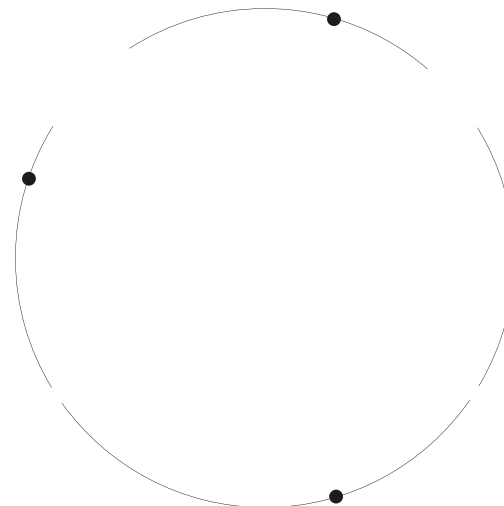




**MOMENT**





# RETHINKING THE COMPACT CAMERA



Bachelor thesis by Nathanael Boell

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Project supervision: Markus Well

Year 2019/2020





# DECLARATION



I hereby declare that the present bachelor's thesis was composed by myself and that the work contained herein is my own. I also confirm that I have only used specified resources. All formulations and concepts taken verbatim or in substance from printed or unprinted material or from the Internet have been cited according to the rules of good scientific practice and indicated by footnotes or other exact references to the original source. The present thesis has not been submitted to another university for the award of an academic degree in this form. The thesis has been submitted in printed and electronic form. I hereby confirm that the content of the digital version is the same as in the printed version.

I understand that the provision of incorrect information may have legal consequences.

M. Böell

Zürich, CH, 30.07.2020

Signature

Place, Date





# SUMMARY



An intuitive compact camera that emphasises the process of capturing a moment and fundamentally rethinks the ergonomics of the latter.

I started by asking: Why is the compact camera dead? That question can be easily answered by the noticable rising popularity of smartphones. It took me some time to realise that the software smartphones run on play a crucial part, not just the hardware. Social media channels like Instagram and Snapchat further connect the world through photos and exclude cameras from this process.

Having that figured out, I understood camera manufactures. However, trying to be as future-oriented as smartphone manufactures and putting smartness in their now smart cameras, they fail.

I dug deeper and realised there is a better option; first by focusing on the future consumer. There is the wish and need for offline experiences and to disconnect from digital socialising. A camera is the perfect answer to that desire. It helps you capturing moments. Actively. Think about all the parents and friends bringing their huge DSLR to the next family holiday to capture important moments. However there is a problem; spending the whole holiday trying to figure out how this thing works, sucks. What happens next? The camera disappears behind the straw hat in the wardrobe. This signals the need for an easy-to-learn user experience.

Second, I focused on the advantages a camera currently has and what can be optimized in the future. The key is space. Space for an excellent optic. Space for haptic controls. And space for a big viewfinder; the ability to dive into the moment you capture.

Welcome to my Moment.





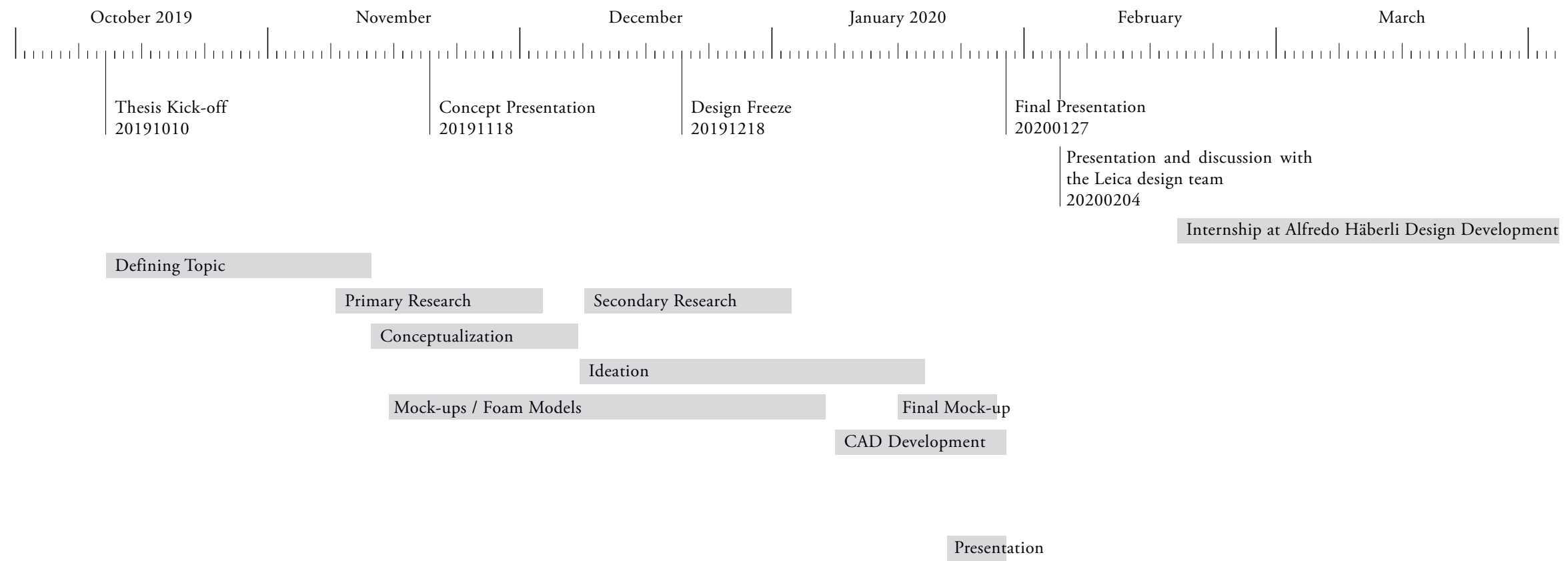
# MOTIVATION

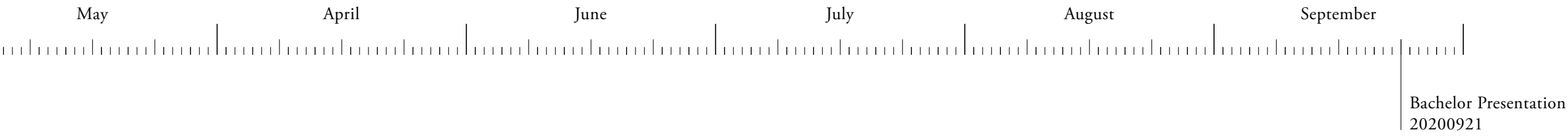


My generation probably still remembers how we, back in the days, sat on our grandparent`s lap and listened to stories of the past while flicking through an old photo album. Nowadays we are confronted by hundreds of photos every day through social media channels like Instagram and Snapchat where we take and share pictures constantly. The latter changed our relationship to photography. With advanced smartphone camera technology everyone is now able to take pictures by pushing just one button. This phenomenal technology is great for making snapshots. As a consequence of the change of how we capture moments, we shift the value of photography to producing more material than we can look at.

This is the reason why I chose the reinventing of the compact camera as the topic of my bachelor thesis. I want to bring back the joy of capturing pictures in a conscious way to more people.







Refined Ideation

CAD Refinement

Documentation

Animation

Presentation





# CONTENT



**01 RESEARCH**

Biggest steps in camera history  
New influences on the camera market  
Consumer survey  
Trend drivers  
The target groups  
Positioning in the market  
Opportunities

**02 PROCESS**

Post-it development  
Thinking on paper  
Hands-on prototyping  
Real-life testing  
CAD development

**03 FINAL DESIGN**

Package / Measurements  
Explosion view / Orthographic view  
User interface  
Diving into the moment  
Circular user interface  
Menu structure  
Charging and storing  
Moment at home and on the road

**04 INTERNSHIP REPORT**

Why AHDD  
Alfredo Häberli Design Development – The studio  
My tasks  
Learnings

**05 REFERENCES**

Image sources  
Literature references  
Thank you  
Contact





01

# RESEARCH

Biggest steps in camera history  
New influences on the camera market  
Consumer survey  
Trend drivers  
The target groups  
Positioning in the market  
Opportunities





## BIGGEST STEPS IN CAMERA HISTORY

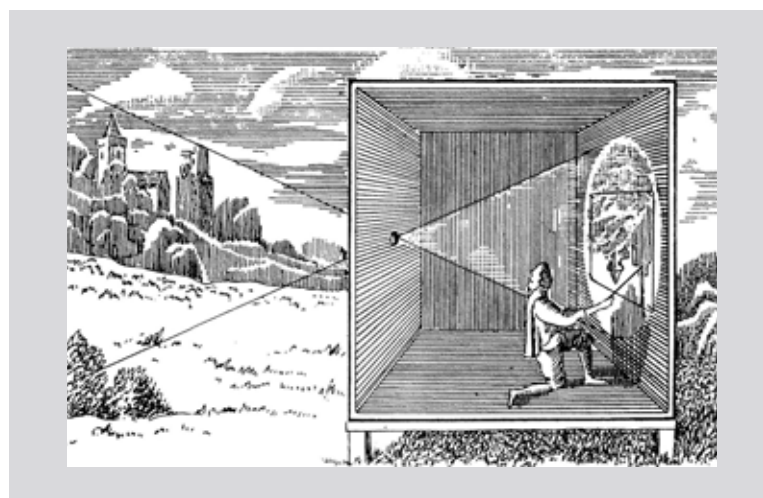


fig.1

### Camera Obscura

The technical principle was already known in the ancient times but first used in the 17th Century.

