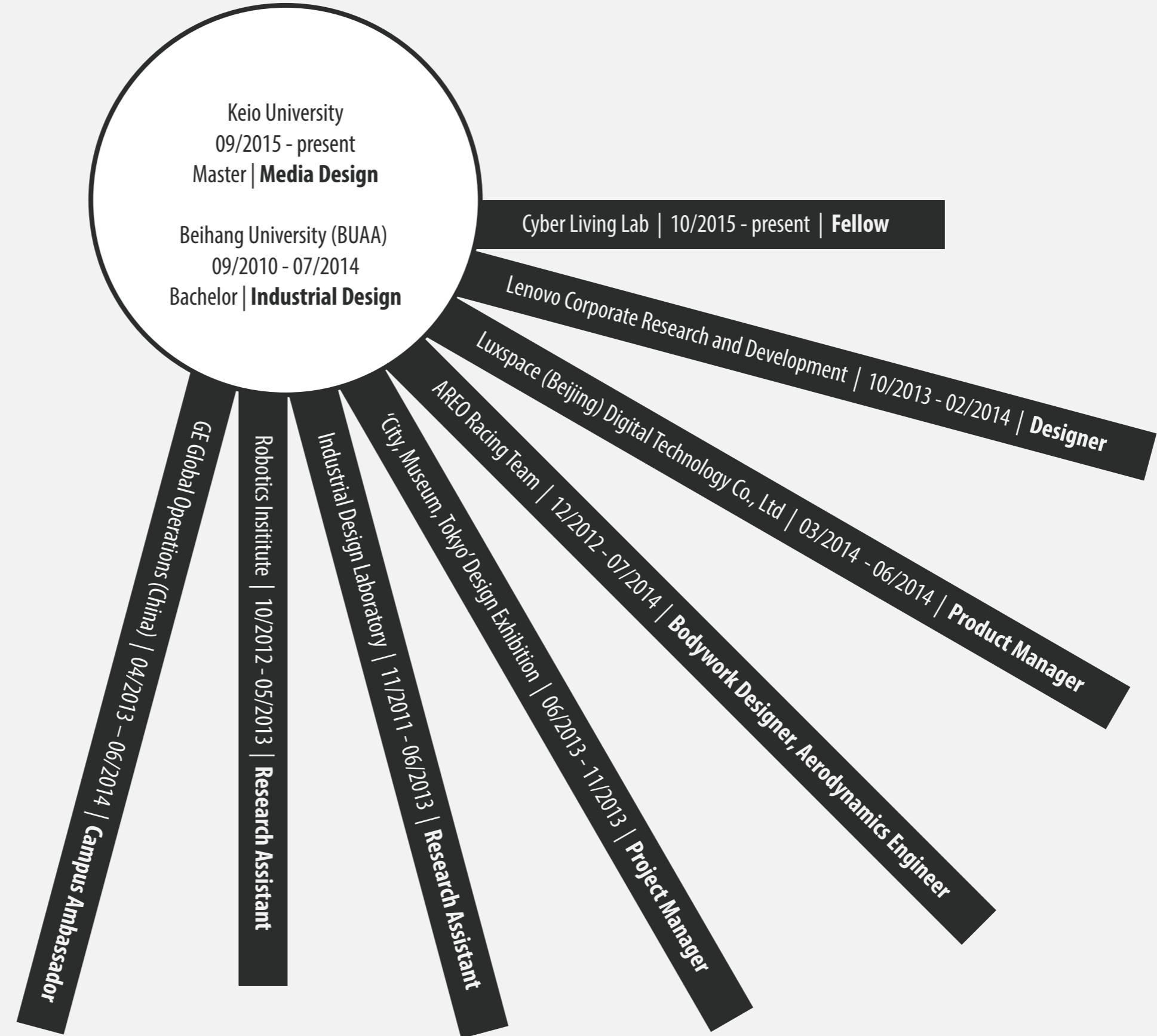




SHEN LICHAO

SHEN Lichao

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Homepage: shenlichao.weebly.com





content

HAHAKI 八千

| Group Work

Jun. 2013 - Dec. 2013
Project Manager

Hahaki is a city postcard system consist of printers and an application for mobile phones. Users such as tourists would customize their own unique postcards in the app, and get cards printed conveniently by the printers scattered throughout the city.

