-or synthetic- photography." (Manovich, 1996, p 62).

I will use his term 'synthetic-photography' as a reference to computer generated images. Today it is possible to generate a digital image in a computer environment by building up a 3d scene and using rendering software. What is the boundary between these kinds of images and traditional photography? By the help of increasing power of computation, humanity started to build up their new virtual worlds and taking 'synthetic-photographs'. I believe it is not so hard to solve the problem of distinguishing "real world" photography from a "synthetic-photographs" or a "manipulated images" by using a technological method.

BACKGROUND



FLOOD OF PHOTOGRAPHY

"Needless to say the absence of photographs is the best weapon with which to deny an event. Vice versa, a flood of different photographs can reveal different facets of reality. " (Coy, 1996, p 68).

Another concern in the vision of the future is about the numbers of images in our life. Technological developments about the capturing devices leads us a new world of images. Now almost every single mobile phone has a camera. This means at anytime, anywhere with or without a scenario, spontaneously we are recording the world. Value of a single photograph is not the same anymore. Also this is a danger for a photographer.

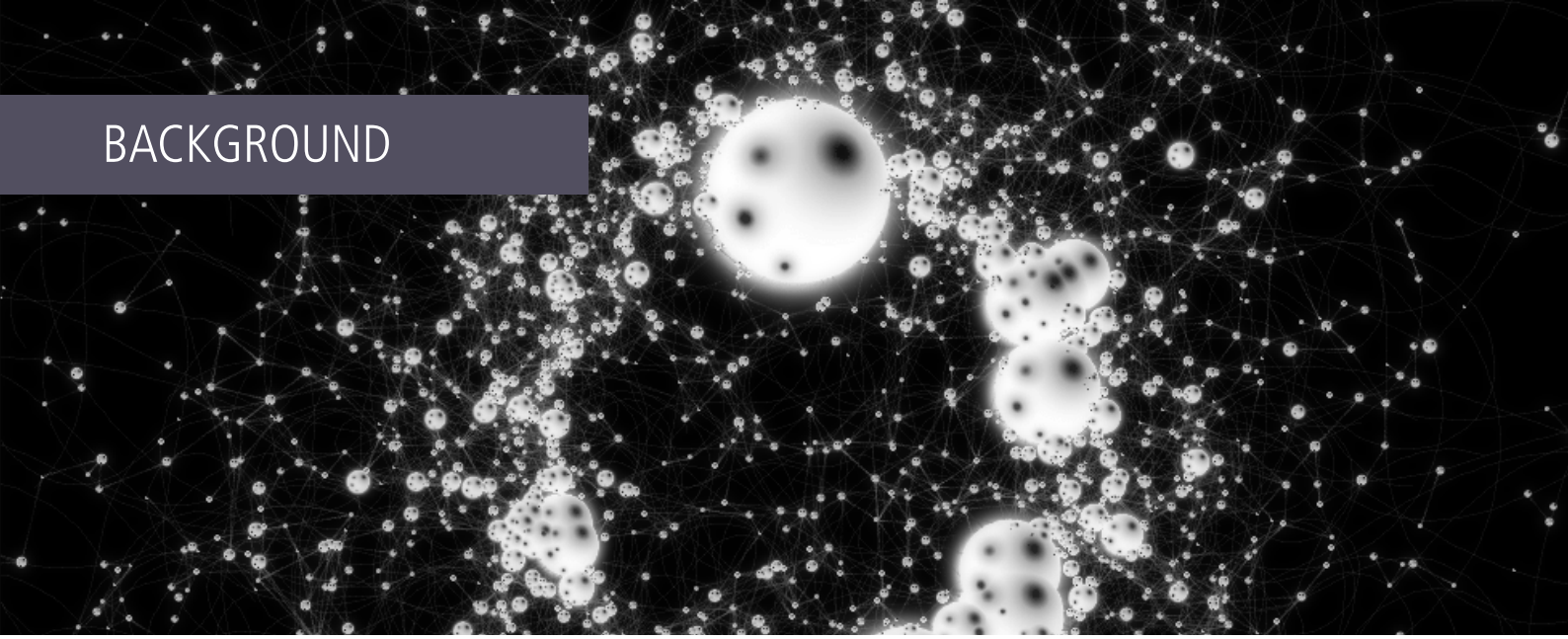
During my interview with Halil Koyutürk he mentioned that his initial years in photography was more about the documenting stories of people but today maybe because of all the technological changes now he believes he has changed his style. Now he explains his own story using photographs adding additional value by explaining his own ego and point of view. This is a good example of how photographers are adapting to the change. They are replacing the lost value with their own view into their works. Halil also talked a lot about documenting purposes of photography is now an open platform and fed by everybody. I also believe that photojournalism is changing and will be a democratic movement just like Wiebel said about the art.

BACKGROUND

TIME

My final insight from my readings pertains to the relationship between time and photography. Photography is a representation of a specific moment. It is not about the image we saw it is about the time that is captured. That is why I am calling my thesis work "capture time" instead of photography. I want to observe this relationship and exploit the possibilities when we expand the limits of photography. Slowing time to understand a movement enchanting a moment, exploring the secrets of nature and amazing details of physics. Also accelerating time and seeing a whole day in couple of minutes. Invention of movie cameras is based on capturing more than a still image. But due to the technical and financial restrictions, the film medium has been limited this process. However through the development of digital stored images, a new type of photography has evolved, "time lapse". Curiosity of life and nature motivates people to observe it deeply. So if a photograph is a representation of time than time itself should be a significant part in the context.

BACKGROUND



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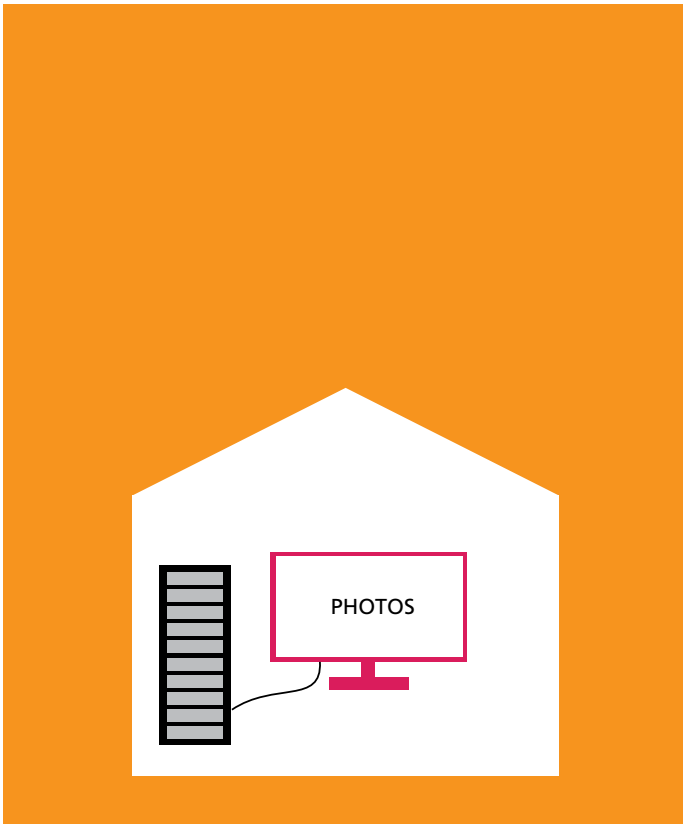
HTTP://WWW.COMPLEXIFICATION.NET/GALLERY/MACHINES/NODEGARDEN/INDEX.PHP

CLOUD; FUTURE COMPUTING TECHNOLOGIES

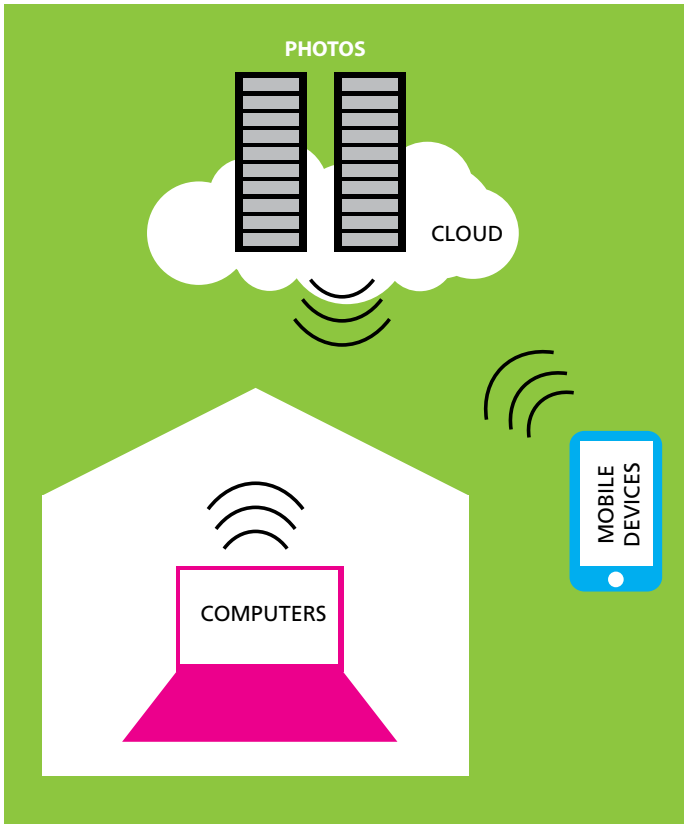
Cloud systems are a big transformation of future computers. Cloud computing is based on delivering a service rather than a product. This network based systems is going to provide end-users a computation and a virtual space which is applicable anywhere through an interface. Music industry has already been transforming to the cloud computing; "Spotify" is a good example of cloud systems. Now customers can use power of computing completely in another location.

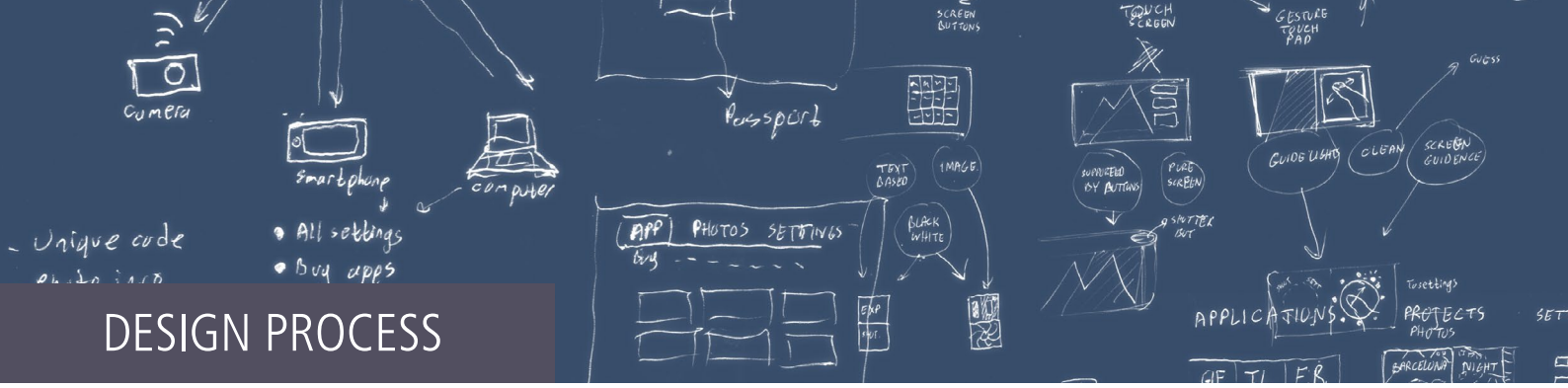
Customers no longer need to maintain storage and computer power. With only an access point which is usually a browser, customers can reach their stored information and edit it by allocating some processor power. Flickr is a website which is an online photo album and photo sharing community which allows customers to back-up their photos and access it anywhere with any device. Also they can share it with public; this is how cloud systems work.

OLD WAY



NEW WAY





DESIGN PROCESS

APPROACH

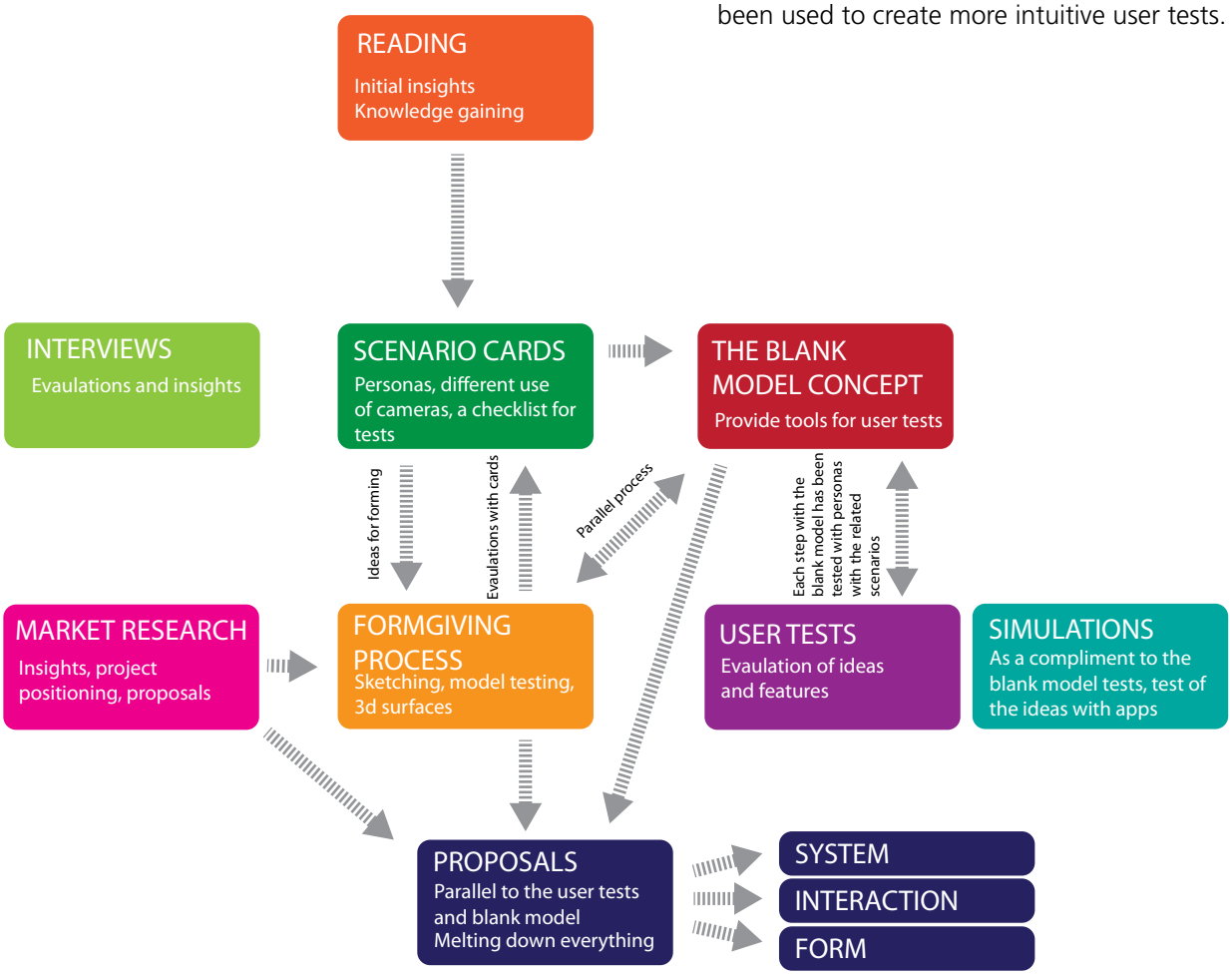
The research phase consists of describing the specific knowledge gained through analysis of the different actors and influents of the chosen topic. It is the documentation of envisioning future technologies, transformations of photography and possible scenarios for users. Investigation will be framed around adaptation of photography both as an art and a documentation tool based on digital revolutions. The research is summarized by collecting the various research findings and set up perimeters for the concept. Literature search was the starting point.

Surveying literature, periodicals has been followed by interviews with professional photographers and a software engineer to look into both sides of the field. Identifying touch points of users and possible user scenarios.

The third step of research process is about developing scenarios based on the outcomes of first two steps. These scenarios will cover a wide range of possible uses of recording devices. I choose to work on possible use scenarios and base my research on it to accomplish user-centred process.

The next step is building a blank model for experimenting and implementing features based on the scenarios and getting instant feedback from users. I would like to observe how these scenarios will mutate a blank box into a meaningful object. 'Blank model' studies are a parallel process to establish form studies and user interaction ideas.

User test and 'blank model' process is a loop flow during the process. Simulations have also been used to create more intuitive user tests.