17th Century



fig.3

### Louis Ducos du Hauron

The Photograph of Agen is one of the first colour photographs with subtractive technique (cyan-magenta-yellow).

1877

1826



fig.2

### Joseph Nicephore Niepce

The first light-resistant photograph with a camera obscura. An exposure time of eight hours in 16.5 x 21 cm.





fig.5

Small format photography  
The “Ur-Leica”, from Oskar Barnack, an employee of “Optische Werke Ernst Leitz” in Wetzlar, The first small format camera.

**1914**



fig.7

Digitalization  
Minolta RD-175: First digital professional small format DSLR Camera.

**1995**



fig.4

Box cameras  
The Brownie Nr. 2 by Eastman Kodak, was one of the first cameras for the amateur market and set a trend in the direction of easy-to-handle photography.

**1901**



fig.6

Automatization  
Minolta: The 7000 and 9000 were the first small format DSLR cameras with autofocus.

**1985**

RESEARCH



## BIGGEST STEPS IN CAMERA HISTORY – OPPORTUNITIES

Since the introduction of the roll film to consumer cameras the manufactureres never rethought the ergonomics and the overall shape from scratch. For instance, the shape of the Leica Q2 is almost identical to the 100-year-old Ur-Leica. But also less traditional companies like Sony copy the shape of cameras from the pre-digital time.

Thanks to the invention of mirrorless cameras and the continous digitalization, a new freedom found its way into the photography industry. It is time to use these radical changes as a starting point to fundamentally rethink the compact camera`s ergonomics.



fig.8

**1914**

Ur-Leica



fig.9

**2020**

Leica Q2

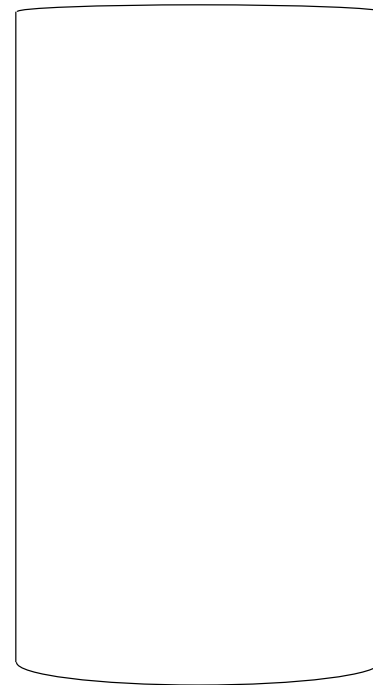




fig.10

**2020**

Leica Q2



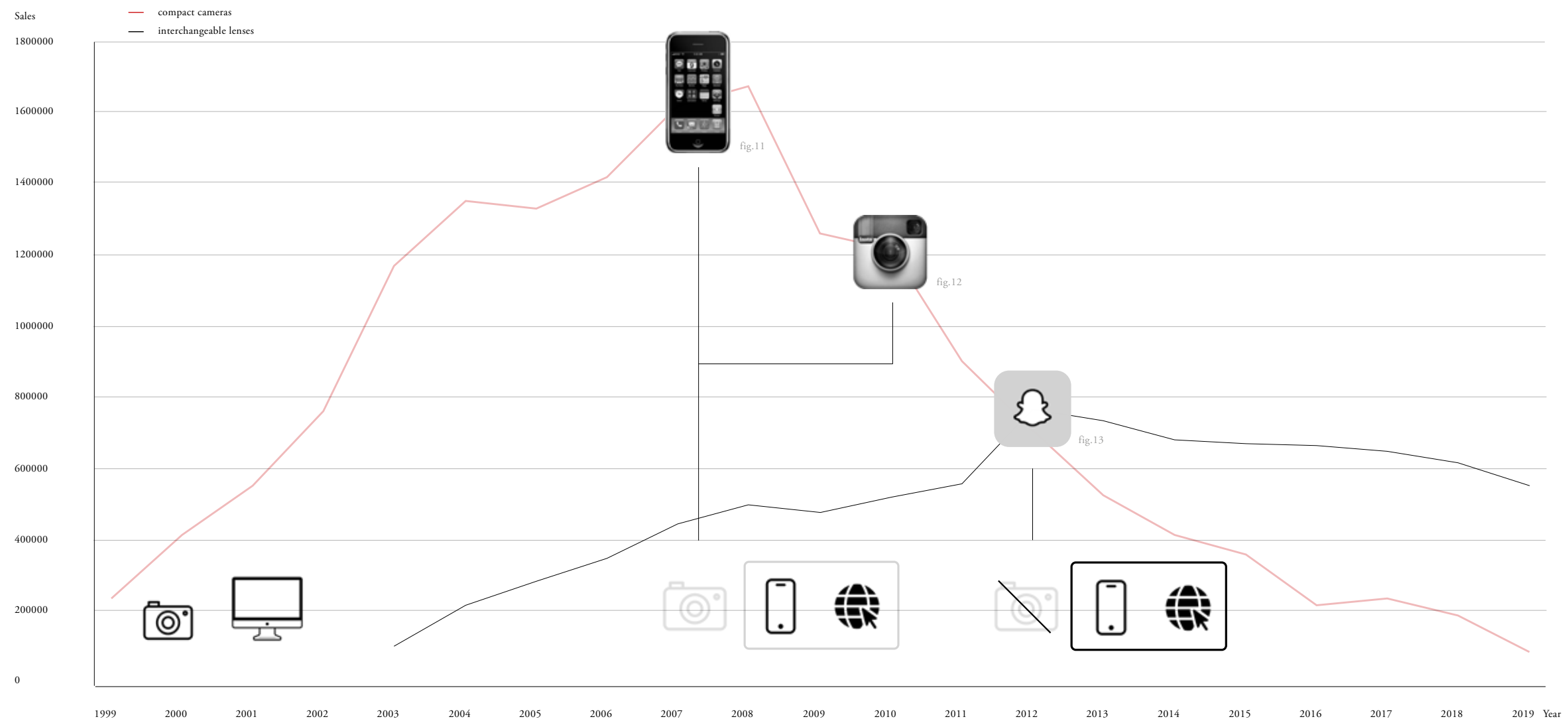
**MOMENT**

The Leica Q2 is known as one of the best compact cameras up until now with a great optics for its size. Unfortunately, the T-shape, which originates from the roll film, is not the most compact design.

I cannot change the shape of the lens, but why not place all other elements like the battery, chips and the viewfinder behind the lens? The resulting cylinder is much more compact and would allow to store the camera the average pocket of a jacket.

This very early realisation during the first research phase was the starting point for my camera project.





[1]



## INFLUENCES ON THE MARKET

Looking at the sales figures, it is quite shocking to notice how much the total sales of the compact camera decreased. When you ask people why the camera sales plummeted, their answers are mostly smartphone-related. They were right. The introduction of the smartphone enabled millions of people to take pictures with just one tap. And that with a device that fits into your pocket!

As the smartphone camera got better and better, new opportunities opened up for app developers. The launch of Instagram in 2010 actually lead to an even bigger decrease in sales of the compact camera, as Instagram exluded the camera from the process of taking pictures and sharing them online. Snapchat adopted an even more radical approach; the concept of the app does not allow any sharing of external camera pictures. [1]

Camera manufactures had to react. They try to catch up with the smartphone industry and come up with WiFi connections and other features which should close the gap between the two competitors. Nevertheless, the compact camera will always be a step behind the intuitive and simple design of the smartphone. [2]

I believe that there exists a more clever way to revive the compact camera than trying to copy from the smartphone industry. New trend drivers show new windows of opportunity.





## CONSUMER SURVEY

Talking to a friend about my project, I realised that my camera not only has a huge potential for Generation Z, but also for people who wish to use a professional camera but just do not find the time to dive into the topic since using a DSLR properly takes a lot of time to learn.

The survey backed the insights I obtained from this talk; there are many people, especially Gen X (born between 60s and 80s) owns a camera which shows the willingness to learn more than taking smartphone snapshots and to spend money on photography. Unfortunately, many of these cameras are not used often.