Hahaki is expected to provide more choices, bring people exclusive memory, and connect people.

As the project manager of the group, I involved in every stage. The idea originated with me, and I took charge of the printer's construction, the app's user experience, user interface and prototype demo.

This project was showed on the "City, Museum, Tokyo" Design Exhibition in Tokyo in November 2013.



Research



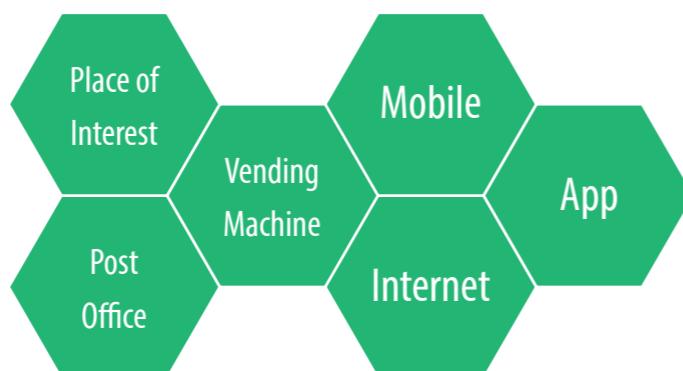
Postcards from Japan



Homogenization

Postcard is one of the most common and favorite souvenir. Its photo is always about place of interest, scenery, festival or event.

However, postcards in the market can hardly meet everyone's demand. Those postcards are usually similar or even the same, because they are not personally customized, and their content are maybe not what we actually want to deliver.



Investigate

Investigation: Such customed postcards have a bright future.

(55 people)

Q1: Will you still use postcards nowadays?

Yes | No

Q2: How do you evaluate posting postcards?

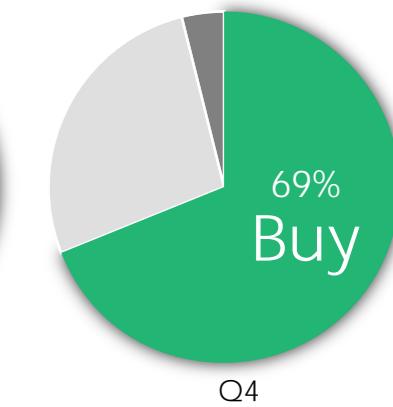
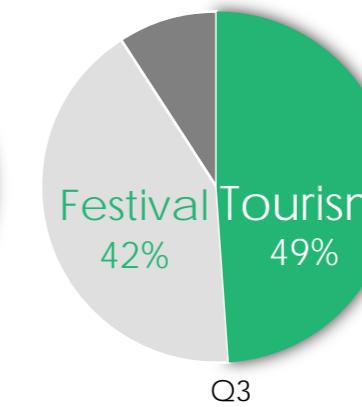
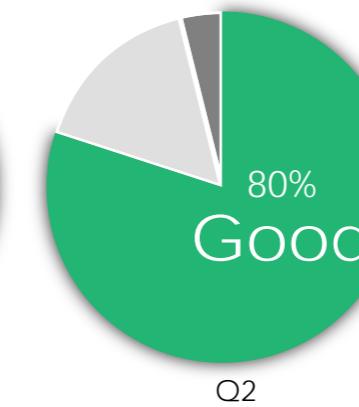
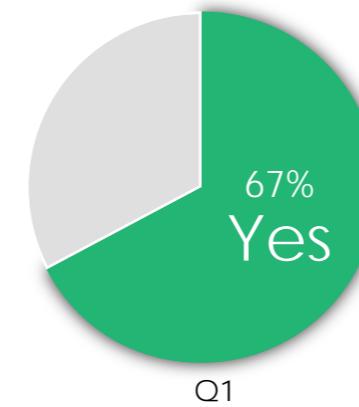
Good | Fair | Bad

Q3: What do you buy postcards for?