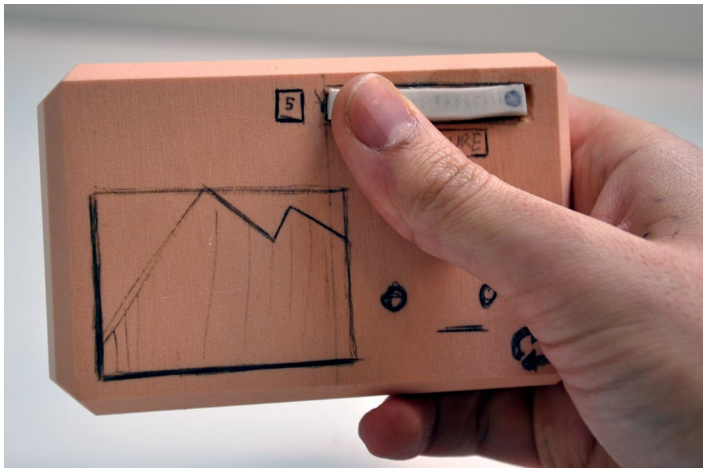


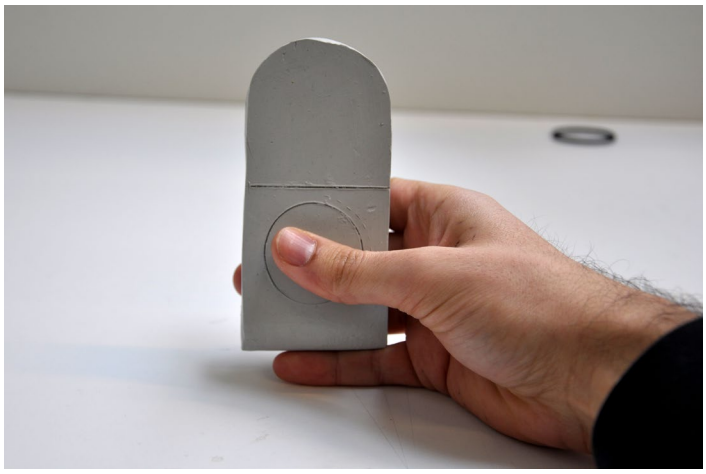
DESIGN PROCESS

HOW TO START

The target aim was to work around a user-centred approach during my design process. When designing an electronic consumer product there is always a problem to incorporate users during the early process of design. Usually users are involved during the late evolution tests and because of the limited resources and deadlines tests often have little or no influence on the final design. All parameters has already been defined at that moment and no possibilities to change it. Michael Arent and Richard Mander have published a paper for discussing about this similar subject. They discuss an approach to design on-screen products and how to solve user interpretation problems during the early stages of design. Arent and Mander suggest using 'the blank model concept' to design small portable consumer products based on hardware and software interactions. "The blank model concept" is creating a geometric solid with no surface features and applying basic known properties of intended product like, size, weight, how it is interacting with user (handheld, wall mounted…) and evaluate all the insights and ideas with the user directly with the simulating the real interaction. The aim with this method is not to analysis surface features or aesthetical properties, it is focusing raw user feedback with the function and experience. (Arent & Mander, 1994).

My interpretation with the camera design was based on this same method; "The blank model concept". My intention was to involve more than physical formgiving process of surfaces. I agree with Arent and Mander's idea about how people are often distracted by the surface and colour on a finished models (Arent & Mander, 1994). Past experiences showed me that usually if I want to get feedback about my design and use a surface finished product usually users evaluating the surface and the aesthetic qualities which are also a part of the process but usually after features and the principles of product has been defined. A handheld camera is pretty much a defined object, when we think about the basic principles of taking a photo. Size and weight are not having a distinct variety which makes it perfectly a good candidate for this method.





DESIGN PROCESS

INTERVIEW AND COLLABRATORS

Bo Westerlund

He is my primary advisor; he is professor in Industrial Design at Konstfack in Stockholm.

Can Günaydin

He is a software engineer focussed on web and mobile applications. He is constantly helping me to understand the possibilities of digital imaging algorithms and helped me to test my initial ideas.

Halil Koyutürk

He is a professional photographer living in Stockholm. After the interview I identified the concerns and scenarios about future of photography by a photographer's perspective.

Harry Clayton Cook

He is a interaction designer working in Ergonomi Design. He is helping me to find out working methods of identifying user-touch points.

Frida Klingberg

She is a professional photographer studying at Konstfack. Discussions was around the insights and theory of photography.

DESIGN PROCESS

MARKET RESEARCH

When we go to a consumer electronic shop or Google to see what kind of digital cameras exist in the market we see that there is endless number of different digital cameras is there, from professional cameras to compact easy use cameras. Depending on the user needs, it is hard to imagine a camera not serving a specific market segment. But also they are all designed in a way that still influenced a lot from the traditional cameras. There is many common points in the cameras which makes them look like each other all and almost each of them have the same way of interaction with the user. I will explain the basic touch points later but I want to mention one of these common points. There is only couple of examples of left handed cameras and I found only one which designed to be operable by both hands (Sanyo Xacti C1 Digital Camera). Lots of forum discussions happening on main photo sharing websites like Flickr about this subject and many people are demanding a good camera for left hand use. Left handed people says they are getting used to operate a camera with right hand but people with the disabilities and can't use their right and is complaining about how hard it is to use a camera with only left hand (http://www.flickr.com/groups/canondslr/discuss/72157594244923959/, 17.03.2011).

DESIGN PROCESS

MARKET RESEARCH

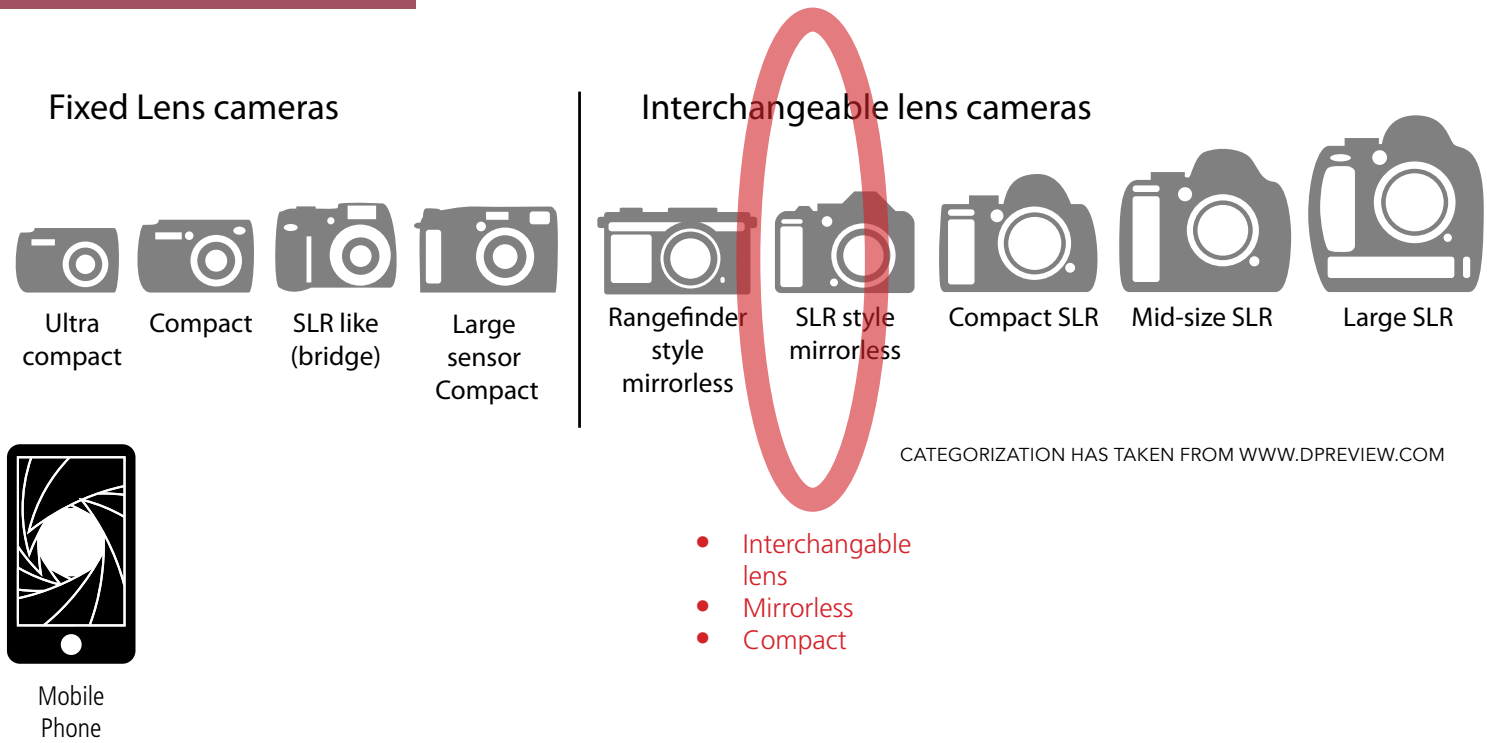
Basic difference between a mobile phone camera and a compact digital camera image is now only image quality. But if we consider the acceleration speed of image quality of mobile phone cameras, we can assume that within a couple of years this difference will be blurred and disappeared. But one of the most important parts of a good camera is a high quality lens which allows capturing more light; get a good depth of field and a high quality image. And this feature is highly depended on the size attached a camera lens. Because of the size restrictions of a mobile phone, it is not possible to design a mobile phone to capture a high quality image as good as a medium size digital camera.

DSLR cameras was the best way to capture high quality images until some of the biggest companies now announces interchangeable lens compact cameras like Nikon J1 (small sensor mirrorless camera). It looks like big brands are now aware of the increased image quality of mobile phones cameras. They are looking for a hybrid combination of medium size sensor interchangeable cameras and small size sensor compact cameras.

NIKON J1 CAMERA

DESIGN PROCESS

PRODUCT POSITIONING



Categorization of the cameras (camcorders are excluded) usually depends on size and sensor quality. But usually buying experience starts with the decision of interchangeable and fixed lens systems. That is why it makes sense to divide them into main two categories. Also DSLR cameras have a long tradition to use viewfinder, which is why they need to have a mirror to reflect light to the eye right before the shoot. It is a big disadvantage because mirror systems have a big impact on increasing the thickness of the cameras. There is other ways to implement a viewfinder by using a separate lens parallel to the main lens system but this means whenever main lens changes viewfinder lens should adapt to the new one.

Within the last 10 years mobile phones evolve faster than any other technological movements. Now almost every mobile phone has a camera and this fact is changing how we perceive the photography and cameras. If it improves with the same speed, in a couple of year's mobile phones will replace the 'fixed lens compact cameras'. Mobile phone's limit has been bounded with their mobility. But a good image quality is parallel with a good lens. Also my initial conversations and interviews showed me that many mobile phone users still prefer to have a separate camera, especially the professional or semi-professional users. With this prediction I decided to establish my design work around the new combination mirrorless interchangeable lens cameras. And as a market segment I will focus on Semi-Professional and Professional field.

DESIGN PROCESS

CASE PRODUCT WORK

This section is going to explain the current interaction systems both software and physical interface of the cameras. In this case I will use Nikon D90 as a case product to observe user touch points.

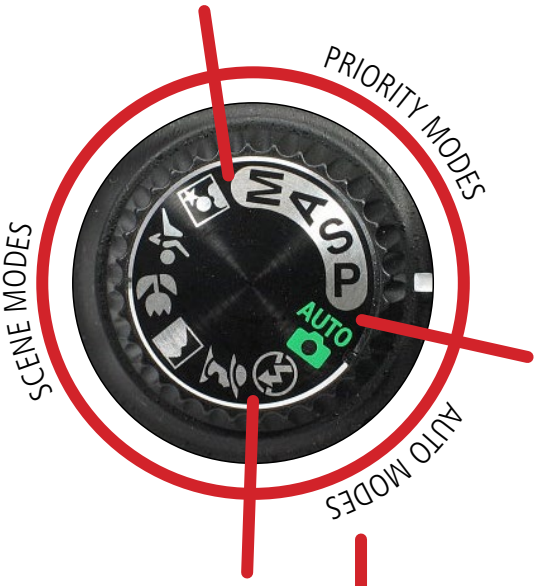
DESIGN PROCESS

CASE PRODUCT WORK

PHYSICAL TOUCH POINTS

Mode button is almost a standard setting buttons for many of the cameras. Depending on the context, initial mode settings are the first part of the process. It is adjusted with a rounded button on the left top side of the camera. It is categorized by priorities, scenes, and auto mode.. Two slider buttons on the right front and right back is for making quick changes on settings right before a shot. Even it is a DSLR with a mirror there is a live view mode for sliding up the mirror for turning camera into a mirrorless direct capture camera. Camera flash is placed on the top of the camera.

Battery is placed far right to transform the gravity center to the holding position. And when we hold the camera on right hand, lens is close to the left side. We need to use our left hand to adjust zoom and focus if we are not using auto-focus.



CASE PRODUCT WORK

SOFTWARE INTERFACE

Internal software is mostly based on adjusting camera settings and doing detailed settings for shooting. There is a top display on the top right part of the camera which is giving a complete overview for the settings and showing setting adjustments. And even it is a mirror based DSLR there is a live view mode which provides a video mode and preview mode for the camera.

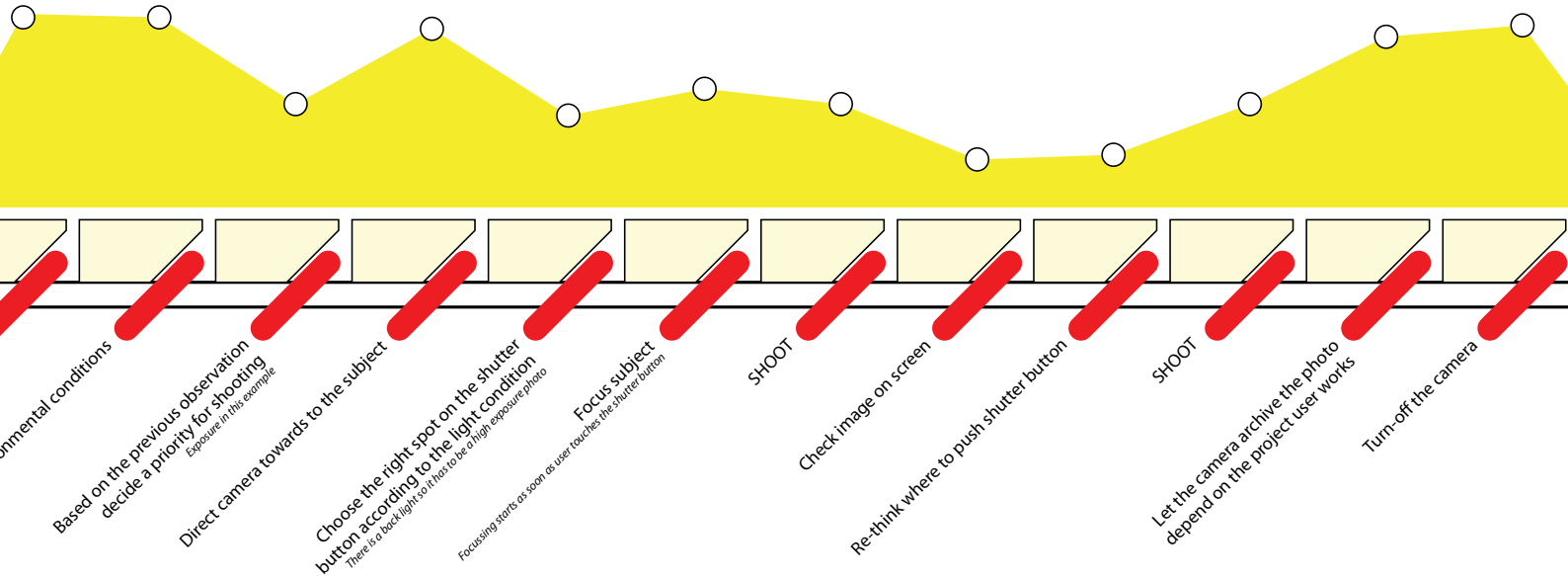
NUMERATIC SETTING BASE INTERFACE

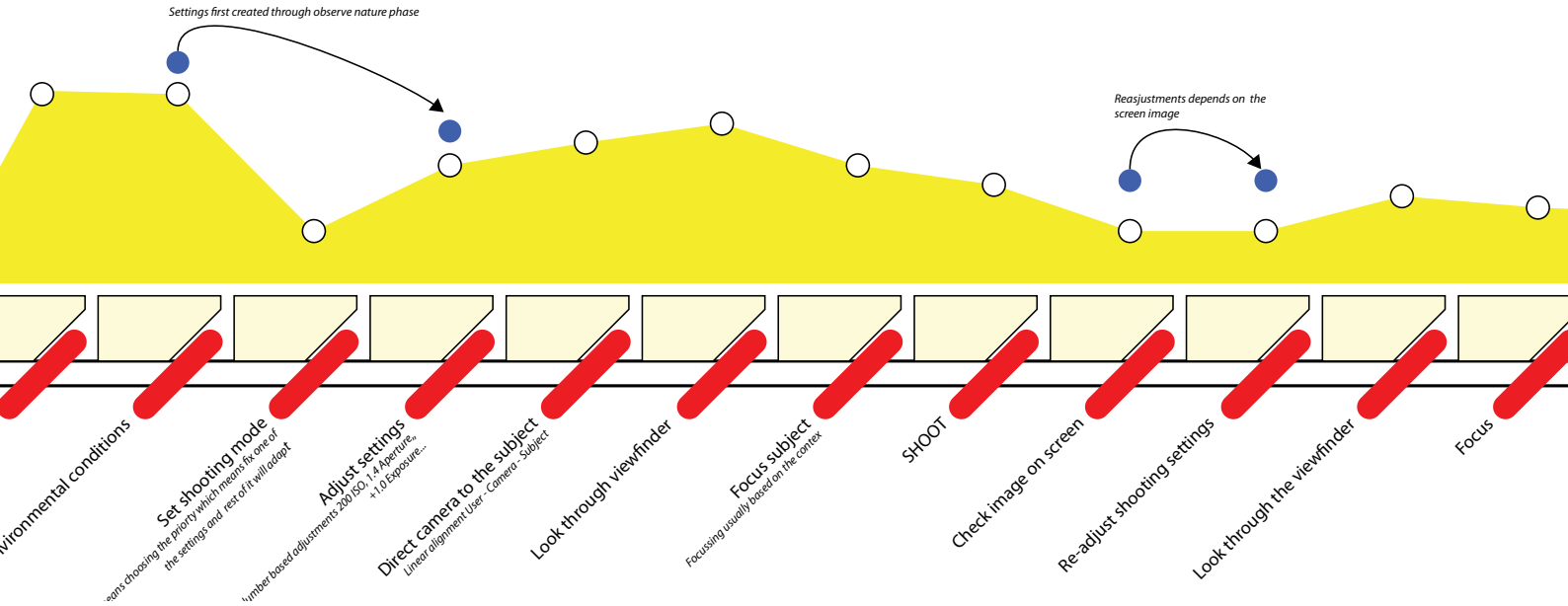
DESIGN PROCESS

CASE PRODUCT WORK

SYSTEM FLOW

At the earlier stages of my process, I map out some of the processes we interact with a camera in a detailed way. Also I observe people reactions and interpretations during these actions. I find out this method very useful for to keep track of what changes it will make when I propose new concepts. This categorization and process of information below consist intangible values and based on my own observation.