Another finding reveals that many people still own unused compact cameras.

I came to the conclusion that the benefit of creating an intuitive user experience is much more important than I thought when starting the project.

*The survey was executed in April 2020, send out to colleagues, friends, friends of friends and family members.  
16 participants sent the survey completely answered back.*





Age

20-40

40-60

Do you own a camera?  
(next to a smartphone camera)

yes

no

yes

no

Which camera do you own?

DSLR/Mirrorless

Analogue

Compact camera

DSLR/Mirrorless

Analogue

Compact camera

How often do use your camera?

monthly

yearly

never

monthly

yearly

never

monthly

yearly

never

monthly

yearly

never

monthly

yearly

never

monthly

yearly

never

RESEARCH



## TREND DRIVERS



fig.20

### The distraction-less consumer

The distraction-less consumer will become more prevalent over years, searching for a some time that is just their own. [3]

It is estimated that we check our smartphones 150 times per day, 66% of people suffer from nomophobia – the fear of being without their phone. [3]

Technology's ability to keep us constantly connected to work is damaging our wellbeing and causing anxiety. [3]



fig.21

### Exclusively offline

Being someone who keeps a low online profile is the new status symbol. [4]

Rarity tends to become a key component of luxury. Finding someone with a low online profile becomes a precious – and curious – commodity. [4]

Phoebe Philo said that the chicest thing is when you don't exist on Google. She would love to be that person." [4]



fig.22

### Signal free spaces

Yondr allows venues to create tech-free events. As people arrive, they place their phone in a case that locks once they enter the „phone-free zone“. It aims to help people live in the moment without being focused on documenting or broadcasting it. [5]

A growing number of cafes and bars are minimizing smartphone use to encourage socialising and human interaction. The tea terrace in London introduced the „phonetentiary“, a mobile phone lock-up, to encourage customers to talk to each other more. [5]



fig.23

## Slow tech

The A/W 16/17 macro trend Elemental spoke of tech slowing down and highlighted the rise of quiet, meditative technology in which users observe and interact with the environment in a more leisurely, lengthier way. [6]

This slow and sensitive approach is becoming more apparent. [6]

Paus for instance, is a new website that wants to help slow down. In that space, you can engage in a breathing exercise, listen to the sound break of birds chirping or slip into the quiet stirrings of a wooded forest. It aims? To help you practice the ethos of the slow movement. [6]



fig.24

## Slow movement

The slow movement is gaining traction. It is a slowly growing phenomenon: we saw slow food first, then slow journalism and now we are starting to see slow travel and slow tech emerge. Slow fashion even has its own movement. [7]

It is encouraging a more thoughtful approach. This is a movement supporting the benefits of slowness and slow thinking. It wants us to slow down, take our time and place a renewed focus on the benefits of quality over quantity. [7]

Society is an advocate of speed: it is short on quality but big on quantity. As a result we are beginning to contemplate the richness of going slow. [7]



fig.25

## Disconnection

For many industries, global connectivity means progress: trade route expansions are fuelling new business opportunities; technology is creating social and commerce networks; modern transport (super trains, space travel, and sonic jets) is closing the time gap between physical connections. And while the importance of connectedness is definitely in our era, it will also encourage the counter-movement, as we wish to reconnect with nature, and disconnect from our devices. [8]



## THE TARGET GROUPS



fig.26



fig.27



fig.28



fig.29

### Sonja

|             |                             |
|-------------|-----------------------------|
| Occupation: | Professional Violinist, Mum |
| Income:     | €4.200 / netto / month      |
| Education:  | Bachelor of Arts / Salzburg |
| Age:        | 48                          |
| Status:     | Married, one child          |

Sonja loves her job, she is often on tours with the philharmonic orchestra and her ensemble which makes her free time at home and with her child even more precious.

For capturing memories of her four-year-old Lukas, she bought a fancy DSLR one year ago. However, as her free time at home is only limited, she is not keen on investing it into figuring out how all thousand settings of her camera stand for and function. As follows, she eventually uses her smartphone to capture moments, which saves her a lot of effort and most importantly, time.

**“No time for a thousand pages manual”<sup>[9]</sup>**





fig.30



fig.31



fig.32



fig.33

Jo

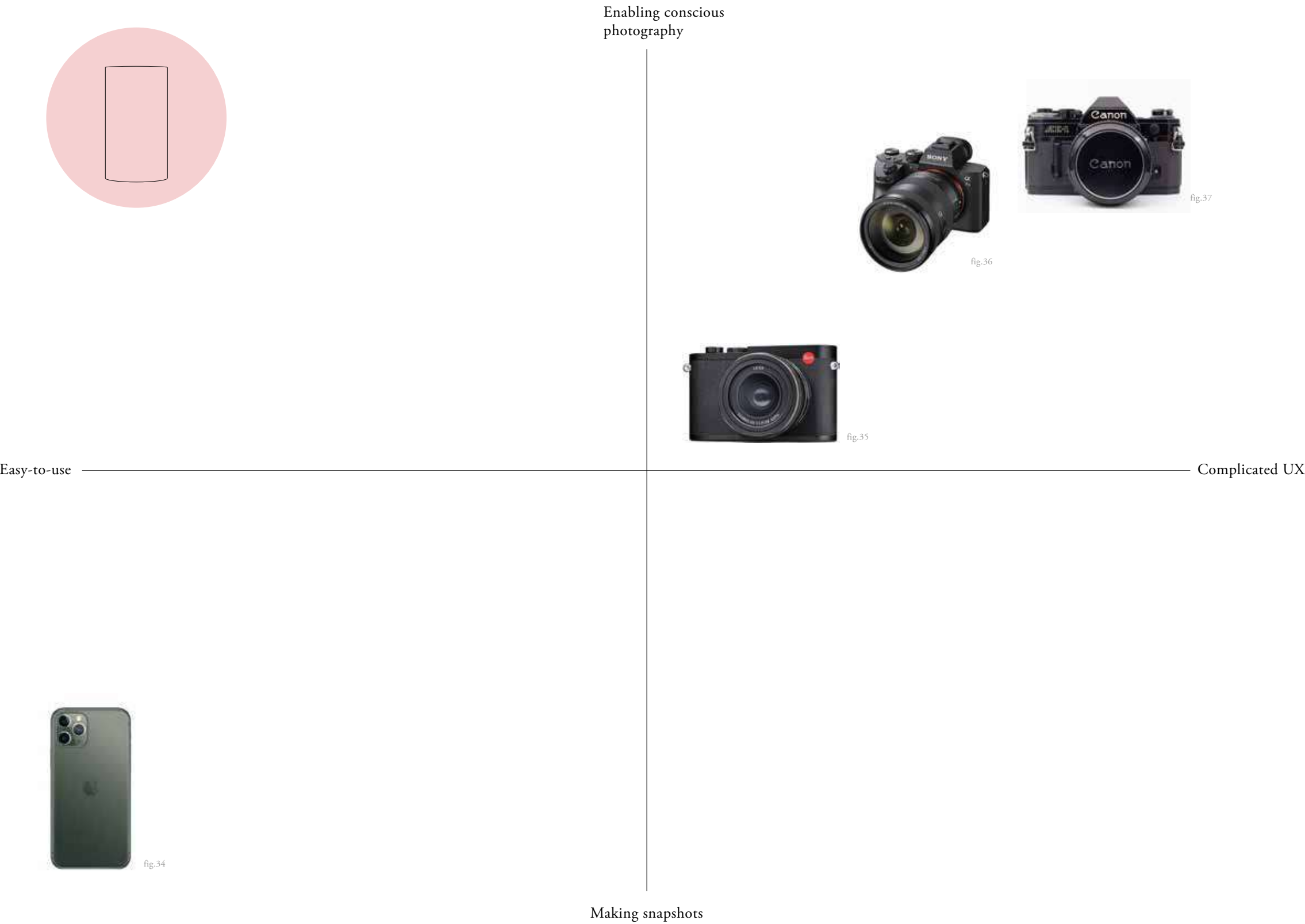
|             |                                                |
|-------------|------------------------------------------------|
| Occupation: | Media designer                                 |
| Income:     | € 2.800 / netto /month                         |
| Education:  | Master of Arts / Royal college of Arts, London |
| Age:        | 28                                             |
| Status:     | Single                                         |