Tourism souvenir | Festival | Others

Q4: Will you buy a personally customized postcard?

Buy | Depend on price | Not buy



Q5: What should be the price of a customized postcard?

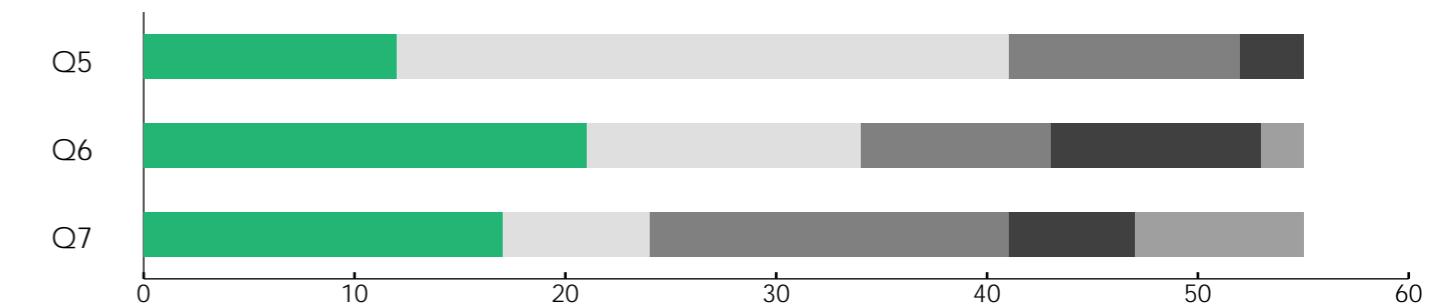
Below \$1 | \$1-\$2 | \$2-\$3 | Above \$3

Q6: Which feature of a customized postcard will you prefer?

Easy operation | Fair price | Good quality | Fast print | Others

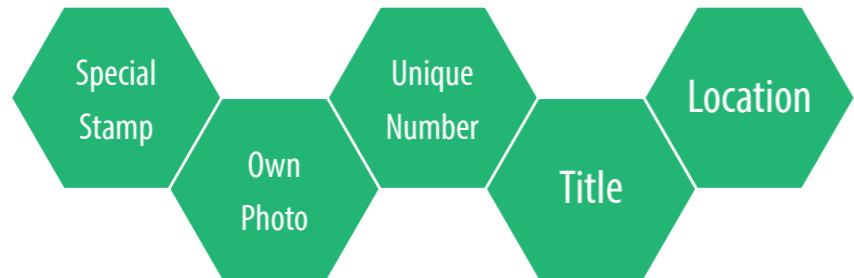
Q7: What do you buy postcards for?