APPENDIX FOR BIGGER IMAGES

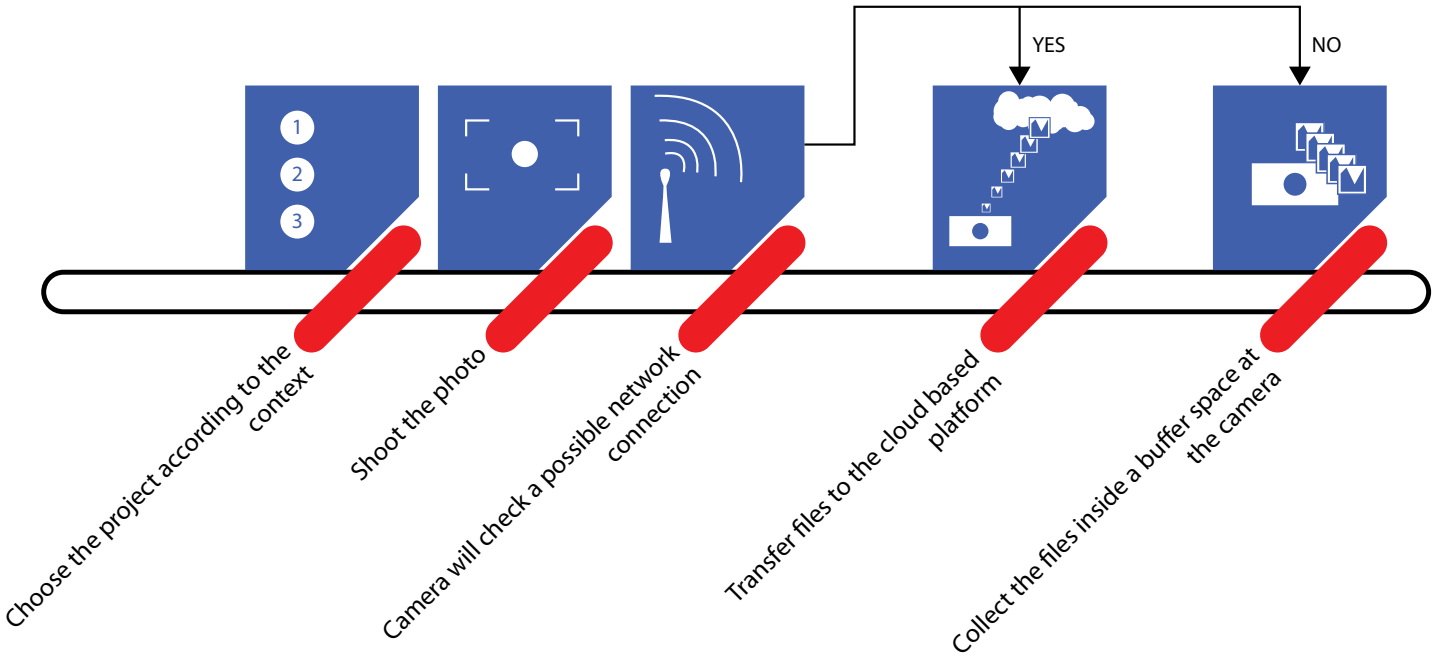
DESIGN PROCESS

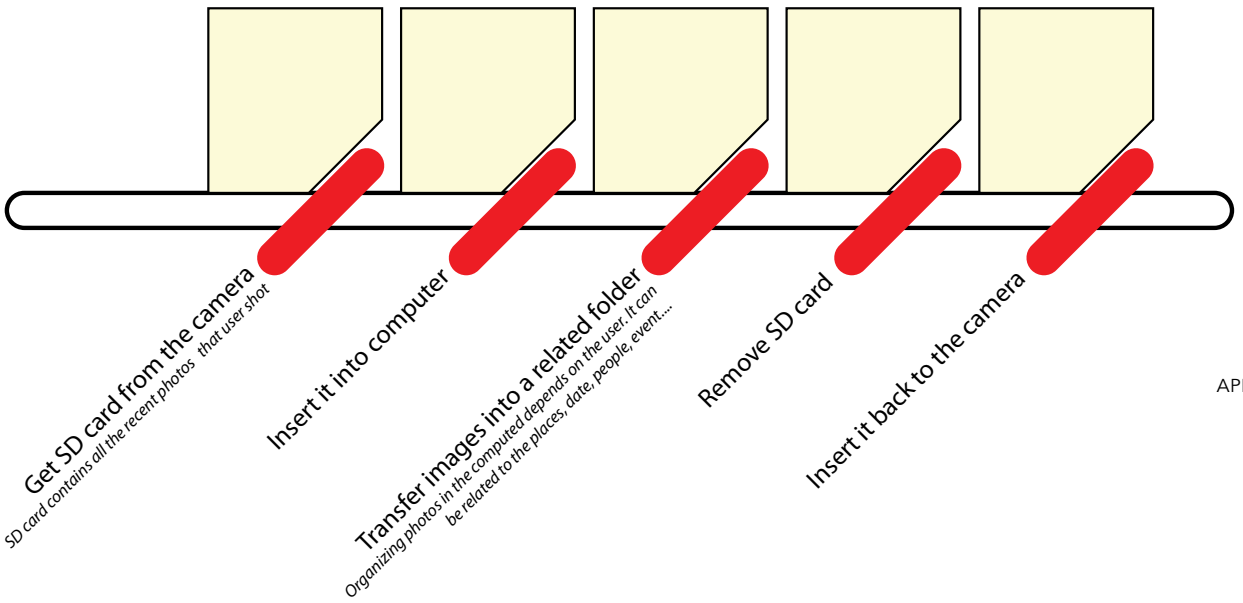
CASE PRODUCT WORK

SYSTEM MAP

Also I look into how we archive and categorize our photos. A camera usually embeds some important information to a photo when the photo has taken and put it into a general folder. Occasionally we transfer these files inside our computer by categorizing it with different methods changing people to people. I offered a wireless transferring system powered by a cloud server, as an alternative to the old methods.

Top flow chart demonstrating, how it will be if cameras documents photos and videos with a tagging system? Furthermore it is also investigating how to implement project base categorization for documenting photos according to the pre-defined variables like place, time, scene, context etc...?





APPENDIX FOR BIGGER IMAGES

DESIGN PROCESS

CASE PRODUCT WORK

CASE STUDY #1

At this point of my project I start taking pictures of Stockholm Streets at night and also parallel to that taking pictures of people around my working area. Both projects have s pre-defined camera settings like ISO and colour scheme According to my studies on this experiments I find out relationship between expanding the action flow of photo taking leads a more organized documentation. It needs an early decision making phase to choose the right project before each shoot but it will decrease the time of remembering settings of the condition. Outcome of this system is also a series of images which have a strong visual connection to each other.

STOCKHOLM NIGHT
B&W COLOUR, 3200 ISO

PEOPLE AROUND ME
BLUE-YELLOW COLOUR SCHEME 200 ISO, 1/4 APERTURE

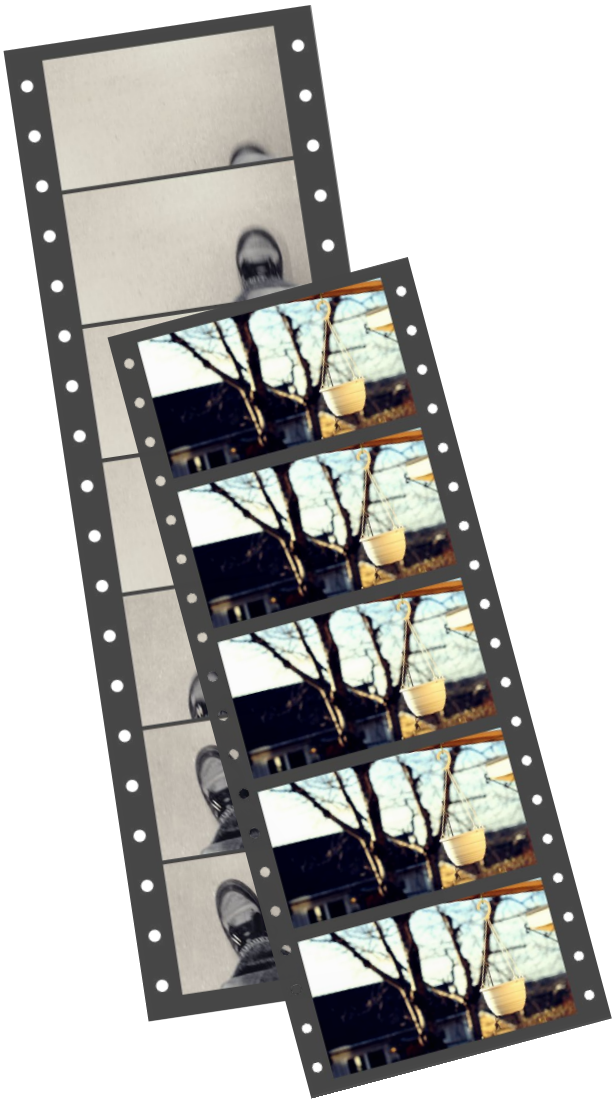
CASE PRODUCT WORK

CASE STUDY #2

Furthermore, I did another experiments to get basic knowledge about what is possible with photos after we store them in an digital environment, I did a project inspired from Jeff Beck's GIF animated photos. I outline the principles of how he approached to the photography and identify the techniques he used in the work. These are the principles that identified;

(Compression Method: GIF)
- For smaller file sizes background should be a still image. Masking the motion is a good idea to avoid noises.
- Subject should be in a repeated motion.
- If subject is not in the initial frame shouldn't be in the final frame.
- 0.09 sec per frame is an accurate for flawless image and low file sizes.
- To create a flawless motion initial sequence can be used again with time reverse in the end. It will not affect the file size because of GIF compression.

Most exciting insight from this experiment was I realize how much digital photography matters depending on how it is presented and prepared. Digital photos are raw information we gather after the transition of light through a processor. It is flexible and a good material for later touches. It grants infinitive possibilities to an artist to for expression.



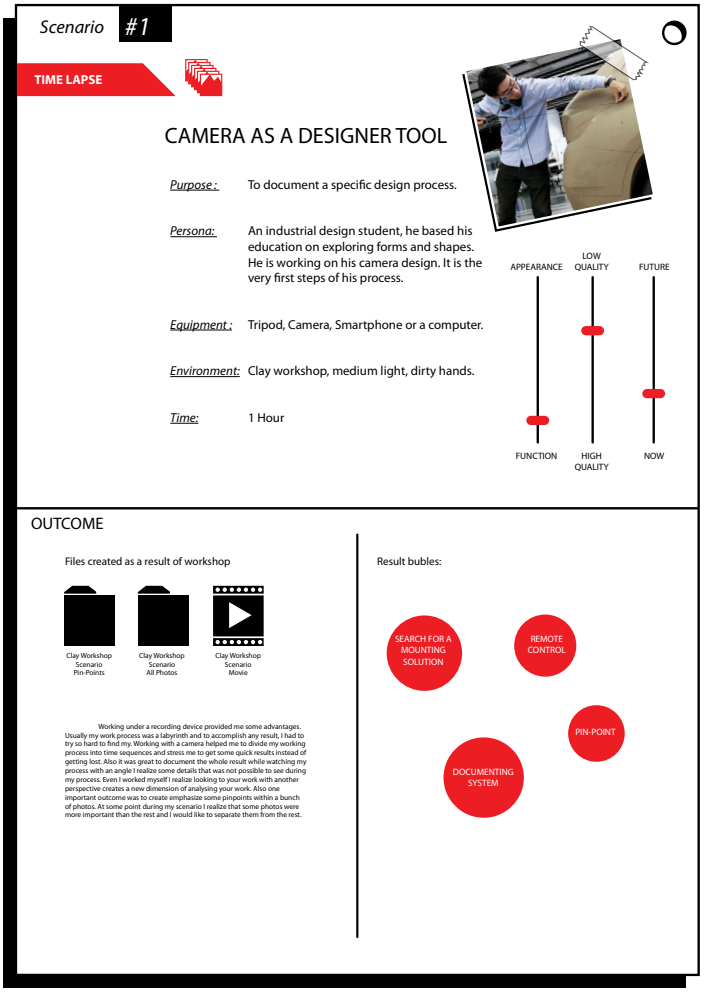
WALKING MAN AND HANGING GIF ANIMATIONS

DESIGN PROCESS

SCENARIO CARDS

First parts of my design work based on knowledge gathering and understanding the contemporary situation of photography and cameras. Before I start my blank model studies I decided to create some scenarios to work around. Organized to be an evaluating tool to refer and test ideas. Also it would be useful tool to give me demand and wishes of the different user groups and I can frame my further studies according to gathered information.

'Scenario cards' have been created to cover a distinct variety of uses of cameras. Most of the parts constructed above the insights of the previous research and readings, rest of it are improvised to cover as many areas as possible. Also those scenarios have been tested with similar target groups and the current equipment. They are categorized photos, time lapses and videos. They contains a persona, basic description of the use purpose, environmental conditions also at the end of the 'scenario cards', it contains evaluations and 'use demands' from the actual tests.' Scenario cards' were also a tool that I used to assess my 'blank model studies'.



APPENDIX I FOR LARGER IMAGES

DESIGN PROCESS

DEMAND AND WISHES

'Scenario cards' and target group tests of the scenarios bring out demands according to the specific uses. This information is a perfect asset for the 'blank model studies'. Any of them can be easily tested through a solid model only serving s specific demand and get an instant feedback from the user. These activities with the users are a continuous loop too gets more demands and test existing ones. Here are the initial demands coming from the personal tests and targeted scenario tests.

DESIGN PROCESS

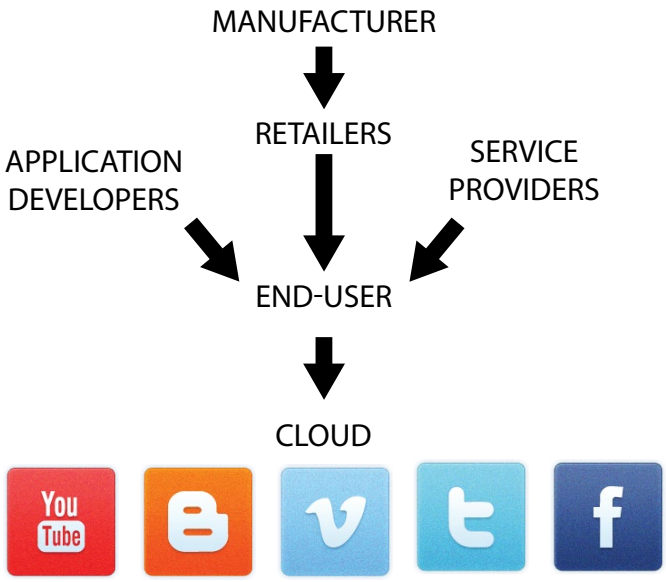
SYSTEM

The discussions about the digitalization of the photography have been fading. Both in the art and documentation, digital cameras replacing the traditional film based cameras. Now almost everybody have mobile phones and big percentage of the mobile phones has digital cameras implemented. Now every single person with a mobile phone is a part of a system producing countless number of frames. There are no longer distinct borders between still and moving images. As Victor Burgin explained, biggest revolutionary in the photographic history is the broadband connection of those tools for capturing potential frames. At this point people are start using their creativity, not only during the moment of photo taking also afterward when they have those images stored in their computer. Also Burgin gave an example of how big companies like Microsoft interpreted with those images and realizes how they can make use of the endless materials on web. Photosynth is an example of a technology uses photo streams to combine images according to the place and the perspective and grants users to navigate smoothly through a digital representation of a scene. (Burgin, 2011, p144)

Photography implemented in our lives in many forms. There are endless ways of using it. Every new camera is targeting a special target group and only changing software not many technical details. Image quality reached a level of satisfying many non-professional users. Presenting of the photos now is adapted to the screens and maximum definition of screens is limited, way lower than the images.

If we consider the camera as a very adaptable gadget and software as a tool for adapting different scenarios, it is possible to establish a platform for photography. This is creating many possibilities for end user and the other stakeholders.

CURRENT STAKEHOLDERS



POSSIBLE EXTENSIONS

DESIGN PROCESS

SYSTEM

When this text refers 'system' as a term it means the combination of all touch points of an image through the creation to the very end uses like printing presenting sharing editing etc..

MOBILITY AND CLOUD INFLUENCE

Previous considerations about the photography and how people using images, provided some good insights for the project. First of all, quality of the images reached a top limit that people no longer demanding to take a better quality or higher resolution photos. Printing media is getting less and less important. People are following magazines and reading news from the web based newspapers and/or blogs. Advertisement is shifting to the digital environments, even street ads getting a piece of that and we are encountering more and more Digital Screens compare to printed ads. Families keeping their photo albums in their computer or they store it to one of the cloud systems like Flickr. When we consider all these process and developments, how a camera should be placed in the system?