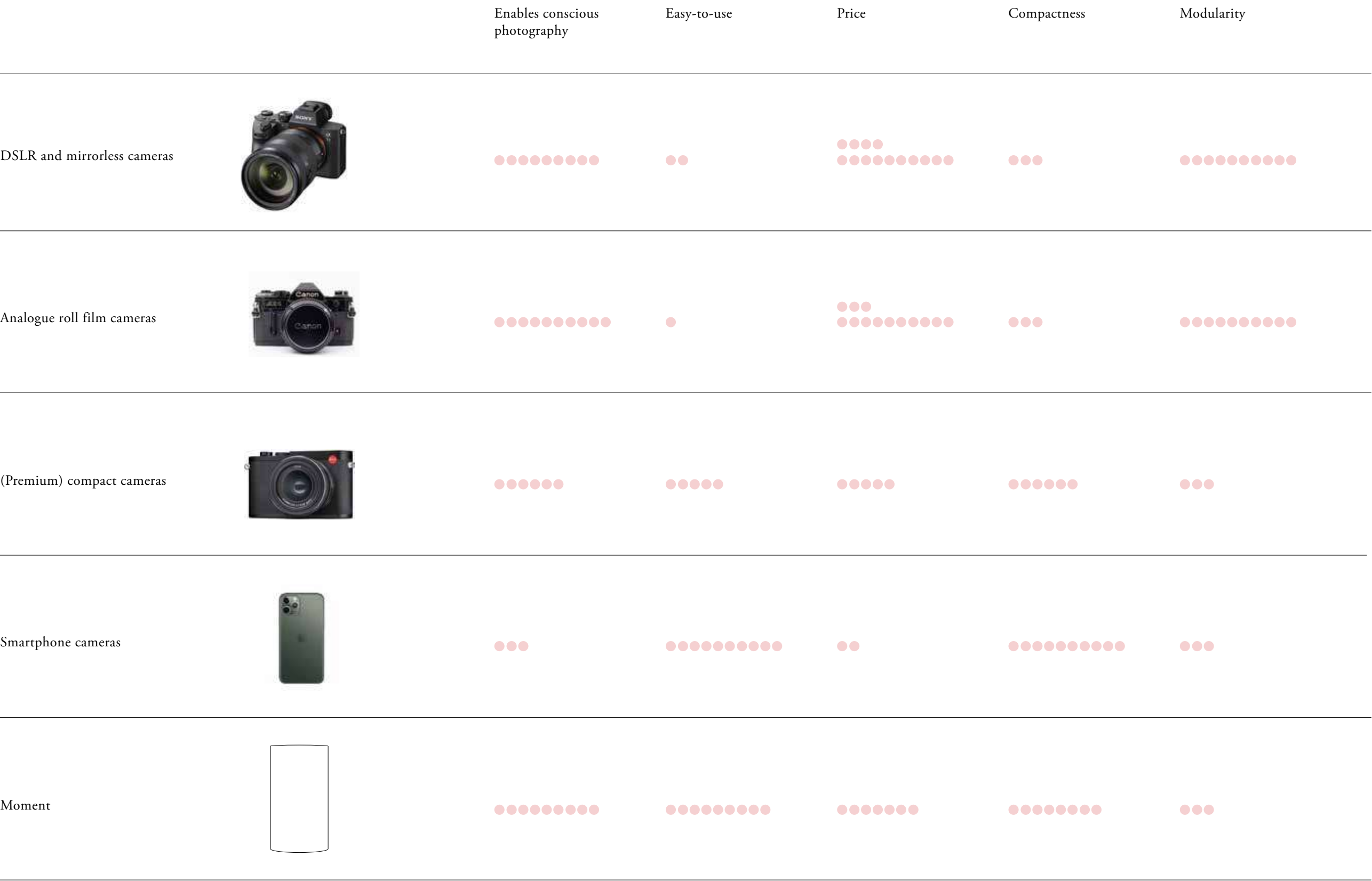
Jo is a passionate media designer. He grew up with digital tools around him. He spends most of his working hours in front of a screen, which makes him seeking for a counterbalance in his free time. Therefore, he loves to spend weekends in the nature hiking and enjoying the silence or listening to some vinyls after work.

“Gen Z’s desire for offline experiences” [10]



# POSITIONING IN THE MARKET



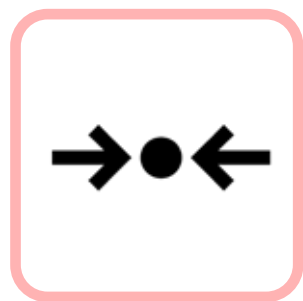




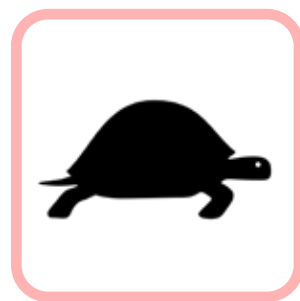
## OPPORTUNITIES

As already mentioned in the research phase, I realised that I needed to rethink both the hardware an the complete user experience. Underneath I highlighted the most crucial points I focused in the conceptualization.

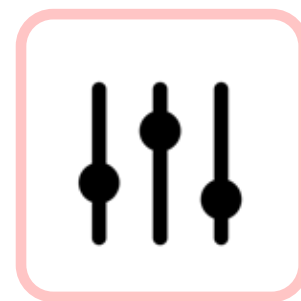
- |                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Compact measurements: | How can I revolutionise the T-shape so that it better fits the goal of the compact camera?                                                           |
| Slow, focusing UX:    | How can I emphasize the act and „greatness‘ of capturing a moment opposed to the quick and „brainless“ smartphone snapshot?                          |
| Intuitive controls:   | How can I get users to comfortably work and play around with a camera within days instead of weeks and, in this way, reach a larger target audience? |
| Offline experience:   | What does the offline experience Gen Z longs for contain and how can I provide the best possible answer to these wishes?                             |



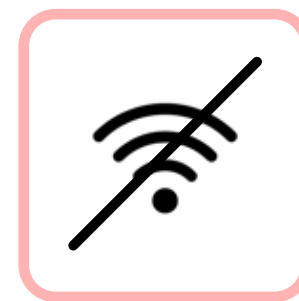
Compact measurements



Slow, focusing UX



Intuitive controls



Offline experience







02

## PROCESS

Post-it development  
Thinking on paper  
Hands-on prototyping  
Real-life testing  
CAD development



## POST-IT DEVELOPMENT

A Post-it wall behind my desk accompanied me throughout the project. I could quickly pin ideas, thoughts or questions which in turn often led to automatic feedback from my colleagues and other fellow students who passed by every day. Most of all, the wall helped me to reflect and link ideas. In contrast to the project book, I was able to visually build and identify connections and opportunities that I would not have thought of before without this method.



IDEATION





## THINKING ON PAPER

In retrospect, I realized that both of my project books were mainly filled with written thoughts, less with drawings. Since the conceptualization of the project required a theoretical and analytical approach, I often kept my thoughts in text form. The formal elaboration was mainly conducted with foam models in scale 1:1.

IDEATION





## HANDS-ON PROTOTYPING

When it came to finding the right shape, physical models helped a lot. A camera is perfect for building quick 1:1 foam models to test ergonomics and find proportions.

I was further able to test various functions and features such as a rotating display very quickly. For example, when finding the diameter, it was practical to test the Model by giving it to colleagues with different hand diameters.

A challenge were the control elements. Where are they appropriate? Is one hand operation possible? Can a right-handed person as well as a left-handed reach every button? How do I make sure that the hands do not intersect with each other? Where do I attach the strap?

All these questions were very difficult, if not impossible, to answer on paper.



IDEATION





IDEATION







## REAL-LIFE TESTING

When I took the final prototype once with me on a hike for some scenery shots, I realised how crucial it was to take the prototype out of the studio environment. The following days, I took it with me on my bike, stored it in the pocket of my jacket. In this way I could then test the proportions and ergonomics of my compact camera properly. As a result, I was able to answer the question that arised during the hands-on prototyping. Another insight I obtained, involved the posture of Moment. Since you only work a digital viewfinder, you need to look through the camera in order to take pictures. This means that you are always facing the object directly you are focusing.





## CAD DEVELOPMENT

Thanks to the simplicity of the basic form of the camera, I was able to concentrate on every detail. For example the shutter release button got iterated throughout many days. I learned the difference between a tangent radius and curveture continuity; that in real live no edge exists without any radius. I changed the font of the text on the control rings several times, to achieve a readability while keeping a minimalistic and modern appearance. Finally, since AHDD used Rhino as their primary CAD software, I got confident in that as well.