Convenient Store | Street Booth | Tourism Spot | Business Area | Others

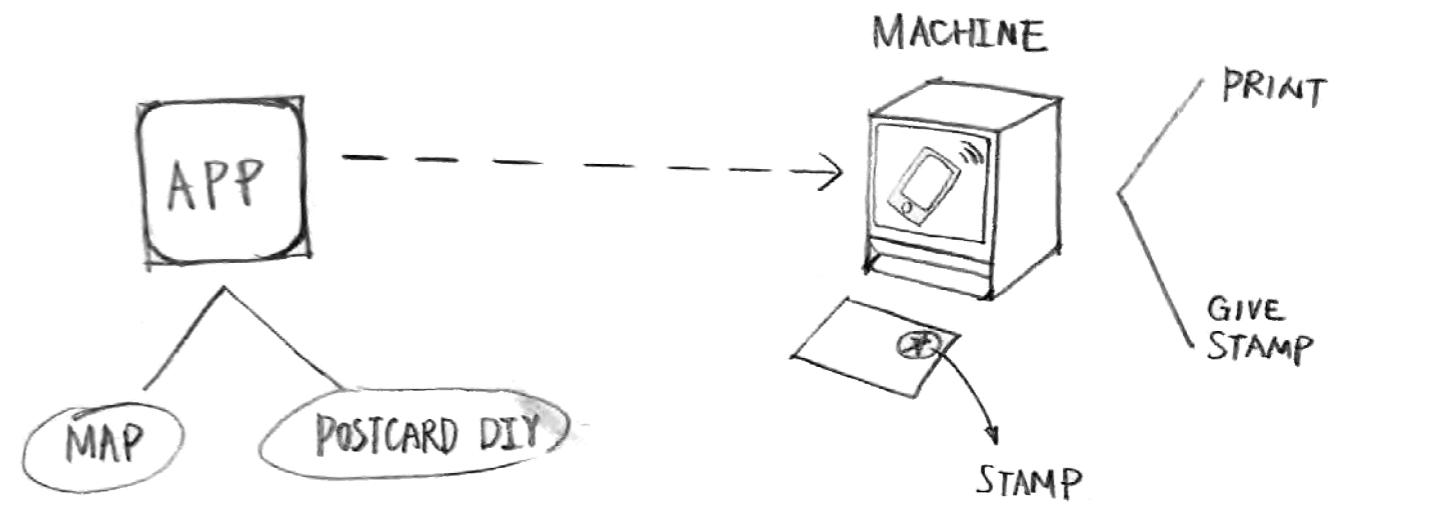
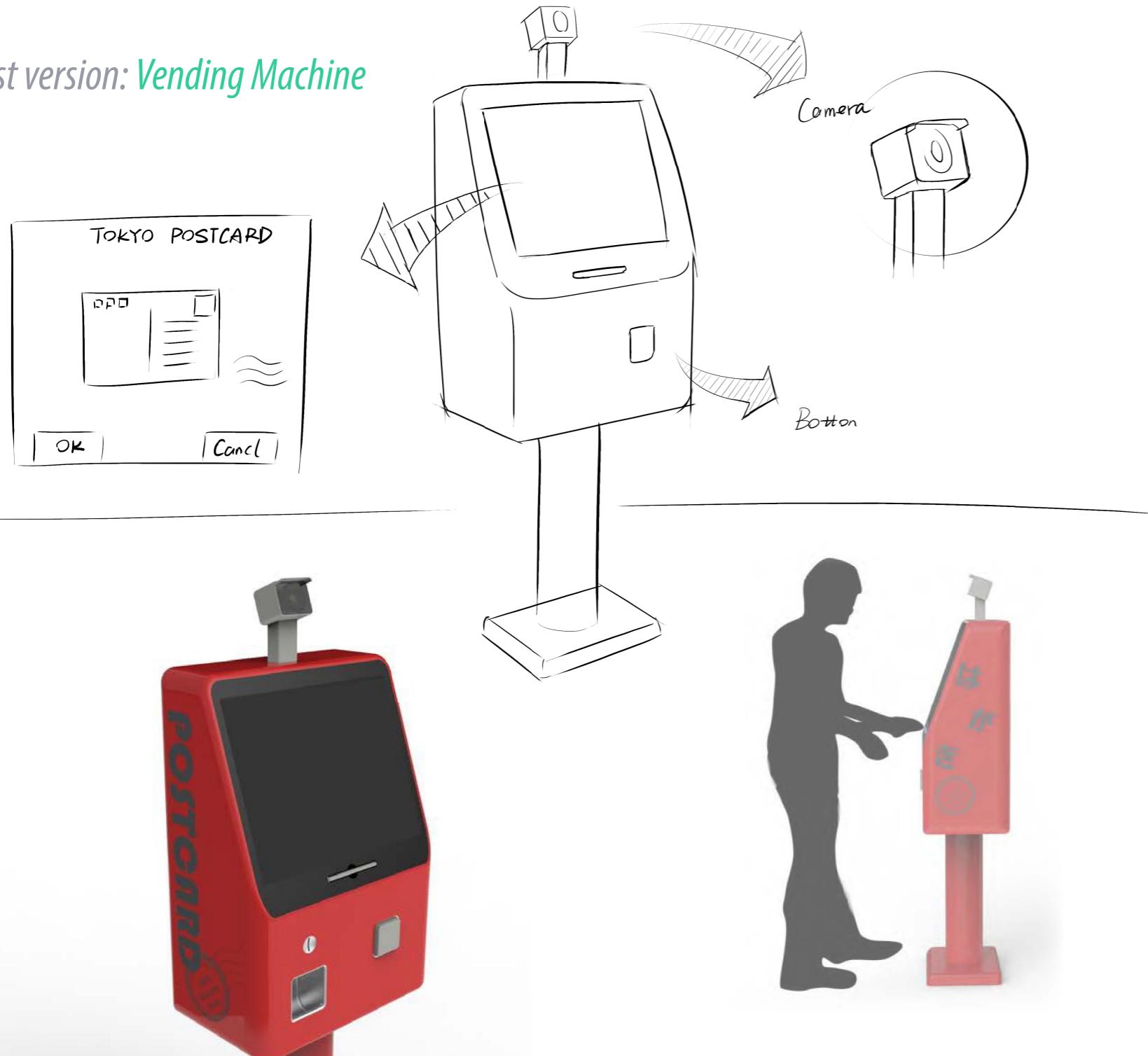