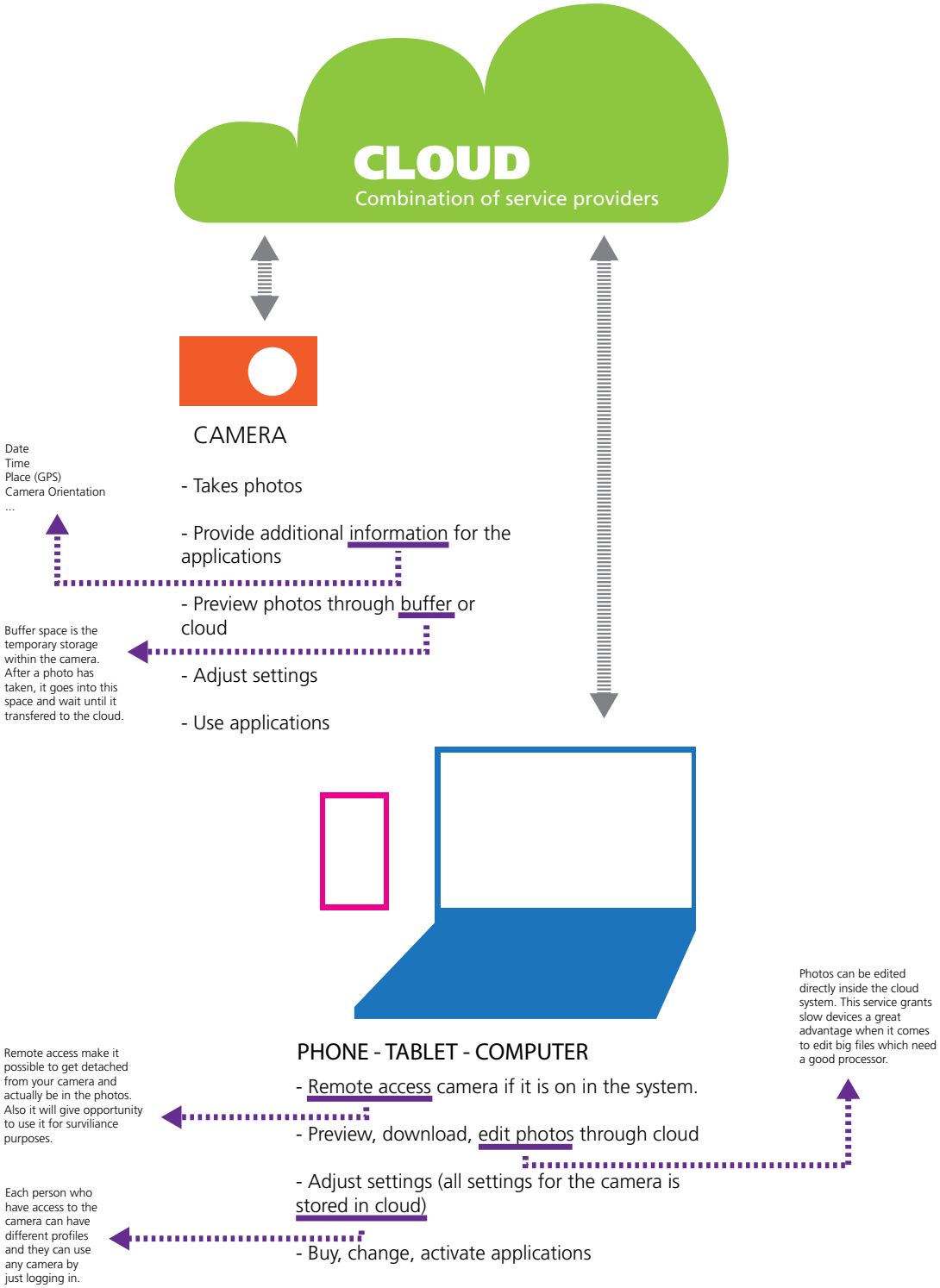
A camera design has not been changed for a long time. It still follows the same principles and we are still interacting with a camera at the same traditional way. Mobile phones have evolved a couple of years ago and people understand that consumer electronics especially the ones which are belonging to a complex system have to be more and more adaptable and intuitive. Also the influence of mobile phones to photography is changing the whole approach of taking a photo. No longer will fixed software or predefined buttons are working. How we interact with the photos is becoming very complex and large system. Lots of variables and platforms are defining the meaning of photography. In this current system, cameras are only dealing with the very first part of the system, taking a photo. Rest of the process is completely independent from the camera. We extract the pictures from the camera and the rest of the system happens in a digital environment, in our computers.

What if the cameras will work exactly the same principles of smart phones, an environment, a platform for accommodating applications and providing essential information to the secondary services? Primary focus of a camera is still taking a high quality picture or a video but instead of only converting the digital information to a meaningful image on the screen, it is possible to provide that raw information to the secondary applications to make use of it, right at the spot where the photo taking happens. So basically buying a camera is becoming a part of a system which includes variety of stakeholders like app developers or service providers.

SYSTEM

USER PERSPECTIVE

Schematic view of how users will interact with the system.

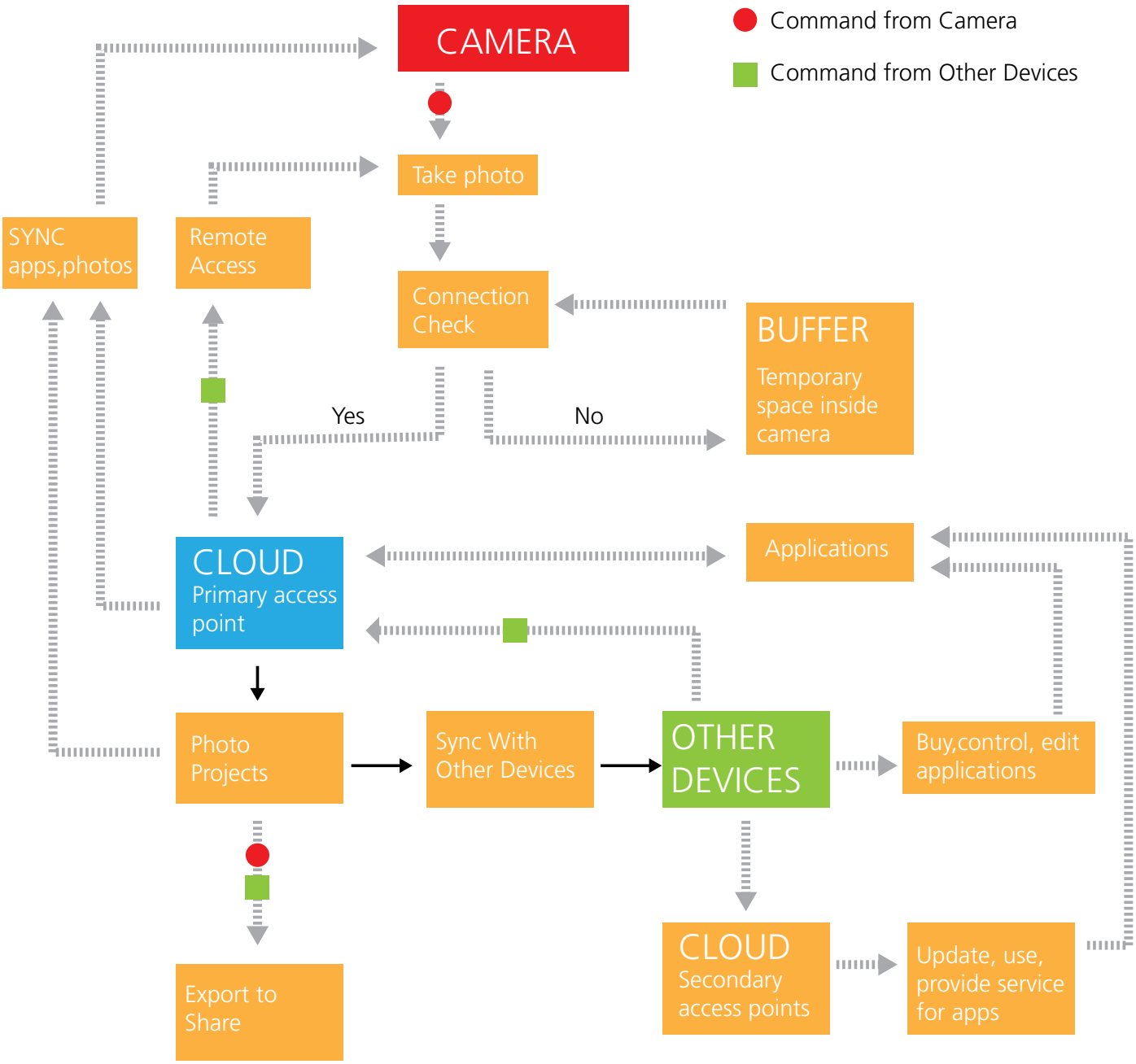


DESIGN PROCESS

SYSTEM

USER PERSPECTIVE

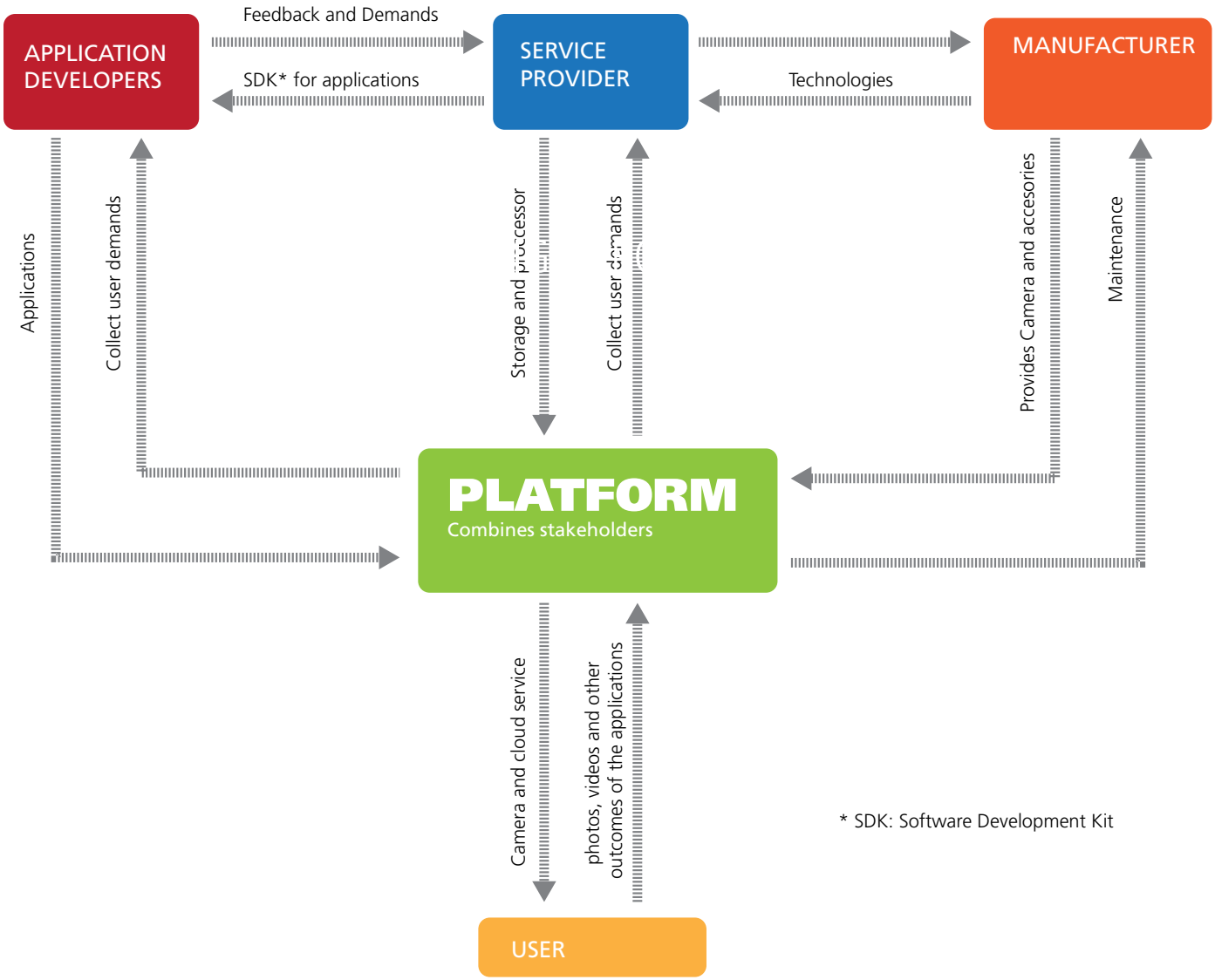
Schematic view of data journey through the system



DESIGN PROCESS

SYSTEM

Schematic view of stakeholder's roles



* SDK: Software Development Kit

DESIGN PROCESS

SYSTEM

In order to set up a system as descripted above, camera as a tool should be a touch point to access to the platform. Defining what kind of needs that a camera have to fulfil will gave a good brief and a frame which makes formgiving and interaction studies a lot easier.

Most important needs for the camera according to be a part of this system is the adaptability. Depending on the scenarios there is two ways of working in the system. One is to categorize the specific needs and design a point on targeted product series to satisfy different demands. Although this way of approach has problems, user's expectation of flexibility from a consumer electronic product has been increased parallel with the mobile devices. Main purpose of the platform is to unify the after experience of photo taking process. Another approach which is the way I choose is designing an adaptable camera to fulfil user expectations with only one device. Thanks to the technological advancements there is many ways to accomplish this task easily.

Software technologies and open source operation systems for mobile applications are getting more and more common in consumer electronics. An open source operation system like 'android' could solve all the problems for the dynamic software interaction. But my aim was not only create a universal software environment also establishing a universal physical interaction covering many different use scenarios and variation of different personas. Here are some of the insights to work around during the formgiving process:

- Compactness (size and the physical shape)

- Flexibility (different environmental conditions)

- Adaptable (left hand use)

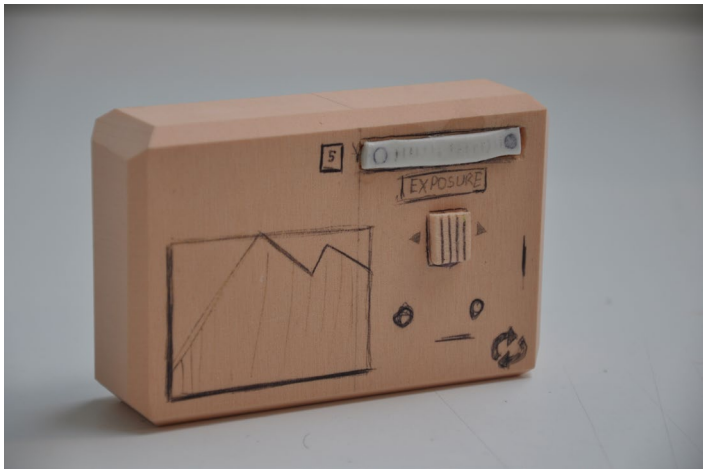
- Simple (easy and intuitive use experience)

Using this approach to the camera is also a benefit for manufacturer; to be more precise on one product, service providers; to develop and work around only one product, Application developers; to not confuse or write many different apps for different devices. Furthermore it is a more sustainable way. Less type products is means less production waste.

INTERACTION

BLANK MODEL INFLUENCE

To be able to create knowledge efficiently and accurately through the process, I tried to follow the contextual direction that I created with my system proposal. I categorised the demands from the scenario cards and group the parts related to the interaction of the product. Before implementing or evaluating with my system, first I test the features or functions with 'the blank model studies'. Although it was hard at the beginning, I fail to gather enough knowledge compare to what I expected. I realize that, to be able to focus and get only related feedback from the user, I should separate the ideas and test them separately in blank models. After using this method my process become efficient and faster. In some cases, I had to combine functions and features if they are complimenting each other; this provides a more clear understanding for the test groups.



TEST MODEL FOR MULTIPLE FUNCTIONS

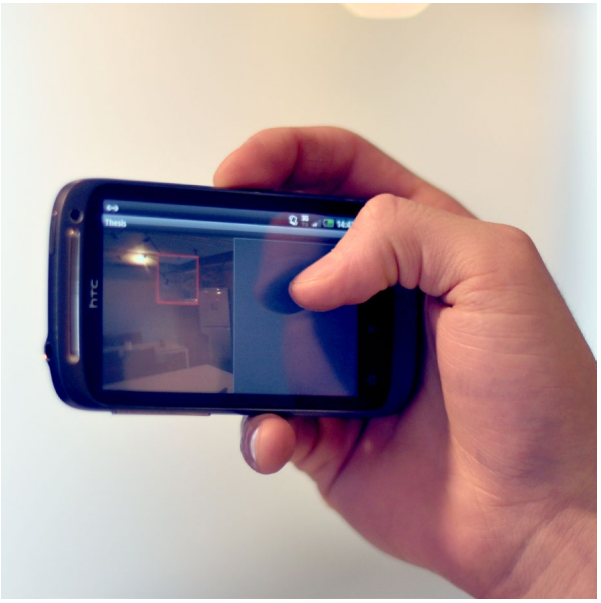
TEST MODEL FOR SINGLE FUNCTION

INTERACTION

TOUCH SCREEN - TOUCHPAD - NAMELESS BUTTONS

Designing a universal camera needs a universal, adaptable input. When we look at the other devices designed for the same kind of purposes, we can see some common points. A mouse, keyboard, touchpad, touchscreen or drawing tablet are good examples of how a universal input device will work. Reconfiguration and multipurpose is the key elements of designing a universal input. A recent one is touchscreens. Now they changed our experience how we interact with a mobile phone. It is probably the most intuitive method among other ones. Just like in real life you touch and get feedback. I start considering touchscreen as an input device for the camera. But also I didn't eliminate other options like touchpad and 'nameless buttons' (assignable shortcuts). I had an opportunity to use a touch screen compact camera (Sony Cyber-shot DSC-TX10). But unfortunately I disappointed, I was expecting a better, more intuitive way of use. Especially when it is an on screen product, there are lots of opportunities you can add to the interaction. Taking a picture and using the same area for my inputs didn't work. For the automatic shots it was reasonable not to touch on screens, but when it comes to manual, more precise shots, it wasn't working. Also ergonomically when there is a touch screen, I realize people are trying to avoid touching screen during the photo shoots, both in mobile phones and touchscreen cameras. And it causes problems for stabilization of the camera. Also it was one of the topics of my interviews, mobile phone cameras and touchscreen cameras which have similar interactions. And I get the similar reactions from the people. On the other hand, I start considering using touch pad as an input device. Dividing input and output into separate places would probably help to increase control over the camera. Blank model studies and tests prove me that it was an idea worth to try and proceed for more tests.

Initial tests made with linear touch button only adjusting priorities of current shoot. I ask the question what if shutter button merge with a slider button and user do the shooting together with the prioritized setting. First example was with the exposure set option. As shown in the model photo, user moves finger according to the light condition (backlight, low light etc…) through the button. Exposure changes according to where user presses the shutter button. This test leads me to another step of merging buttons. This was only a linear interaction but it should have possible to do a 2d movement to increase the amount of information that user inputs to the device during shooting. After a couple of more 'blank model' tests, at one point I realize that I need to test touchpad like input situation. I decided to do a smart phone application to test separate input areas for orientation, intuition and efficiency. With the help of my project collaborator Can, we wrote an android application. We divided the screen into two pieces one part is acting like a screen other part as a touchpad. And I did user tests to understand how the experience was. No orientation problem has occurred; users easily adapt to this new situation and had no problem with divided screen interaction.