IDEATION





03

## FINAL DESIGN

Package / Measurements  
Explosion view / Orthographic view  
User interface  
Diving into the moment  
Circular user interface  
Menu structure  
Charging and storing  
Moment at home and on the road



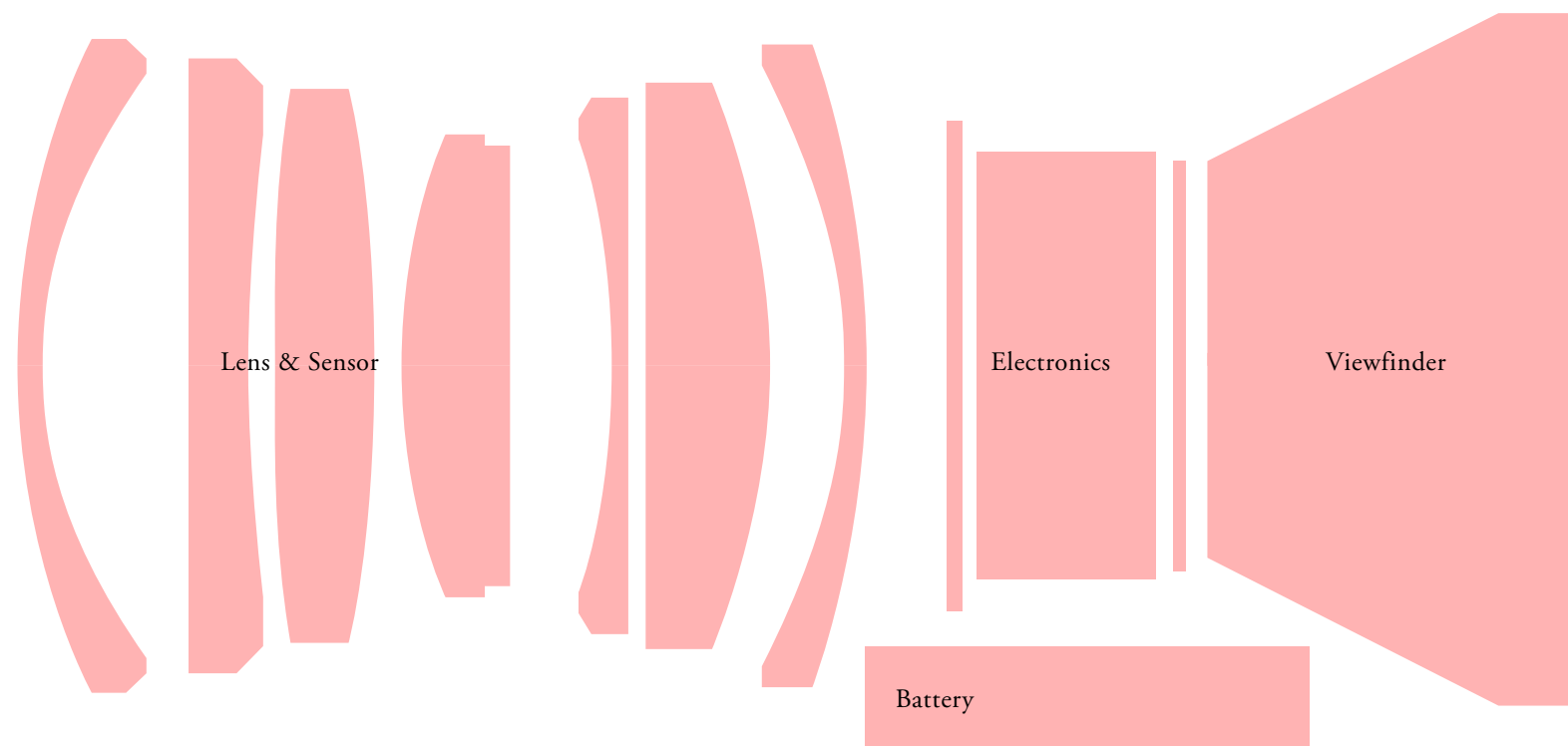


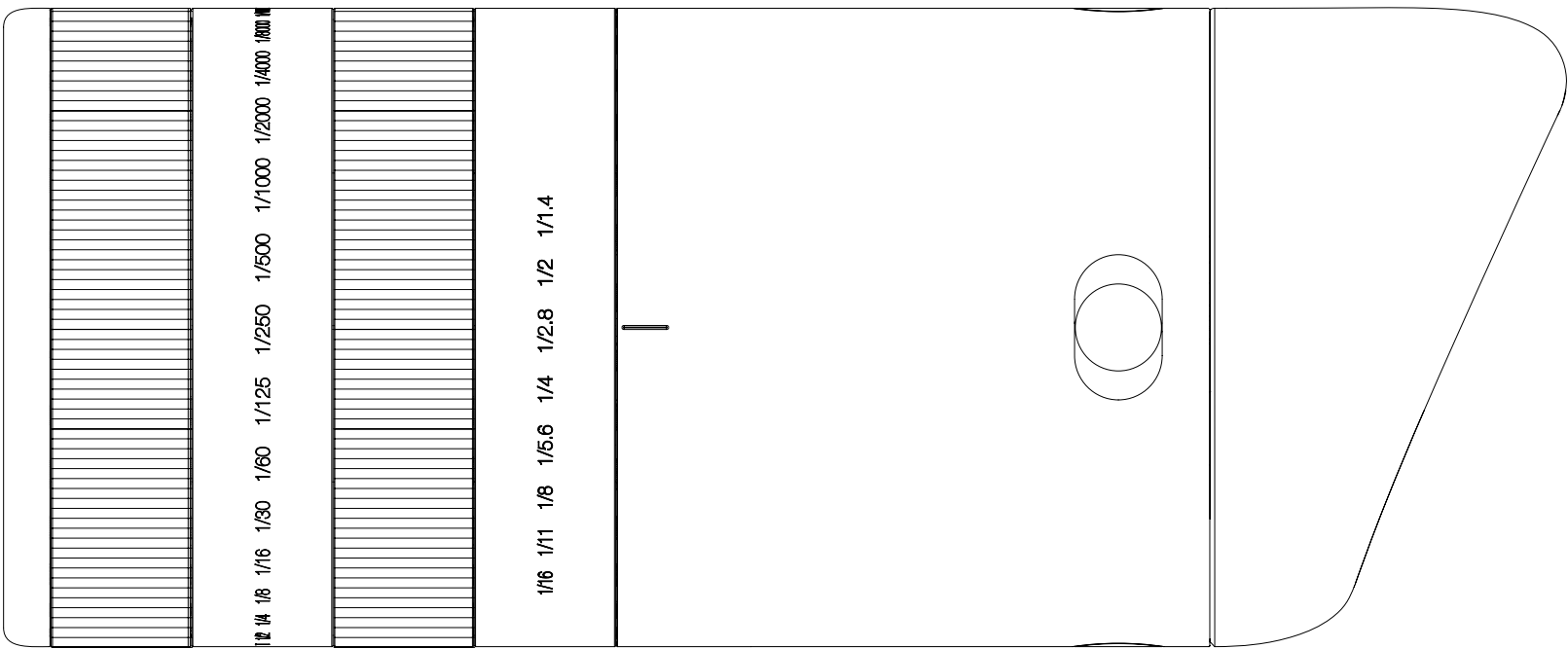
## PACKAGE

Looking at the package you may realise that most of the space is occupied by the optics and the viewfinder. Exactly these two shape the characteristics of Moment. They completely embrace what you cannot find when using a smartphone. The latter can compensate a lot with artificial intelligence but cannot yet compete against an astonishing optic. An astonishing optic needs space.

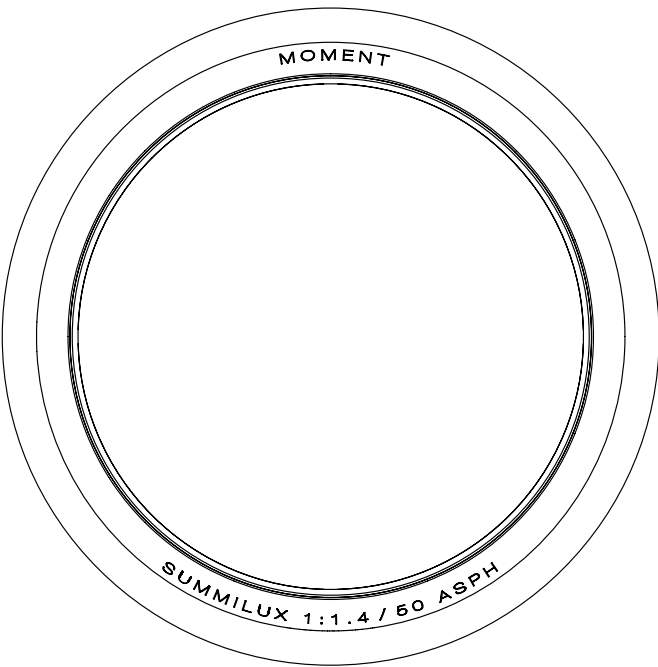
Additionally, even the biggest professional cameras usually do not have a big viewfinder. The user always needs to squeeze the eye against the little rubber ring while the nose is pressed against the screen. The viewfinder is further a feature of Moment which does not exist in a smartphone. Using the space which is needed from an ergonomically point of view anyway, is the logical conclusion.