Sketch

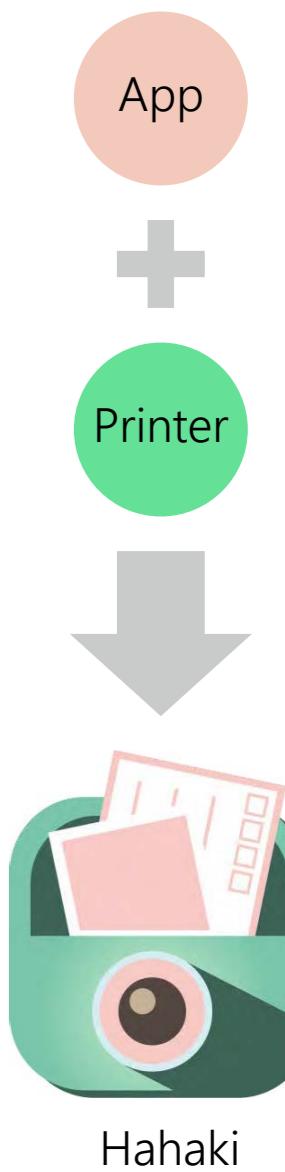
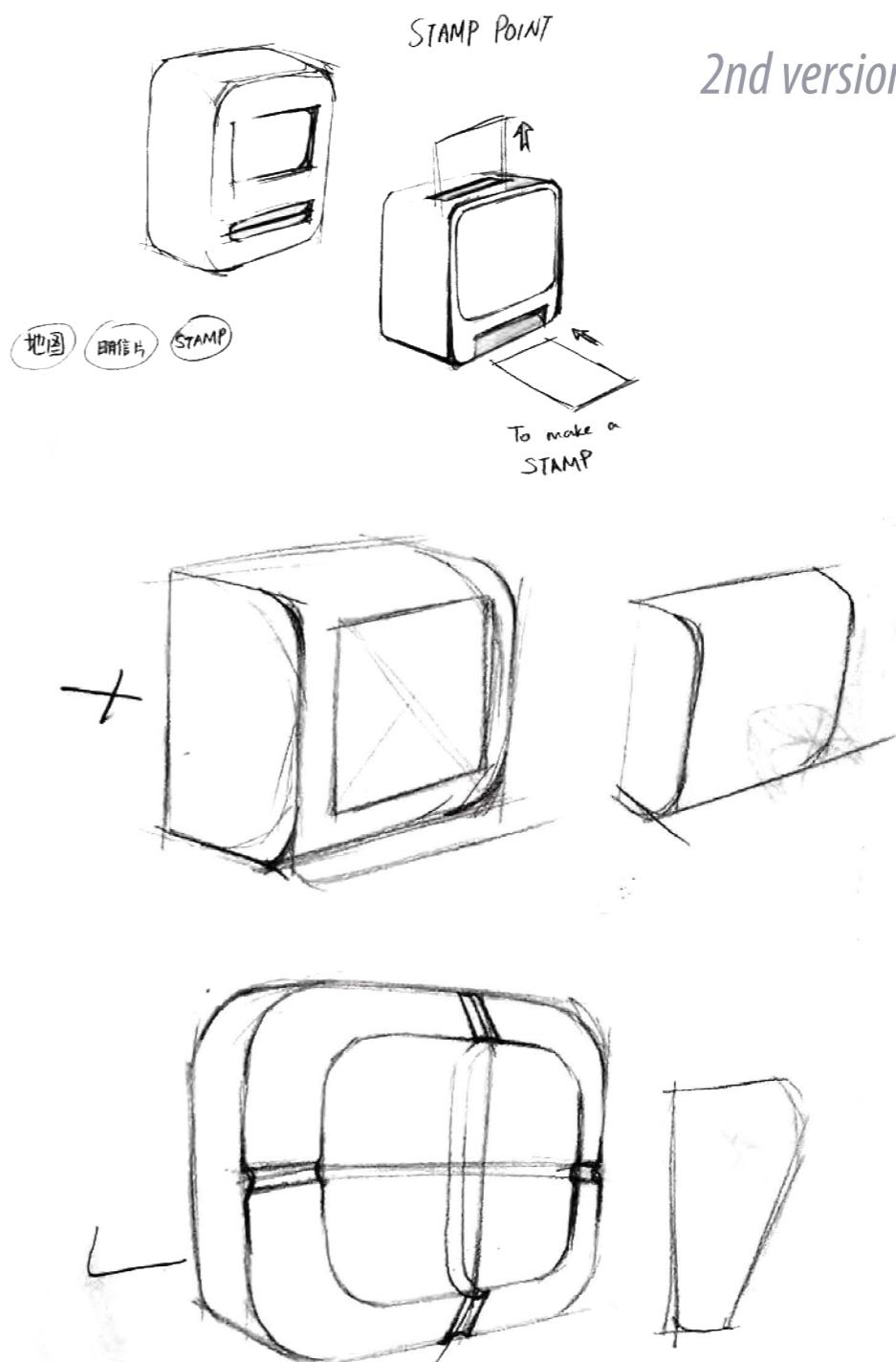
Be yours, be unique.