USER TEST - ANDROID DEMO APPLICATION FOR TOUCH FOCUS

DESIGN PROCESS

INTERACTION

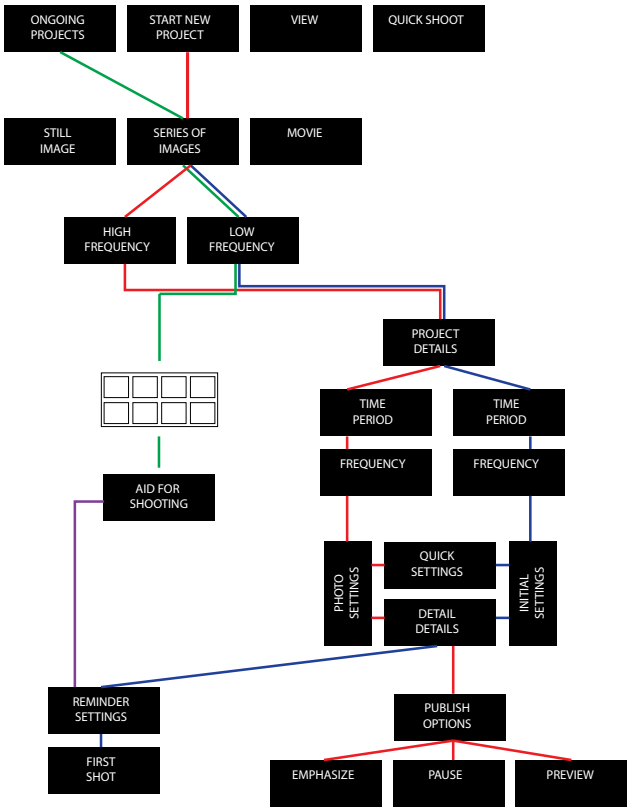
PROJECT BASE INTERACTION

Common camera interfaces are based on numeric based settings. But when a photo has taken all settings transform to the pixels and become meaningful. I start working about putting those numeric based settings into the context of projects. My personal experience and observations showed me people who are working with photos have variety of settings they use for different purposes. For example to when I need to take photos during night I usually use maximum ISO number and minimum aperture, also usually I choose black and white photos to avoid colour noise pollution. From this insight I decided to construct a new interface where projects have the highest priority compare to settings.

What if the settings were a part of each project and if user chooses a specific project it will recall the pre-set options right before the shots. This is also a step to a 'smart recall system'. Smart recall system is a concept that I envision. With the help of digital image analysis algorithms in the future it can be possible that whenever user points the camera to a subject, camera can analyse the context and propose to recall pre-set options to the user.

Here is how I visualise the project base interaction.

APPENDIX FOR LARGER IMAGE

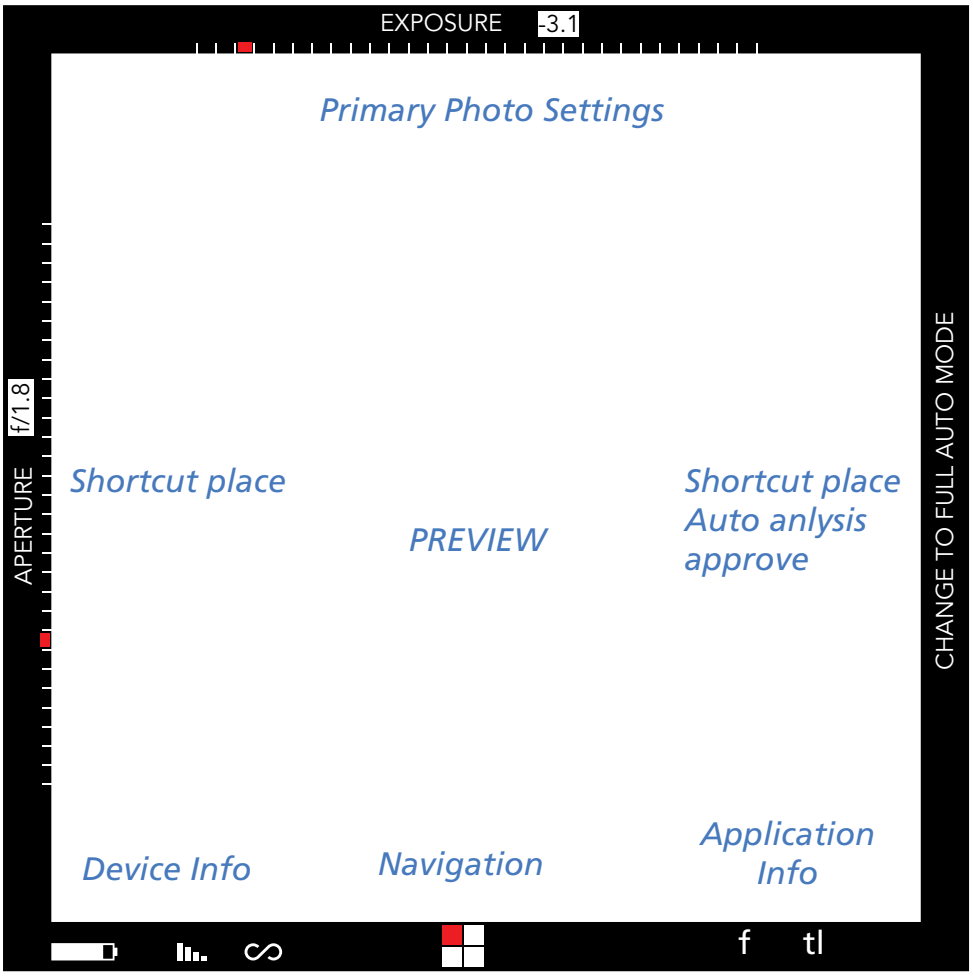


APPENDIX FOR LARGER IMAGE

INTERACTION

GESTURAL APPROACH AND ANALYSING SCREEN SCTRUCTURE

Screen has to serve as an output device. Primary function is to show user digitalized data produced by the lens and demonstrate the pre photo status before pressing the shutter button (viewfinder). Secondary function is to adjust the processing algorithm and physical properties of the photo (photo settings). And third function is navigating through the device and cloud to reach advance settings and look out the photos which has been taken before. Final function is to guide user through the changeable shortcuts to reach critical points of the interface. Thumb using tests has been made to define the function placements.



SCREEN STRUCTURE

DESIGN PROCESS

INTERACTION

POSSIBLE INTERFACE SCENARIOS

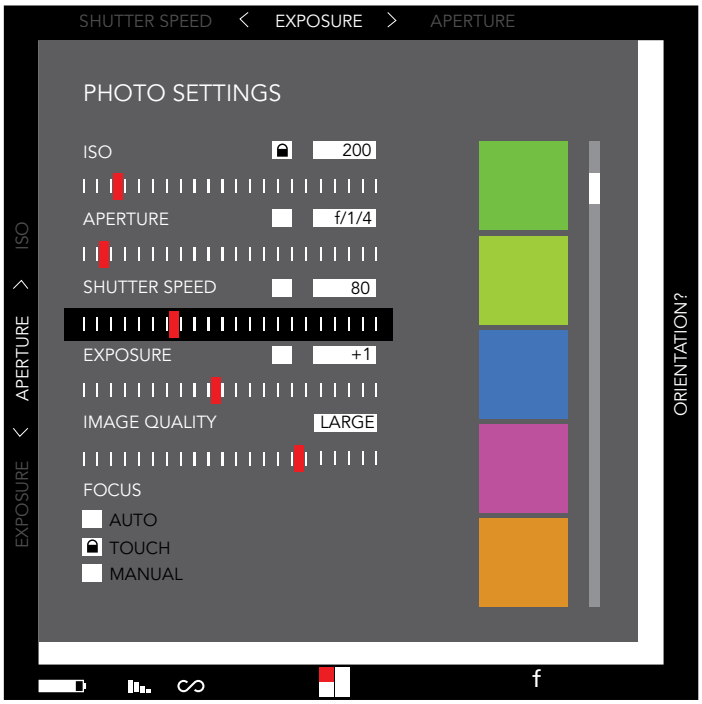
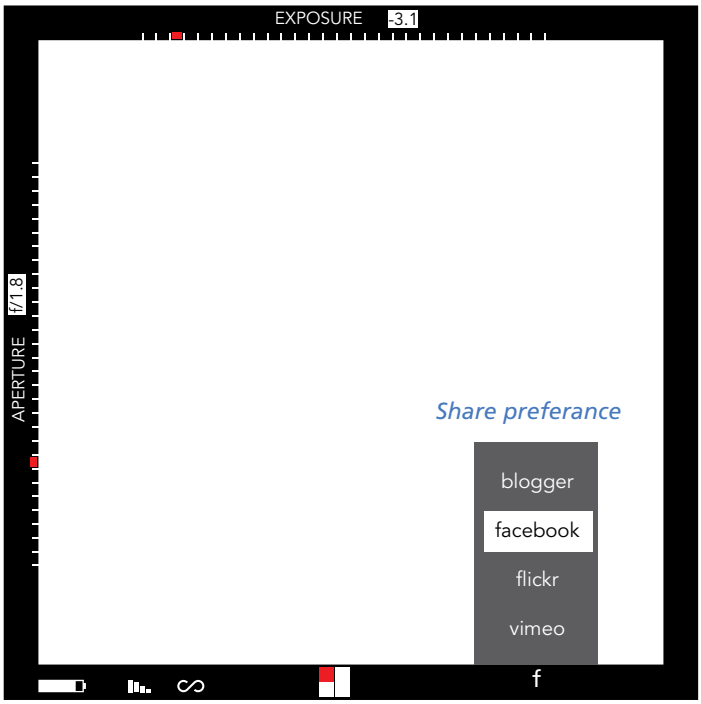
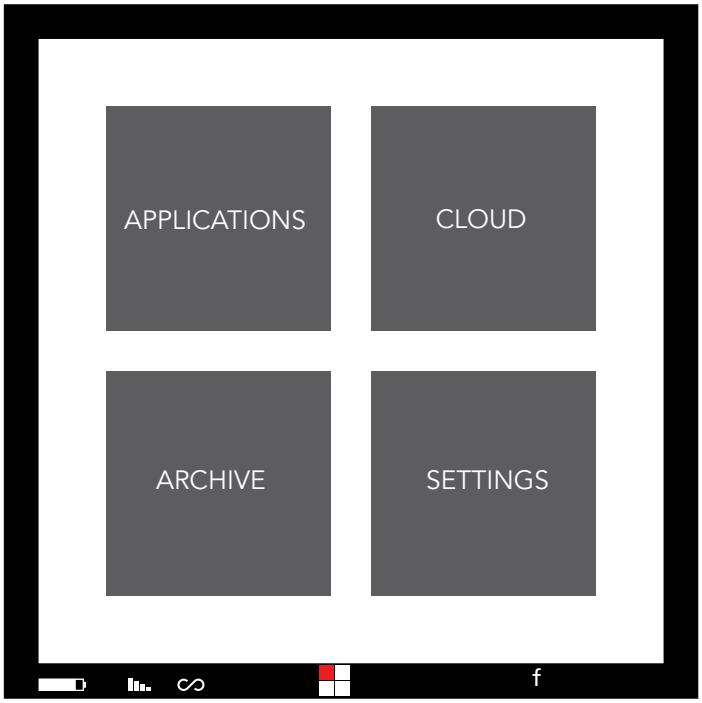


PHOTO SETTINGS



SHARE OPTIONS



NAVIGATION

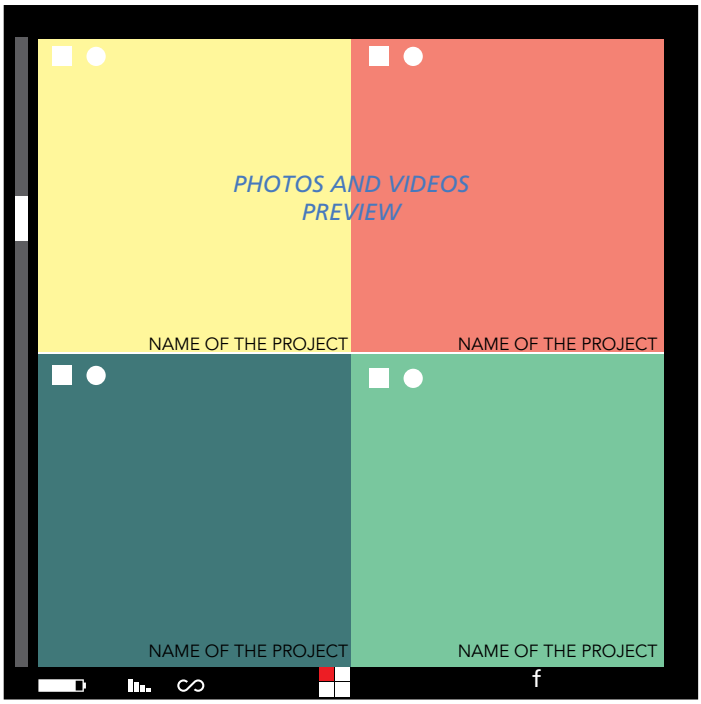


PHOTO - VIDEO PREVIEW

DESIGN PROCESS

FORMGIVING

This section is explaining, how does previous proposals effect and evolve the form of the artefact. How does the decision making process happened with the use of scenario cards and blank model concept. Final results of the user tests and final form will be explained.

Sketches, physical model photos, 3d renders will be used to explain formgiving process.

FORM EXPERIMENTS - "DESIGN NATURALLY" WORKSHOP

DESIGN PROCESS

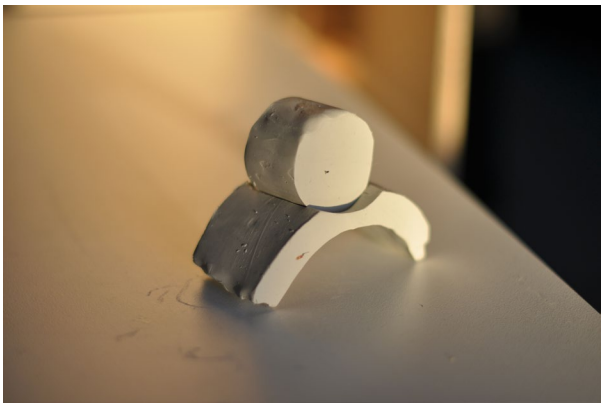
FORMGIVING

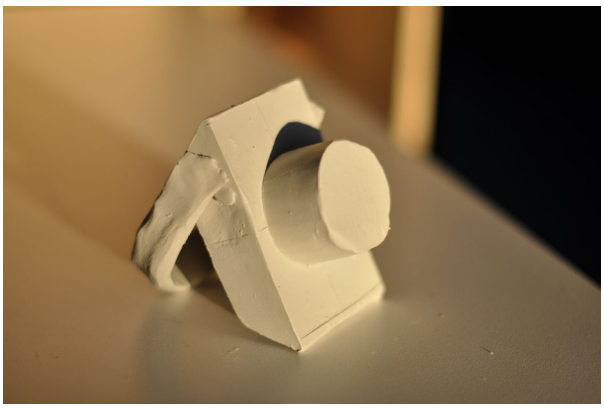
INSPIRATIONAL CLAY MODELS

Before I started to the defined and structured formgiving process, I went to the clay workshop and do some freeform tests to explore possibilities and get inspiration. Also I document the workshop session with the time lapse method to experiment how it would affect to my working process.

TIME LAPSE PROCESS

CLAY WORKSHOP



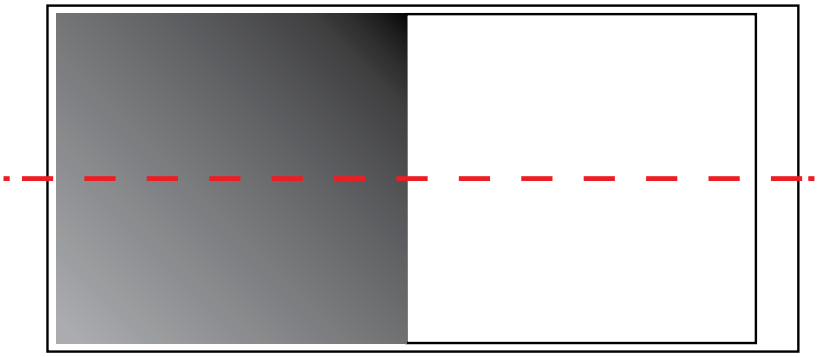


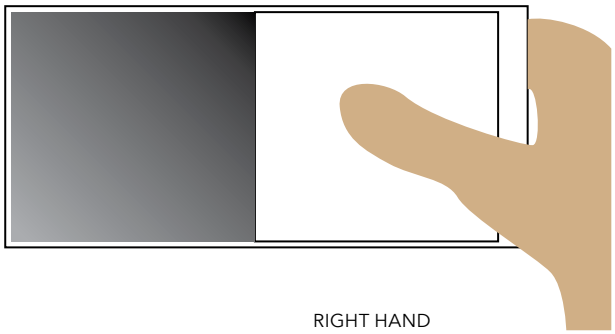
CONCEPTS DURING THE WORKSHOP WORK

FORMGIVING

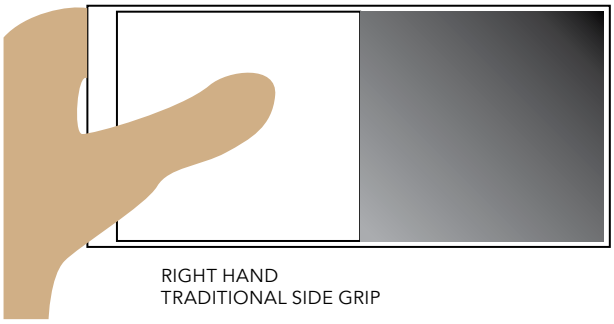
ADAPTATION TO DIFFERENT HOLDING SITUATIONS

'Symmetry rule' is a principle I found out during my left hand, right hand studies. Touch screen and touch pad easily can be oriented to the new situation by adjusting the software. But holding and using the camera needs a special form for adaptation. Basically when the camera has to adapt to the right hand and left hand it needs top and bottom symmetry. First I defined 2 different positions for holding. First is the traditional side grip, second one is vertical griping. Vertical position is more stable and easy holding position which is a good advantage for recording a movie. Both positions have also two different way of holding; left hand and right hand.