Finally, the battery is placed on the bottom and gives the camera an irregular weight distribution in order to prevent it from rolling away on a gently tilted surface.





length 168 mm



diameter 69 mm



## MEASUREMENTS

The length and diameter are the result of weighting different factors:

How wide can I maximally design Moment in order to still have it fit nicely into a small hand while also optimising the operational space for the optics?

How much space do two hands need on the camera without being in each other's way while keeping Moment as compact as possible in order to fit it into a pocket of a jacket.

FINAL DESIGN





## EXPLOSION VIEW





FINAL DESIGN





## ORTHOGRAPHIC VIEWS



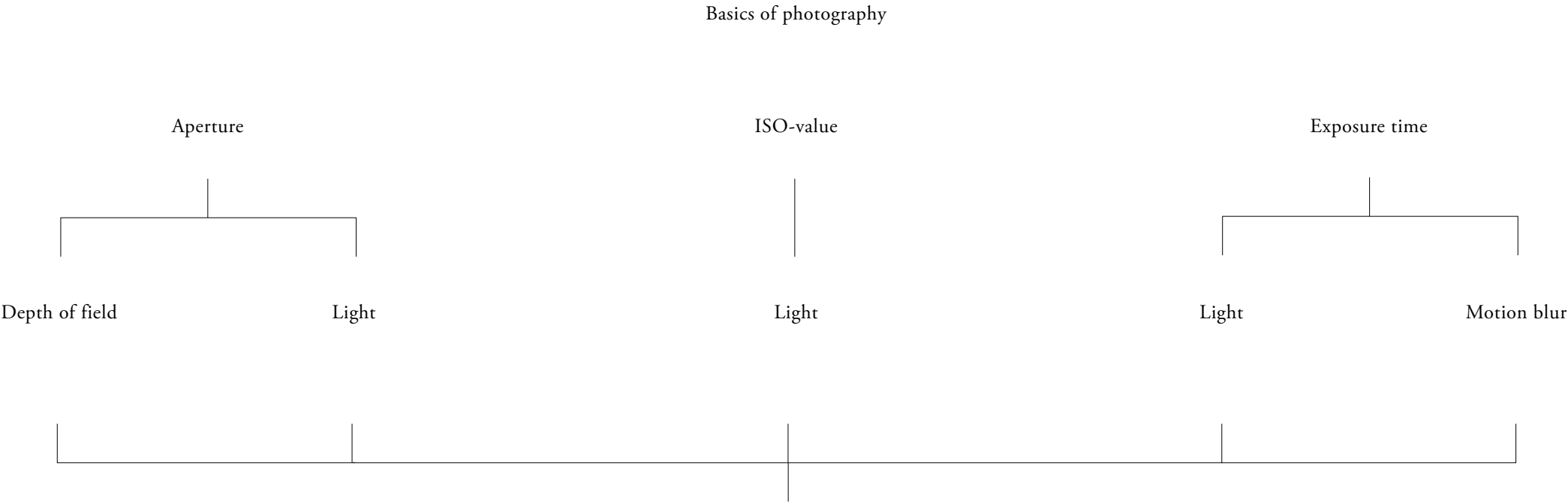


FINAL DESIGN





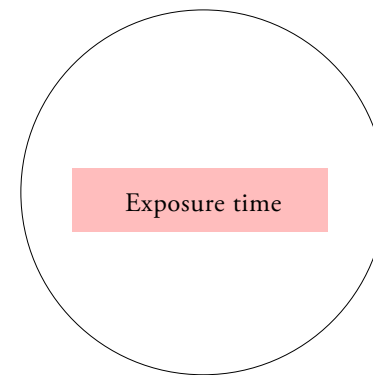
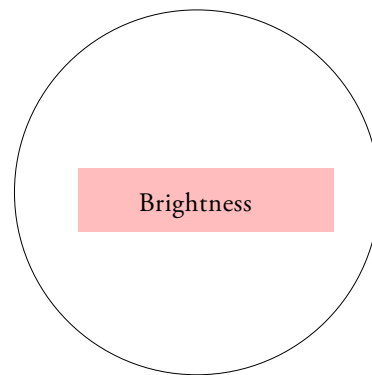
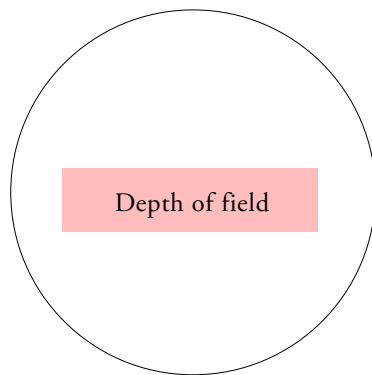
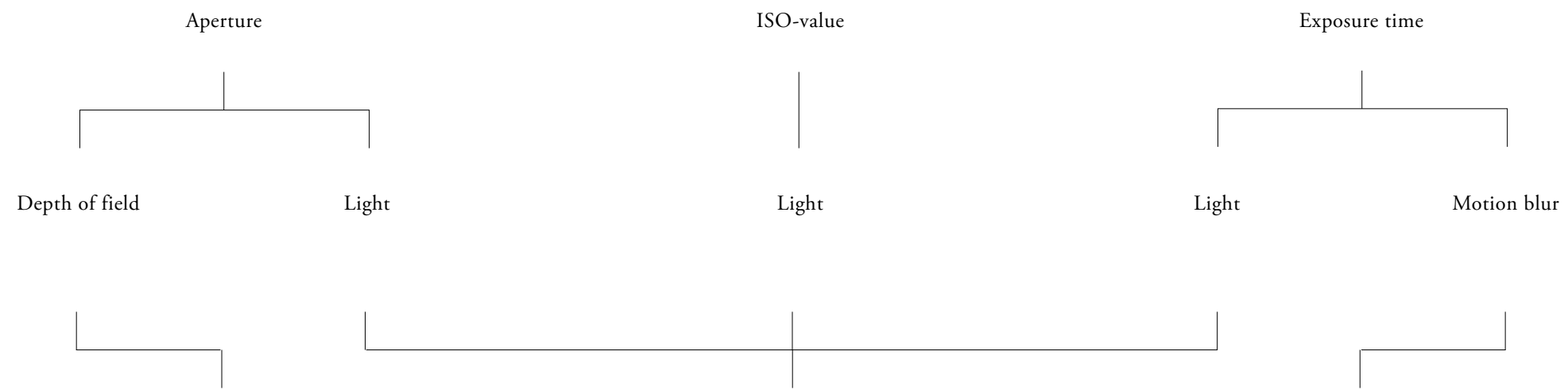
USER INTERFACE



|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| M                         | Aperture, exposure time, ISO manually adjustable          |
| S/T/TV (shutter priority) | Manually adjustable exposure time, automatically aperture |
| A/AV (aperture priority)  | Manually adjustable aperture, automatically exposure time |
| P (automatic programme)   | Automatically aperture and exposure time                  |
| C1/C2 1/2                 | Own set-ups                                               |
| AUTO                      | Fully automatically                                       |
| SCN                       | Different scenes like macro, snow, ...                    |