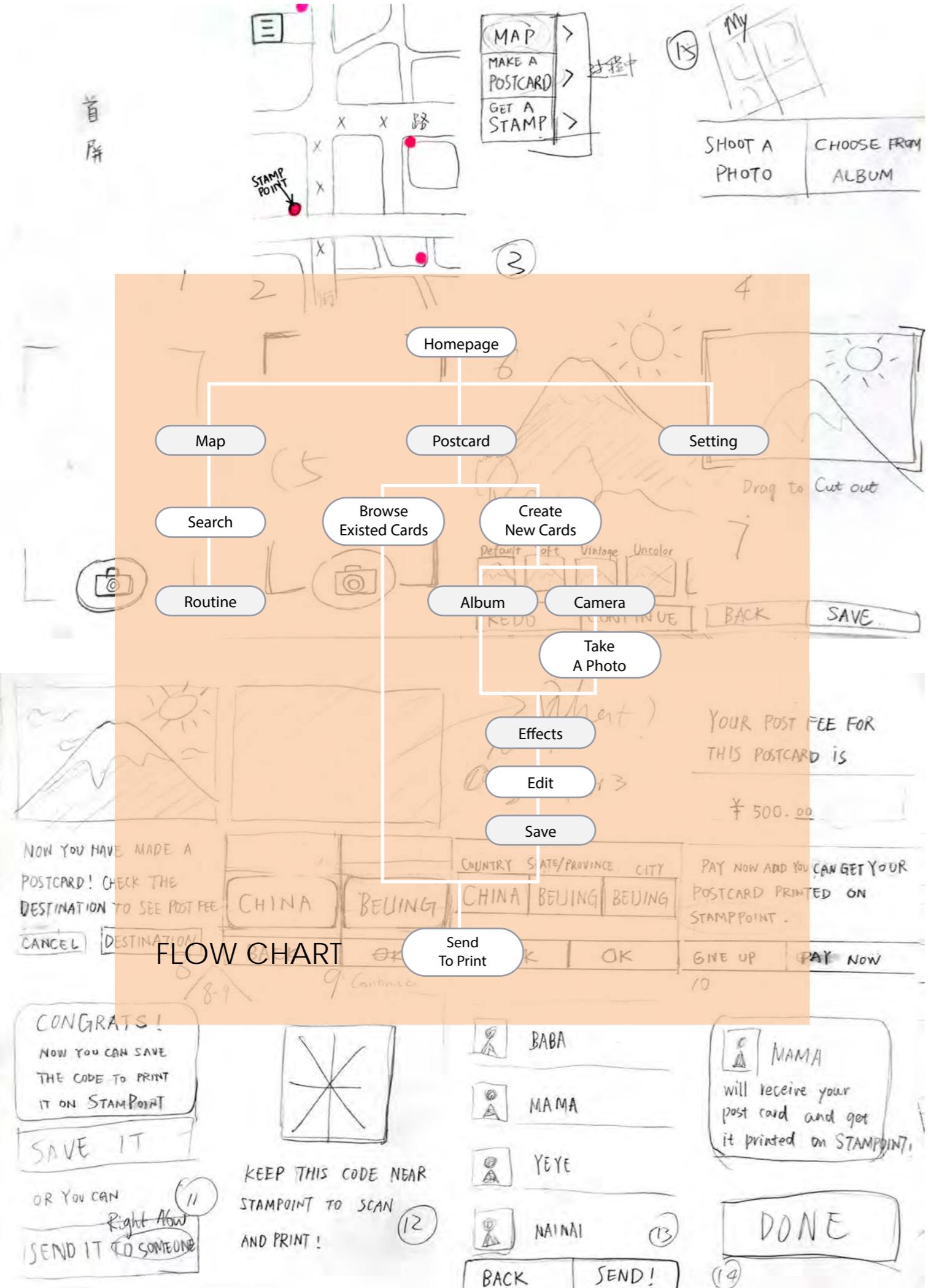


1st version: Vending Machine



2nd version: Printer+Mobile App



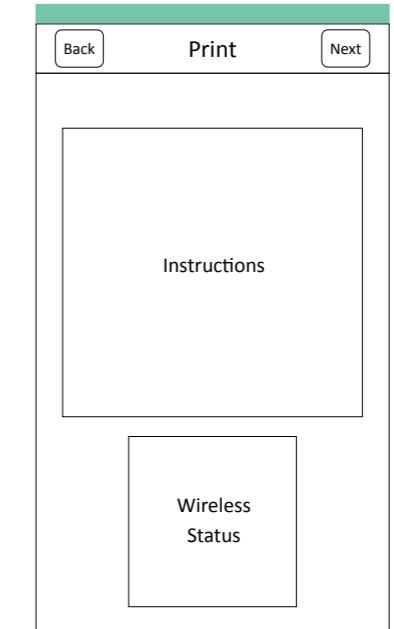
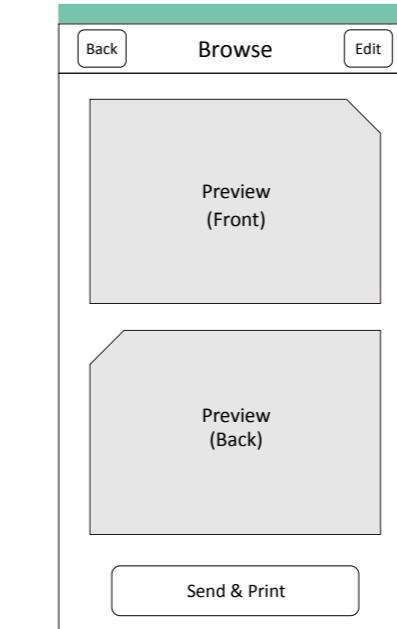