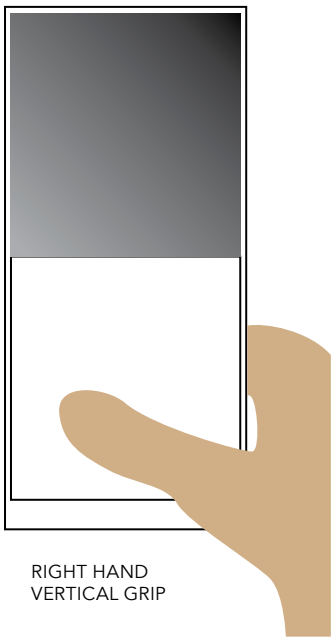




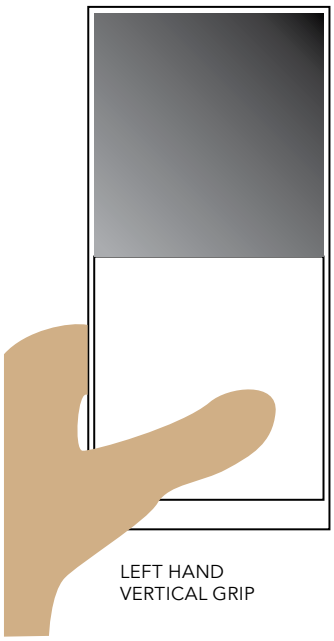
RIGHT HAND
TRADITIONAL SIDE GRIP



RIGHT HAND
TRADITIONAL SIDE GRIP



RIGHT HAND
VERTICAL GRIP



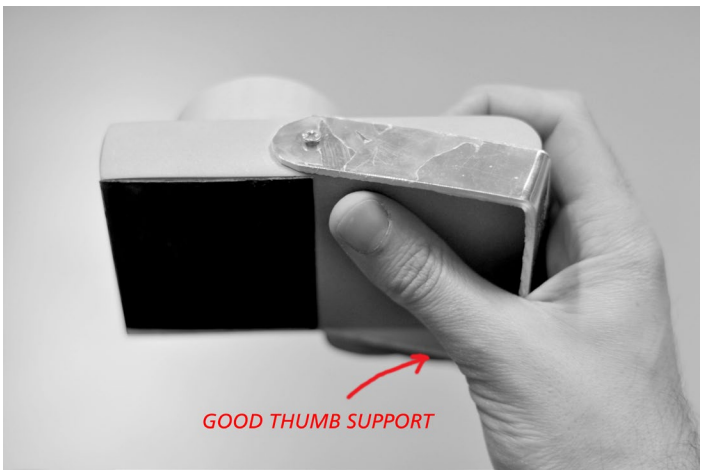
LEFT HAND
VERTICAL GRIP

FORMGIVING

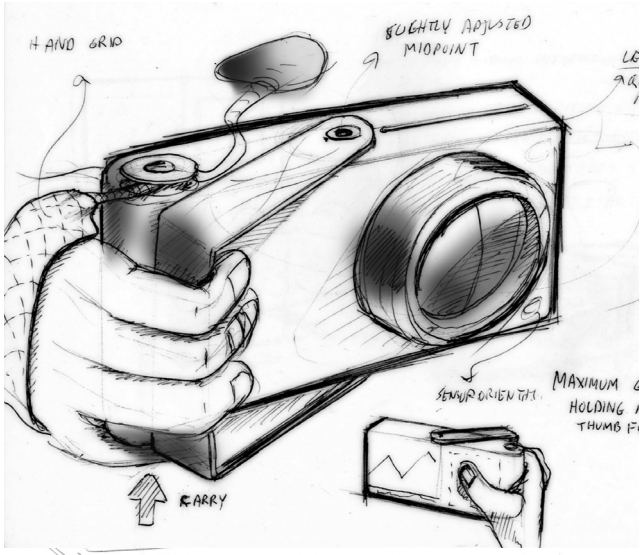
NEW WAY OF HOLDING A CAMERA

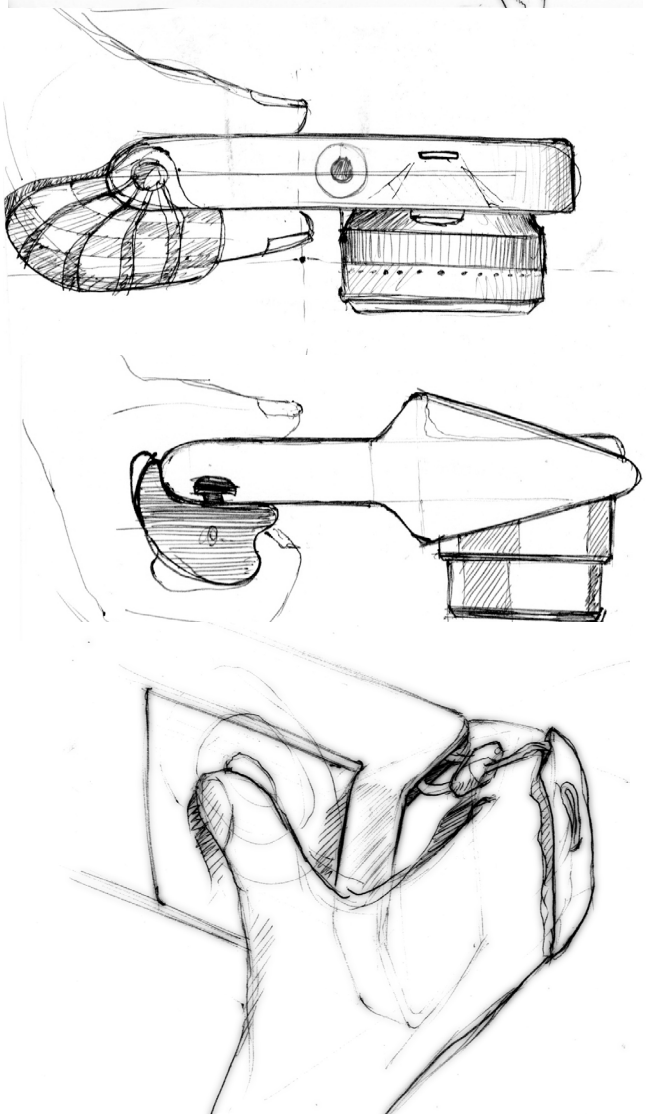
Sketches and physical models showed me a new interaction proposal has shifted how a user handles the camera. Traditional front griping is not working when user needs to use thumb for input. A new way of support is needed.

TEST MODEL FOR ERGONOMICAL FEATURES



TEST MODEL FOR ERGONOMICAL FEATURES



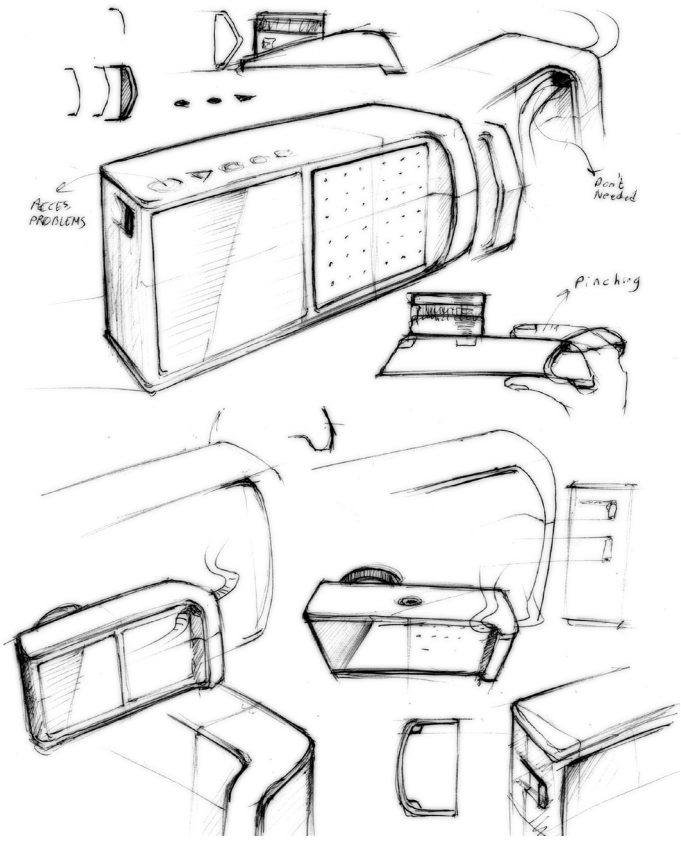


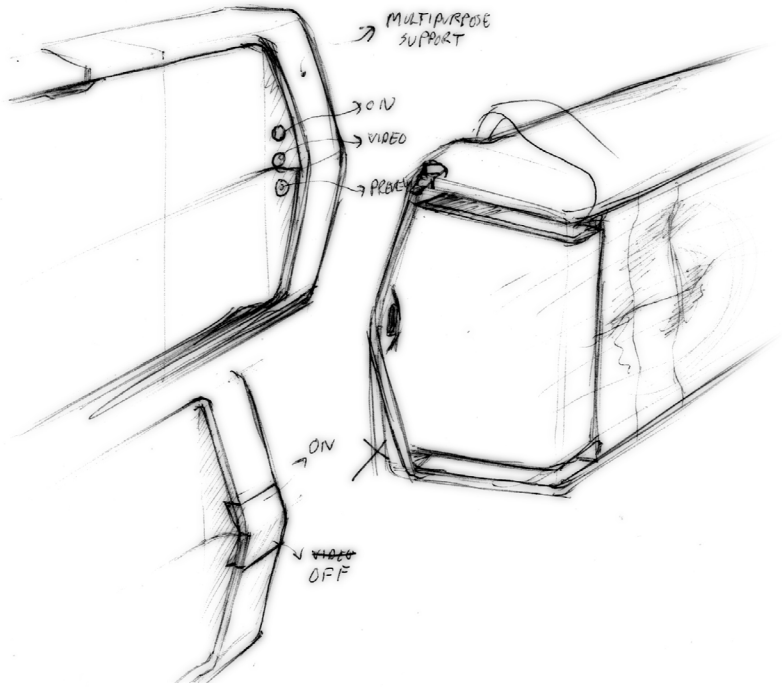
DESIGN PROCESS

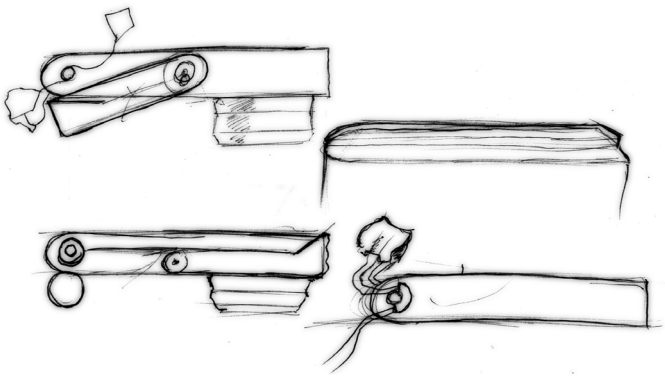
FORMGIVING

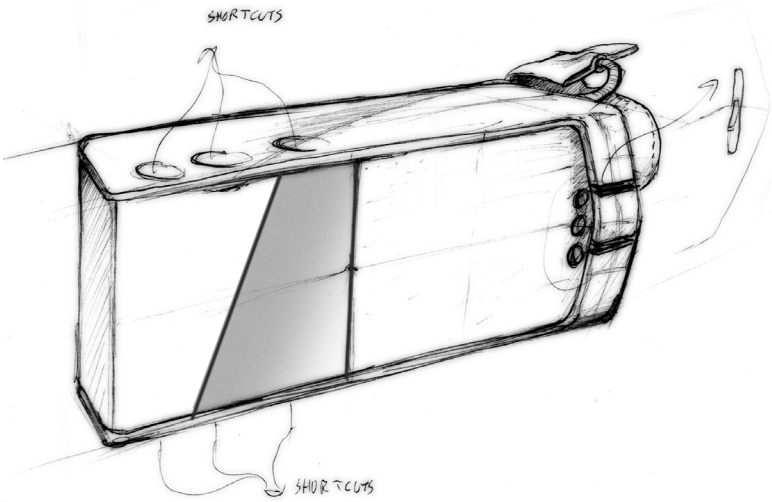
NEW WAY OF HOLDING A CAMERA

Shaping the support for a confortable use experinece.





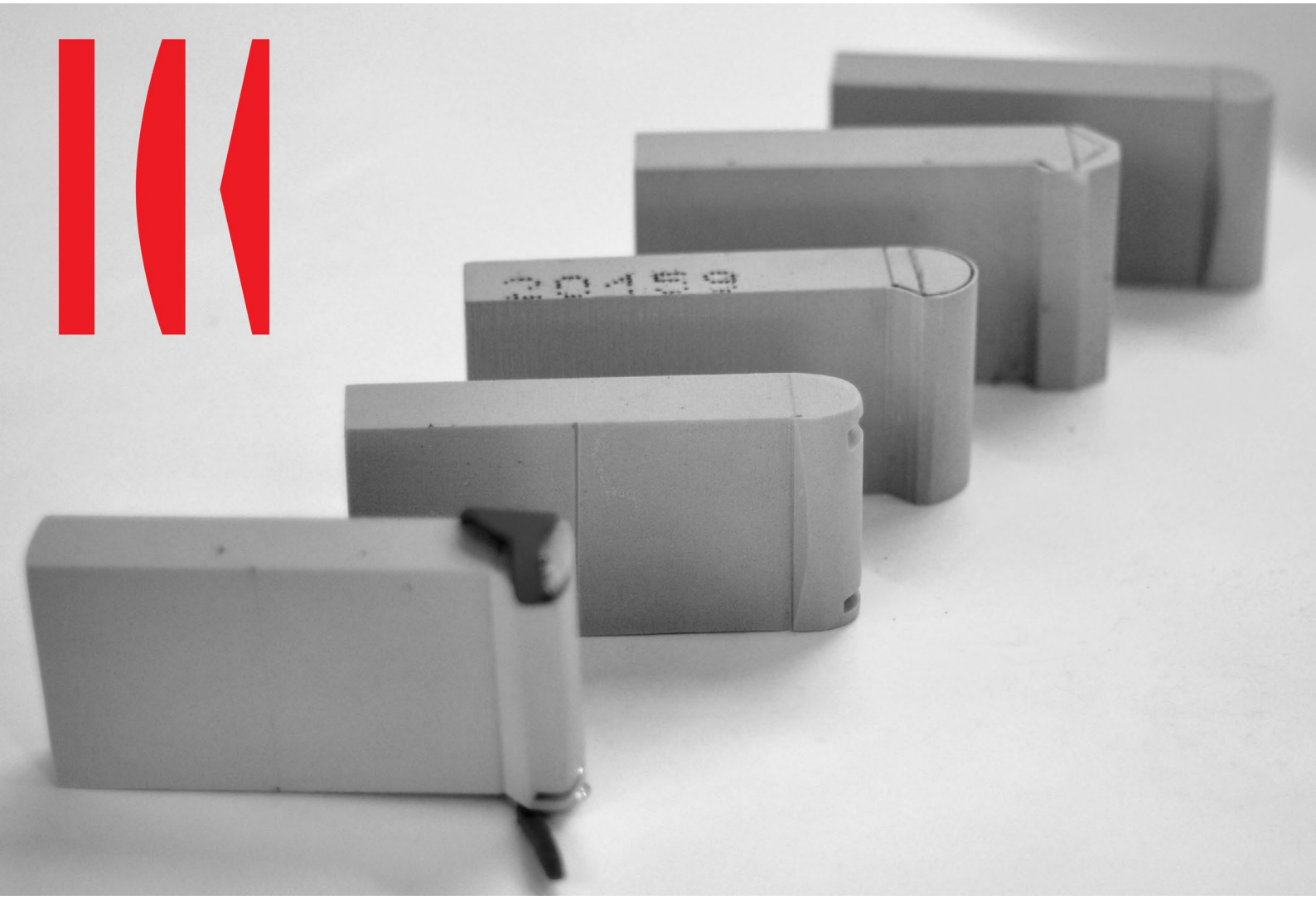




FORMGIVING

NEW WAY OF HOLDING A CAMERA

The inside grip has to support the bottom thumb but has to avoid creating dead surfaces where thumb can't reach. Foam models showed me, with the all different holding positions, hand was only touching to the edges of inside grip. This is why a wide triangular shape was creating the most powerful support and flexibility.