## Basics of photography





## USER INTERFACE Pt.1

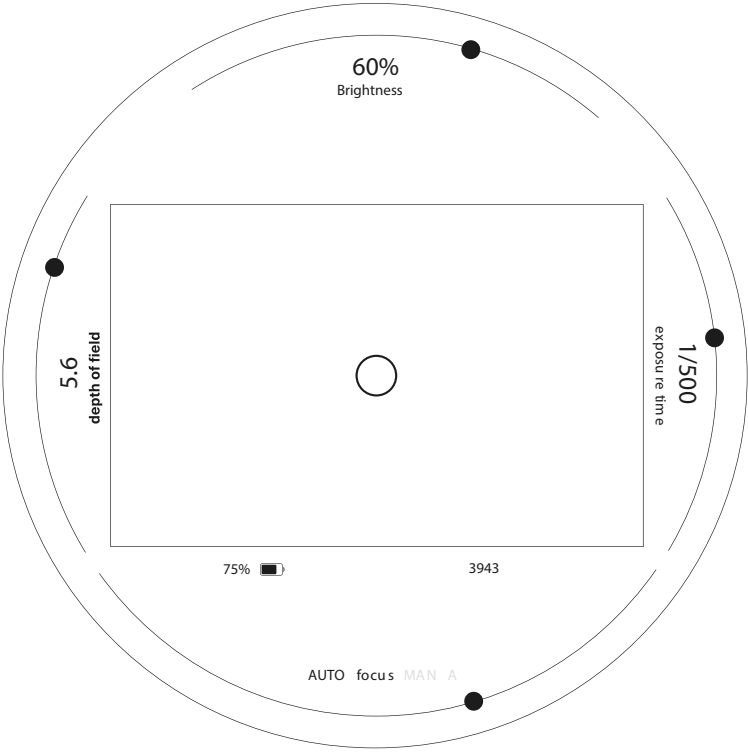
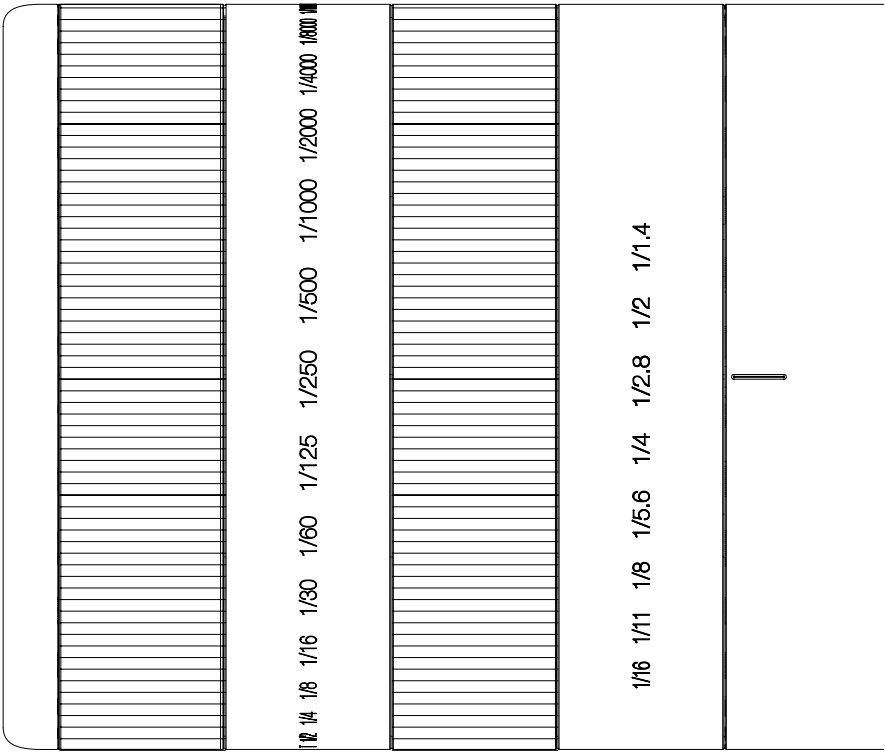
On page 56 and 57, a comparison was shown between a traditional interface and the structure of Moment. The idea is simple; combining everything that together leads to the best visual result possible. All three categories of exposure time, depth of field and ISO affect the brightness. Combining these three elements into one control ring makes sense as the user should be able to have independent control over every adjustment.

Controlling every “ingredient” of the picture with an own ring lets the user easily taking control of these different aspects. In the User Interface the rings are located around the picture in order to let the setting always move in the direction of the turning ring.





Focus





## USER INTERFACE Pt.2

Even though the effect on the picture should be independent with each ring, it is a fact that the depth of field and exposure time have an effect on the brightness. The ISO can balance that out so it is not visible for the user. But the ISO also has its limits. To make that understandable to the user, the length of the brightness ring on the interface changes with the turning of the aperture or shutter speed.

The right page shows two examples:

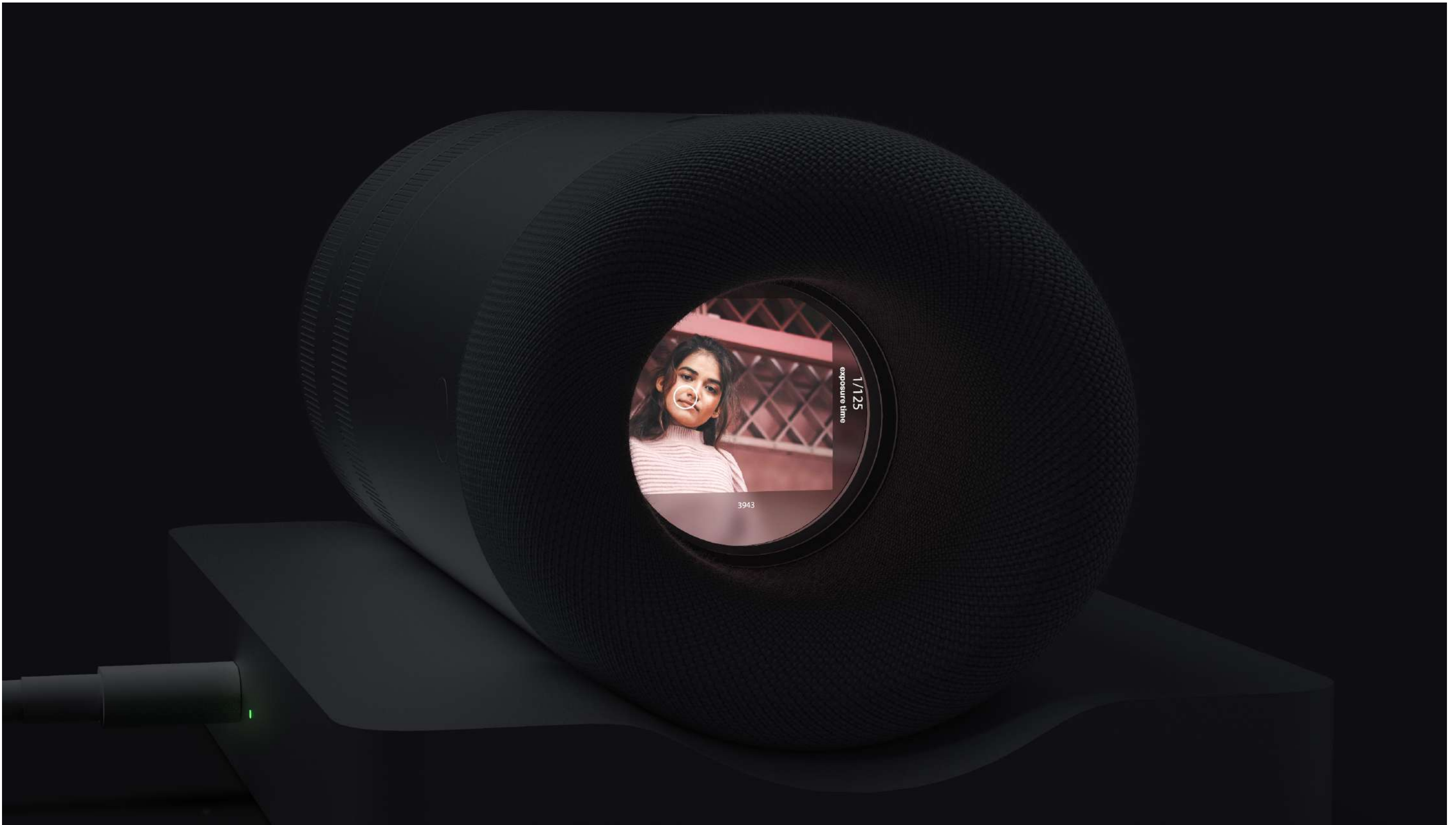
On the blue picture, the depth of field is quite small, which means that the lens lets less light into the sensor. The ISO balances the lack of light out, allowing the picture to keep the same brightness level as before. However, the length of the brightness ring is shortened, since there is not that much possibility anymore to light up the picture.

On the red picture, the stroke of the brightness ring is much larger. The depth of field is big, letting more light into the sensor and the ISO does not need to counterbalance that much.

Thanks to this feature the user acquires an understanding of how the different ingredients affect each other without having an impact on the resulting picture.



FINAL DESIGN





## DIVING INTO THE MOMENT

As already shortly mentioned in the description of the package set-up, I decided to focus on the connection between the eye and the camera. With my camera I have the space to do so, compared to compared to the rigid smartphone design.

In my opinion, it is crucial that the user can dive fully into capturing the moment and that no light distracts the view. Therefore, I decided to cloak the viewfinder in a foam, upholstered with fabric, which lays softly on the skin. You might be able to compare it with over-ear headphones, but then for the eyes: an over-eye viewfinder.