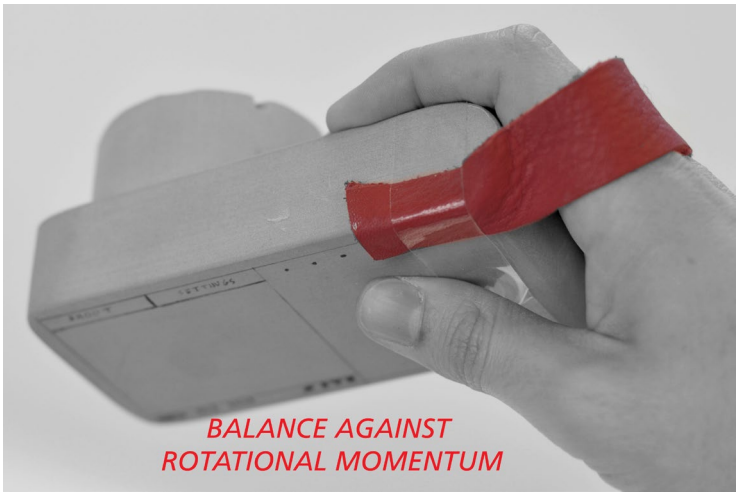


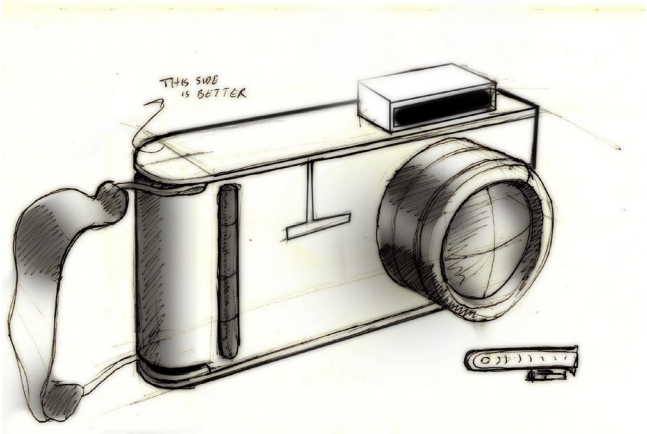
FOAM MODELS FOR FORMGIVING PROCESS

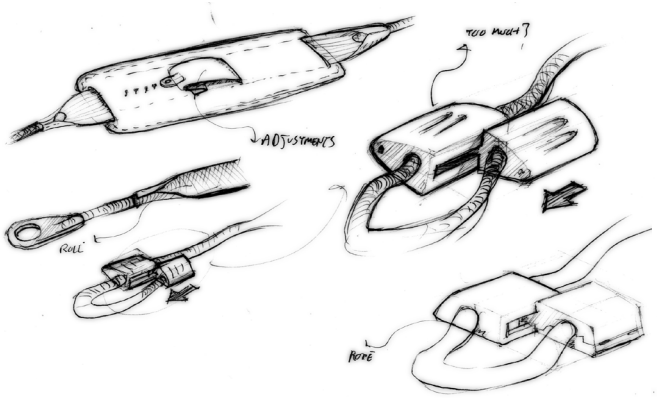
FORMGIVING

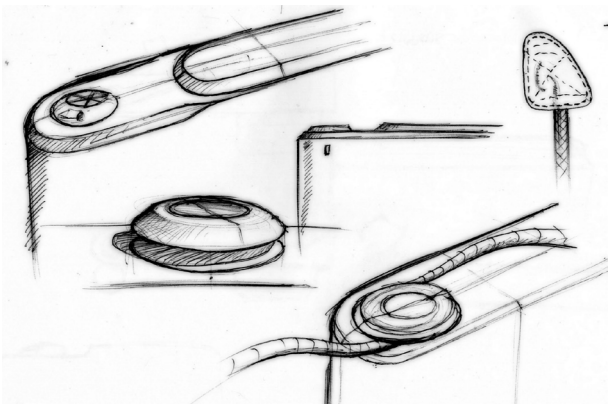
NEW WAY OF HOLDING A CAMERA

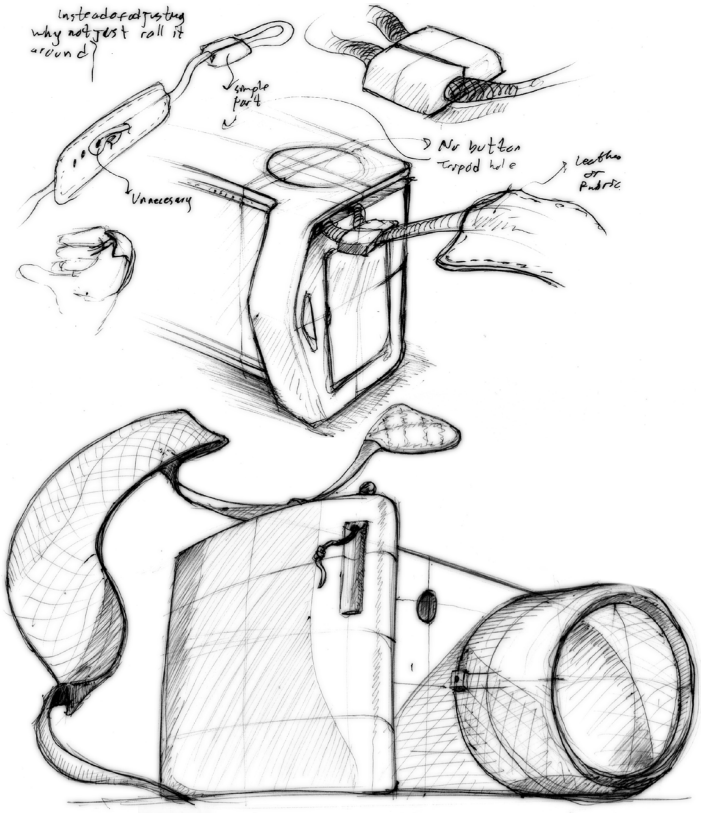
To be able to accomplish one finger interaction camera has to be balanced when holding it. One of the drawbacks of using interchangeable lenses is moving gravity centre away from the griping area. When holding the models with two hands it gets so easy, but when I ask people to hold it one hand and use their thumb it gets complicated. To get a good support I test different types of straps for one hand use. When having a strap covering 3 fingers camera's rotational momentum has been balanced and it gets so confortable to hold it.

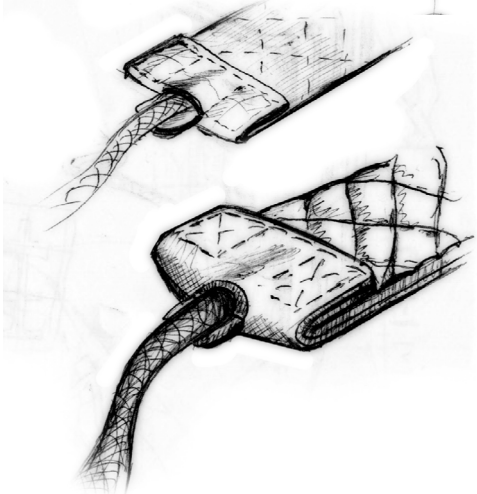






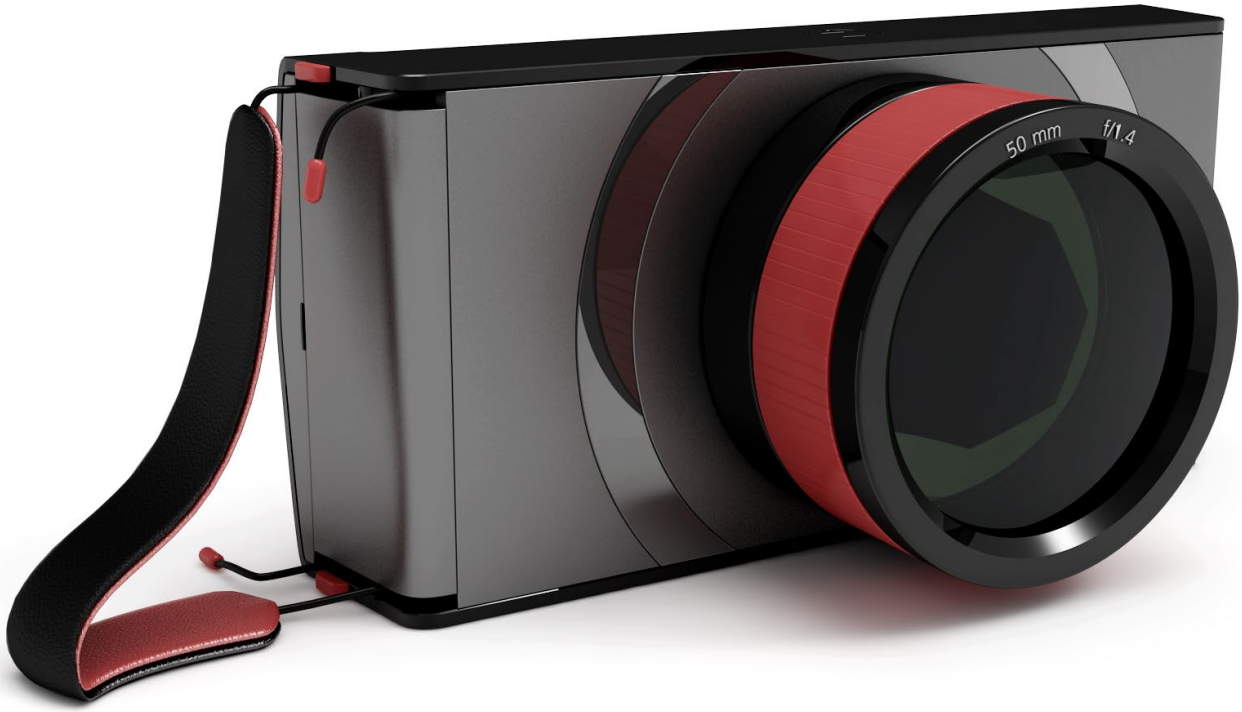






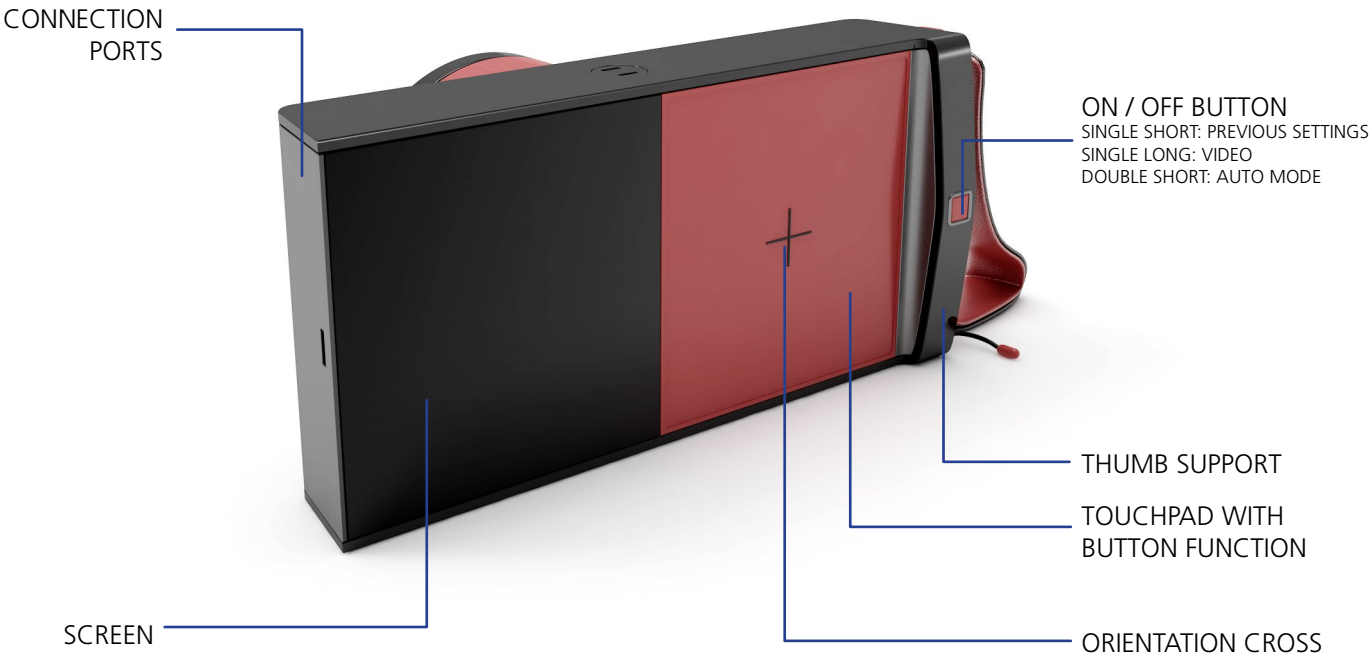
FINAL PROPOSAL

FINAL PROPOSAL



FINAL PROPOSAL

COMPONENTS



FINAL PROPOSAL

HOLDING POSITIONS

RIGHT HAND - SIDE

RIGHT HAND - VERTICAL

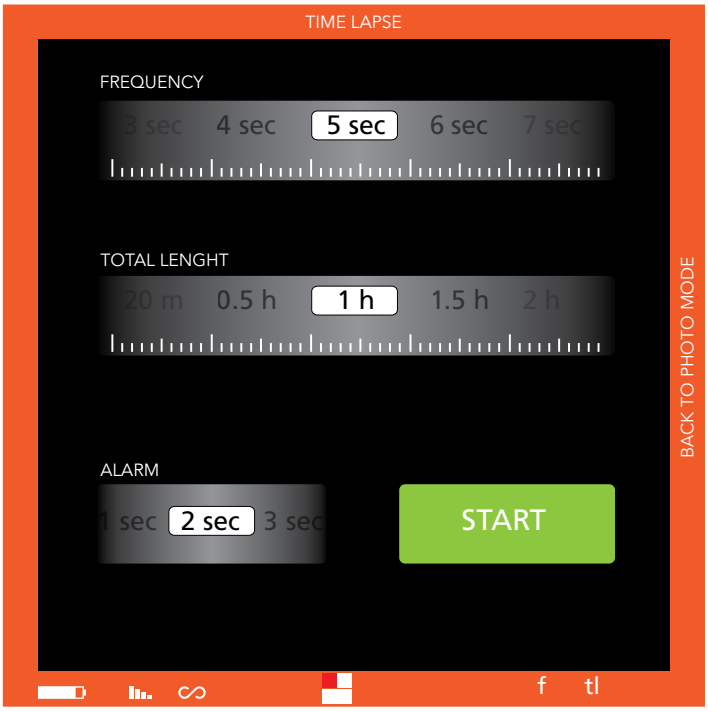
LEFT HAND - SIDE

LEFT HAND - VERTICAL

APPLICATIONS

TIME LAPSE APPLICATION

The earlier phases of the process I did some experiments about time lapse photography. I found the technique really fascinating. Even I consider designing a specialized camera for taking time lapse photography. But I realize it could be easily implemented to the camera by software. Time lapse can be an application users download from the platform. The application consist two different modes; one is high frequency time lapse which is short term photo taking like every 5 sec, the other mode is low frequency time lapse that is for long term photo shooting like every day. For long term shoots software can alarm user to the exact time and also aid user to point the camera to the exact place by comparing previous shot with the preview image.



EASY GIF ANIMATION

GIF photos have been around more than 25 years. It has been used for different purposes and nowadays people are started to use it again. I wrote in the beginning of my essay about how I fascinated by the works of Jemie Beck and I also did the same work as a case study for my project. I find out it is not a new but very nice way of presenting a moment with motion in it. It is not traditional photography but also it is not a video either. This product is also really suitable for precise masking with the touchpad.

FINAL PROPOSAL

FURTHER FORM STUDIES

REPRESENTATIVE MINIMALIST FORM

After the initial form studies and improved blank model. Second phase was to identify a more representative form for emphasizing functional properties. Overall red color has been removed from the product and only applied to the touchpad to create more disntinct focus. All unnecesarily surface features and functions has been eliminated. Hand strap is no longer a part of the product , instead of that 8 different side holes has been implemented to the product to able to create a platform for accessories.

APPENDIX II FOR MORE IMAGES

DISCUSSION

FEASIBILITY

Everything I proposed in this project is possible to establish with the current technology. Some big companies already start discussing about implementing an operation system into the cameras to launch an open platform for people. Sunhong Lim from VP Sales & Marketing in Samsung's Digital Imaging division explained his vision about Samsung's role in shaping the future of cameras at one of the interviews. He believes, near future all the cameras will have the same processing power as smartphones and all cameras will have a mobile operating system with a built-in connection.

Customers are already looking for a total solution when it comes to photography. Furthermore Polaroid just launched their smart camera with android operation system. All these points are shows that the way I approach to the cameras has already been talking by the big companies. After cloud computing settle all non-connected devices will be out of market and with a good business plan it is completely possible to create a uninterrupted user experience. (Barney Britton, Interview with Sunhong Lim)

POLAROID CAMERA WITH ANDROID OPERATION SYSTEM

DISCUSSION

TOUCH SCREEN

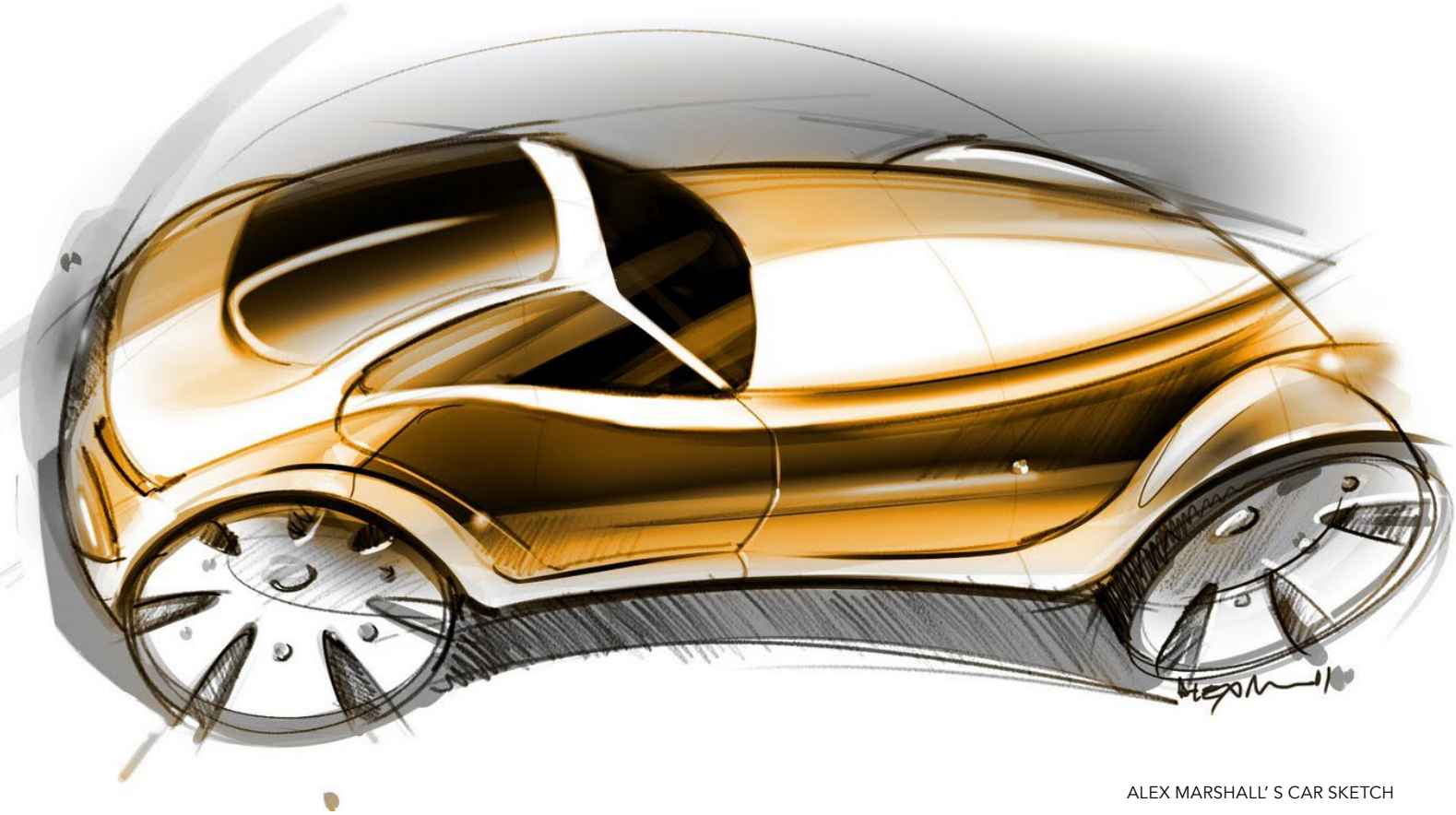
One of the biggest dilemmas for me through the process was deciding between touchscreen and touchpad. Both of them have strong points to discuss. Decision making process was highly affected by the user tests and temptation of proposing a new method and testing it. During the user tests and interviews big percentage of the people were demanding a physical button for taking a photo. I am also a big fan of buttons and getting a physical feedback from the products. Even smartphones are trying to solve this problem by small vibrations as a feedback. Touchpads are using in the field of computers for doing precise works, like drawings. Also it provides a clear distinction between input and output for the devices. But even though final proposal also could be a touchscreen, everything I propose can easily be done by a touchscreen.

MAC FUNAMIZU'S FUTURE CAMERA CONCEPT

DISCUSSION

STYLING

The project has focussed on how a camera can adapt to a more complex system with expanded variables. The formgiving process has been around ergonomically details like how a new interaction method on the camera can morph the physical form of the camera or how to accomplish multi holding stances. But when I look back to the project I realize some styling aspects was missing. 'The blank model method' was successful to compare different features, evaluate decisions and get user insights for the project, although I think my process also needed a new phase to create a discussion where aesthetical aspect of the product will be evaluated.



ALEX MARSHALL' S CAR SKETCH

DISCUSSION

SHARE

The final proposal was about to establish a platform where user can get involve all different touch points of a digital photographic journey started from the photo-shoot to presenting it. We already have experience at this process of instant sharing by using smartphones. And even it is a recent technology many people are start discussing about the drawbacks of this system. During my interviews people asked me one important question; "why we need to share our private life into a public area?" I think this question is an important topic by itself and I prefer to avoid it in this project. It was not the point of my project to argue the ethical values of digitalized lives. It is already out there and people are using it, I just decided to implement it to my project due to the reasons I explained before.

POPULAR SHARING PLATFORMS

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APPENDIX I

SCENARIO CARDS

Scenario #1

TIME LAPSE

CAMERA AS A DESIGNER TOOL

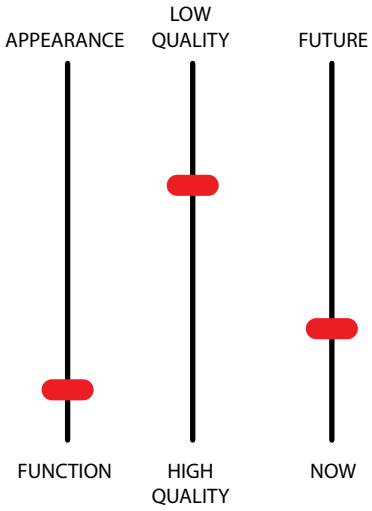
Purpose : To document a specific design process.

Persona: An industrial design student, he based his education on exploring forms and shapes. He is working on his camera design. It is the very first steps of his process.

Equipment : Tripod, Camera, Smartphone or a computer.

Environment: Clay workshop, medium light, dirty hands.

Time: 1 Hour



OUTCOME

Files created as a result of workshop

Working under a recording device provided me some advantages. Usually my work process was a labyrinth and to accomplish any result, I had to try so hard to find my. Working with a camera helped me to divide my working process into time sequences and stress me to get some quick results instead of getting lost. Also it was great to document the whole result while watching my process with an angle I realize some details that was not possible to see during my process. Even I worked myself I realize looking to your work with another perspective creates a new dimension of analysing your work. Also one important outcome was to create emphasize some pinpoints within a bunch of photos. At some point during my scenario I realize that some photos were more important than the rest and I would like to separate them from the rest.

Result bubles:

Scenario #2

STILL IMAGE

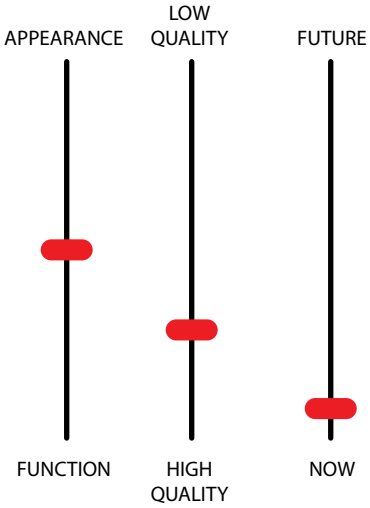
PHOTOGRAPHY AS A SECONDARY PURPOSE

Purpose : Seeing interesting subjects during his primary job and want to tell these stories to other people.

Persona: Şevket Şahintaş is a taxi driver working night shifts at the centre of Istanbul. He is a former car mechanic. After 2004 he starts working as a taxi driver. He usually encounters with drug addicts, prostitutes, alcoholics and homeless of Istanbul.

Equipment : Camera

Environment: Night shots, low light, risk of burglary,



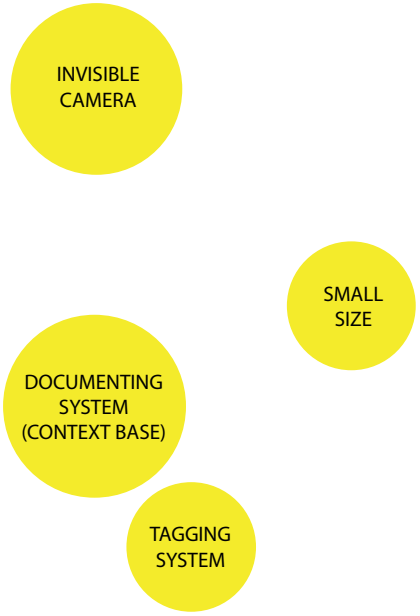
OUTCOME

He explained some of his strategies to take this photos, which is I think really valuable for me.

If he wants to take photos of a homeless man, he have to have a strategy he said. First he gets closer to the man and offer a cigarette without showing his camera. After that, he starts a conversation and talk with the man for a while. Later, he says "You have great beard, can I take a photo of it?", this process usually ends up with success. He also mentioned that his camera is not a professional one, so nobody scares from it.

Also if he want to take a picture of a drug addicted man he can't just go and ask to take a photo of him they never let it. He explained that first he has to wait somewhere which they can see him and usually they come and ask money. If they do, he is telling them "Ok if I take a photo of you and if you look handsome I will give you money". Also camera is hidden during this process.

Result bubles:



Scenario #3

TIME LAPSE

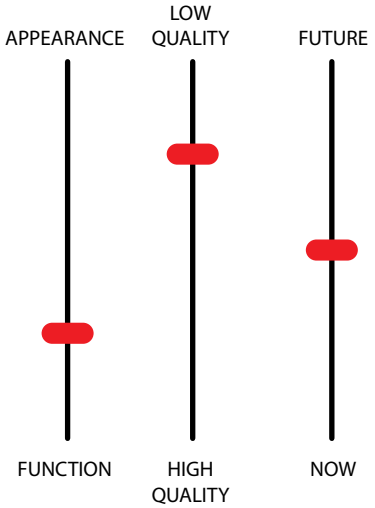
A EDUCATIVE AND CREATIVE GAME FOR KIDS

Purpose : To create a plotform for childrens to play and learn, express their creativity.

Persona: A family who have a 7 years old kid. They want to create an environment for their kid to play and demonstrate his creativity. So they decided to teach him stop motion.

Equipment : Tripod, Camera, Smartphone or a computer.

Environment: Indoor environment, medium light



OUTCOME

Files created as a result of game

Stop Motion Game Scenario Movie

WAITING FOR THE TEST?

Result bubles:

SEARCH FOR A MOUNTING SOLUTION

INSTANT PREVIEW

EASY-SETUP

Scenario **#4**

TIME LAPSE

DOCUMENTING A FLOWER GROWTH

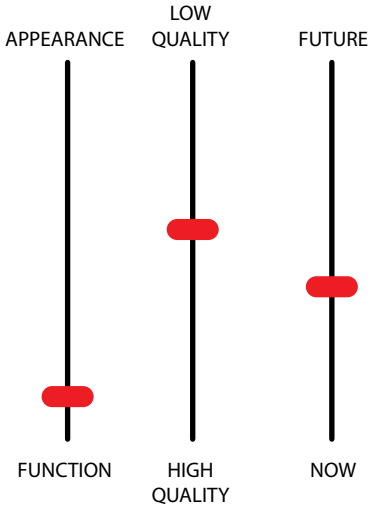
Purpose : To opserve and archive a flower's growth process. One picture for everyday basis.

Persona: A elemantry chool student have a biology homework to take photos of a flower on her garden for 1 month at spring to observe how it growths.

Equipment : Camera

Environment: Outdoor, Possible rain, High light condition

Time: 1 Month



OUTCOME

Files created as a result of game

Stop Motion Game Scenario Movie

WAITING FOR THE TEST?

Result bubles:

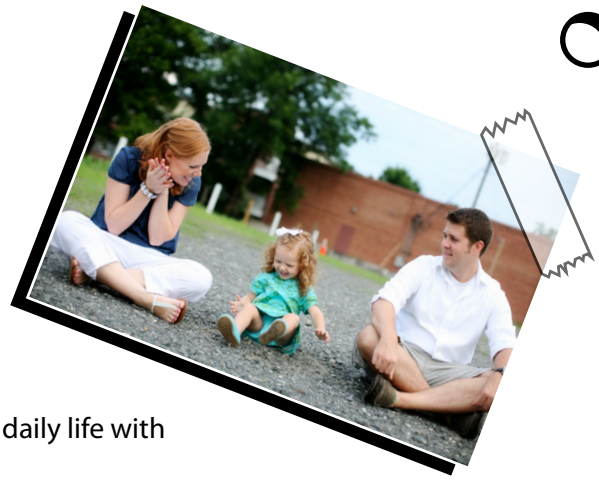
SHOOTING AID

DOCUMENTING SYSTEM

REMINDER

Scenario **#5**

MOVIE



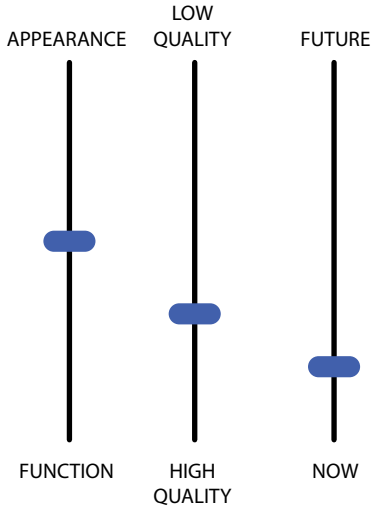
A CAMCORDER FOR DAILY LIFE RECORDING

Purpose : A family wanted to record their daily life with their new born kid.

Persona: A couple with a new born kid, Isabella. They are working long and don't want to miss any moment of their kid's life. They are not so experienced on electronical devices. Now they are using their mobile phone to record.

Equipment : Camera, Mobile Phone, Computer

Environment: Many different environments, interaction with the kid is possible



OUTCOME

Files documented in Isabella Folder

Isabella Age One Seq 1 Video

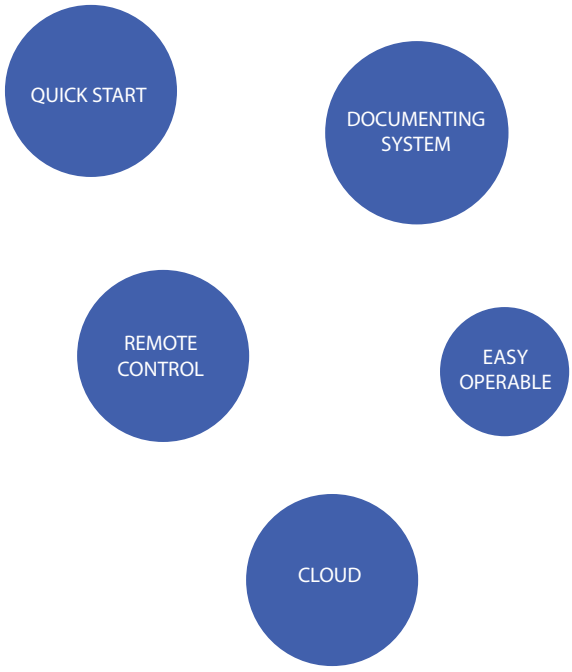
Isabella Age One Seq 2 Video

Isabella Age One Seq 3 Video

When we consider this scenario as a daily life camcording many needs of recording can be done by a mobile phone. But there is some occasions which makes a camcorder useful. One example is they want to use a camera as a surveillance tool when they are away from Isabella.

Remote control and cloud systems will be an excellent way of remote control. They can mount their camera to the place where their kid is and control and get the videos from their work.

Result bubles:



Scenario #6

MOVIE

STILL IMAGE

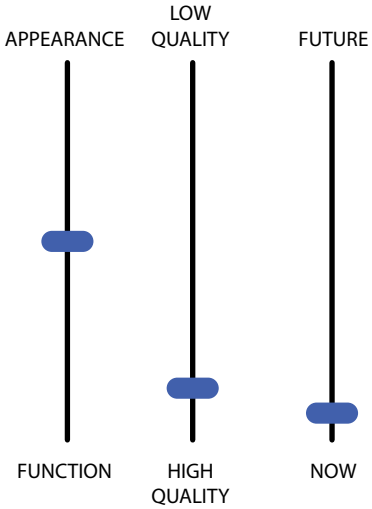
AMATEUR TRAVEL PHOTOGRAPHY

Purpose : Taking photos and recordin videos during travel.

Persona: A couple who likes travelling. They like backpacking, staying at hostels. They want good quality images.

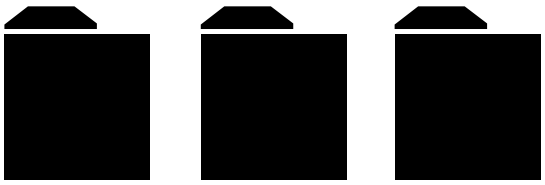
Equipment : Camera, Mobile Phone

Environment: Depends on the context and place



OUTCOME

Files documented in Isabella Folder



Paris Videos and Photos

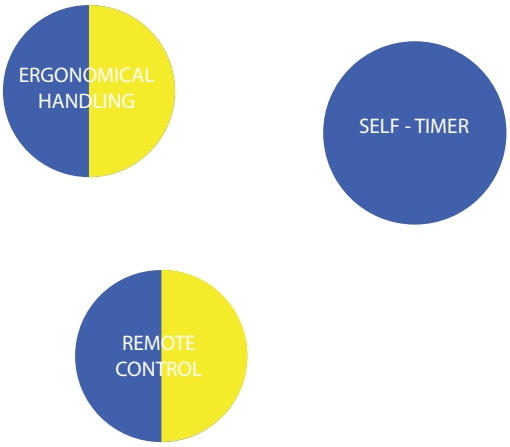
Barcelona Videos and Photos

Milan Videos and Photos

They want to take photos together which makes remote control or a self-timer a good idea. They walk a lot and take photos. And usually they carry a backpack with them so they don't want to get their camera out when they want to take photos.

With a good tagging system, documentation will be easy and intuative. After they take all the pictures they can share and see their photos in a very good orginised way later.

Result bubles:



Scenario #7

STILL IMAGE

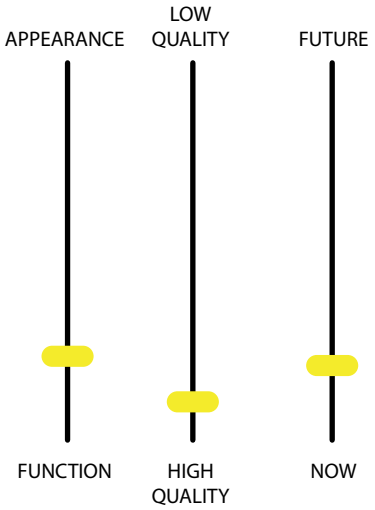
CAPTURING EVENTS FOR EVIDENCE

Purpose : Recording traffic accidents, demonstrations and other events for evidence

Persona: Policeman, who is responsible of taking photos. He is not a big fan of cameras or this job. He is trying to make photo taking enjoyable.

Equipment : Camera

Environment: Depends on the context and place



OUTCOME

Files documented in Isabella Folder

In this case, with an implemented application camera becomes a evidence recording device. Photos have to be unedited and tracable. Just like the other evidences it has to contain lots of information like time, place, context...

Setting have to be highly adaptable because variety of environments

Documenting and sharing should be quick and easy.

Result bubles:

APPENDIX II

FURHER FORM STUDIES


AF LENS
35 MM 1:1.4


AF LENS


32 GB


AF LENS
35 MM 1:1.4