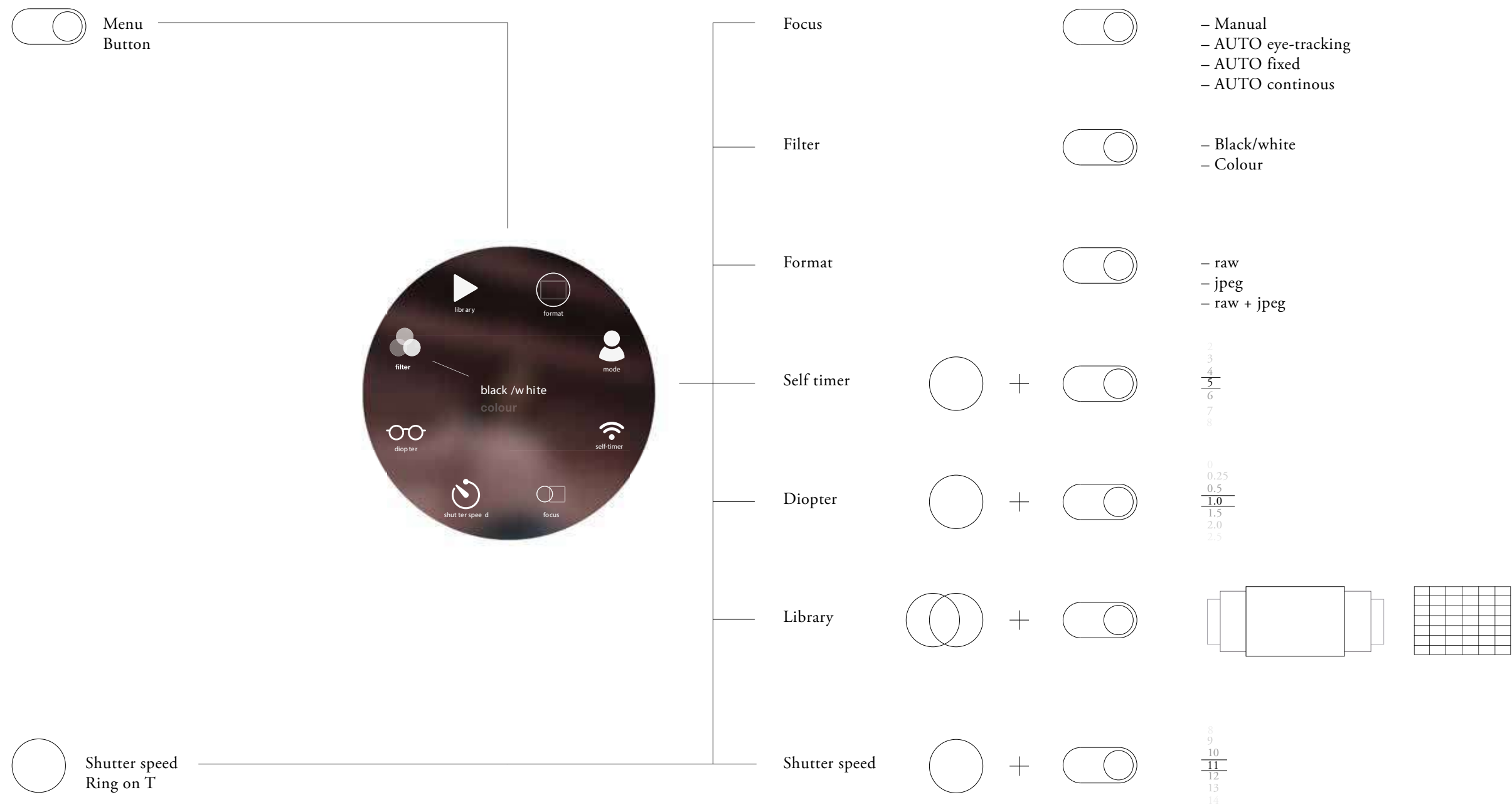
## CIRCULAR USER INTERFACE

The User Interface is round while the sensor is just the size of the actual frame. After long elaboration and testing things out with the help of my quickly made phone screen prototype, I decided to keep a round User Interface. For me it is really important because it literally gives you a bigger picture of the scene which feels more like the natural way of looking and lets you be more consciously in the picture, in the moment.

One solution would be to use artificial intelligence which combines the picture you see on the screen and frames that get captured while the camera is moved, into a blurry picture.



FINAL DESIGN





## MENU STRUCTURE

The idea of the menu strucutre is to strip it down to the most important settings. For instance, leaving out different modes like sepia and other filters. This action leads to a menu which can be completely overviewed in one single page. Apart from the menu structure, I also focused on how to navigate through the menu. Because there is no possibility for setting up a touch screen and as I did not want to overcomplicate it with an eye-tracking feature, I decided to use the hardware controls I already have. In detail that means shifting the release button to the right or turning the shutter speed ring on T, opens the menu. The shutter release button can now be used as the OK button while the focus ring navigates you through the menu.



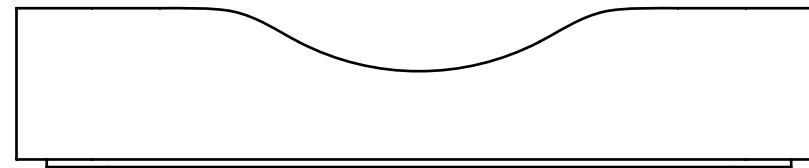


## CHARGING AND STORING





length 167 mm



height: 21 mm

width: 106 mm

FINAL DESIGN





## MOMENT AT HOME

Every day, we get surrounded by more and more technology. I believe that there are two ways to deal with that; first you can hide it, try to make it invisible. The second option is to embrace it. However, I do not want to make a bold statement and make sure everyone notices that “He has a Moment”. I want to let it blend into its environment. I got inspired from the serif TV from the Bouroullec brothers for Samsung. They did not cover the TV with a fabric or hide it in another way, but let the TV blend into the living room, turning it into an object where you can place other items on top, just like every other piece of furniture. Moment should be a beautiful object that has a minimalistic and unobtrusive appearance.



fig.38

FINAL DESIGN



fig.39



fig.40

FINAL DESIGN



## MOMENT ON THE ROAD



FINAL DESIGN







04

# INTERNSHIP REPORT

Why AHDD  
Alfredo Häberli Design Development – The studio  
My tasks  
Learnings





## WHY AHDD?

In March 2019 my class did a design-related excursion to Switzerland where we visited the Vitra campus, design museums and two design studios. One of them was the studio of Alfredo Häberli. I was super intrigued by the stories of the products he told us and felt really welcomed. I decided to apply for an internship and was lucky enough to get an invitation a few weeks later for a personal interview. During that interview I noticed that this completely different world of design would teach me a lot in addition to the bachelor programme of the FH Joanneum. Two months later, I rang at the doorbell of the AHDD studio with a heavily pounding heart and a smile on my face.



fig.41

## INTERNSHIP REPORT





## THE STUDIO

Alfredo Häberli Design Development (AHDD) is a design studio based in Zürich, just next to the Zürich lake not far from the city centre. Alfredo founded the studio in 2003, three years after his graduation as an industrial designer at the ZHdK Zürich. Since then he worked on projects in different fields: the interior design of the 25 hour Hotel Zürich, a vision for BMW, a glass family for the Finnish glass manufacturer Iittala, furniture for Vitra, Moroso, Andreu World, Cassina and many more. The core team exists out of three industrial designers, allowing Alfredo Häberli to be involved in every project and process while still working efficient.



## INTERNSHIP REPORT





## MY TASKS

What differentiates AHDD from other “author designer” lead studios is the involvement of the intern in the different aspects and stadia of the projects. As an intern I did not only work on the execution of projects, but accompanied the projects from the first phase. Alfredo Häberli often let me ideate on my own even though he knew already what he wanted, to give me the opportunity to experience the whole design process. Alfredo paid attention that I work with different methods, as long it could be combined with the current projects. I built carton board prototypes of furniture in scale 1:1, got confident in Rhino and sketched hundreds of sheets of papers full of ideas. My first projects were furniture projects for a Danish and a German client. Next to that, Alfredo gave me a few fast-paced projects where I got a briefing on Monday and present my outcomes during a little presentation at the end of the week. The last two months I worked on a series of small items for another Danish company. I am glad that I was able to really dive deep into the different projects. Additionally, working on furniture projects for three months, increased my knowledge on this topic enormously as I was able to benefit from the huge knowledge Alfredo has of this subject.

Lastly, I want to thank Alfredo as well as the awesome team around him, which made my internship a wonderful experience!



## LEARNINGS

During the past six months I learned how diverse a design process can be. From projects that started with an intense research phase to projects that lived from a single formal statement. I learned how stubborn clients can be, how projects can take years with all the restrictions. I learned about the whole furniture history. Due to Covid-19, the everyday life in the studio was quite calm. The studio does not have that many employees and the restrictions in Switzerland were quite swift. Luckily, I was able to continue with my internship and work from the office. The latter opened the opportunity to learn from the expertise from Alfredo: his encounters with different designers like Achille Castiglioni, Enzo Mari, Konstantin Grcic, but also his experiences how to approach clients, how to make an offer and salary calculations. This knowledge he shared is something which I would never had the chance to experience at school. Day by day I wrote every learning down in a little notebook which Alfredo gave me at the beginning of the internship.



## INTERNSHIP REPORT





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- Image sources
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