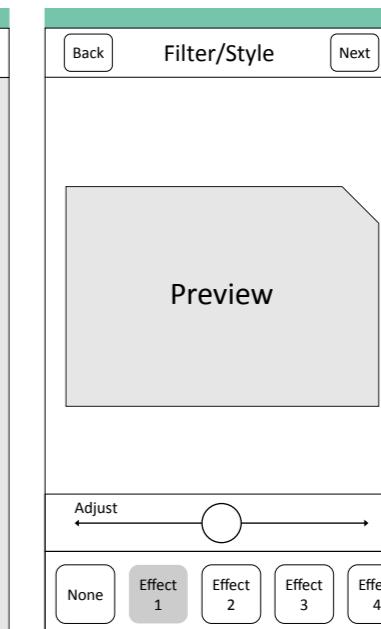
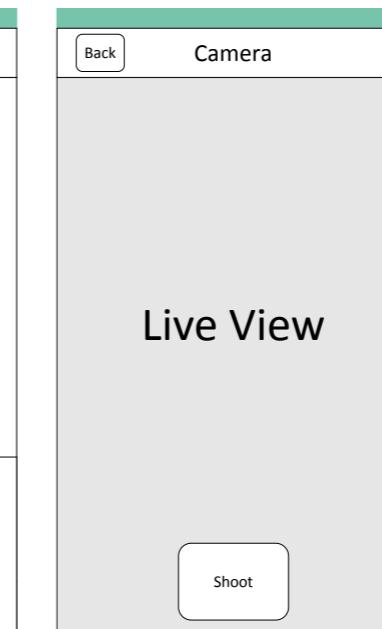
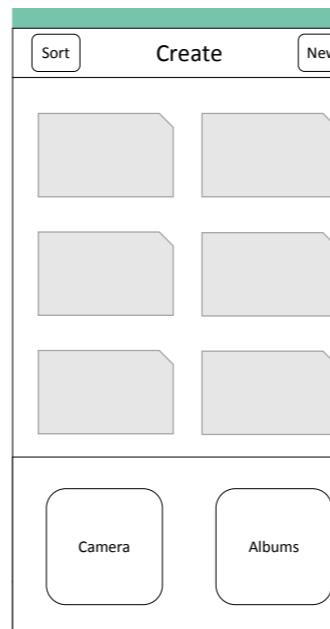
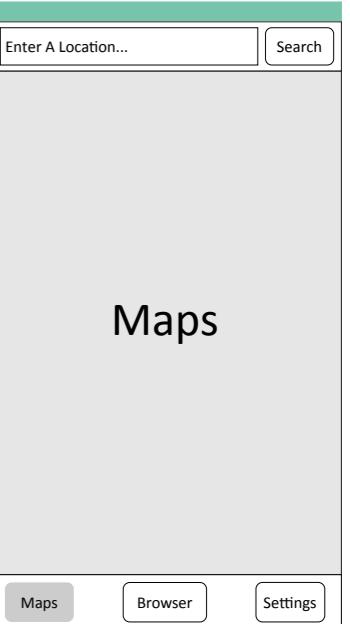
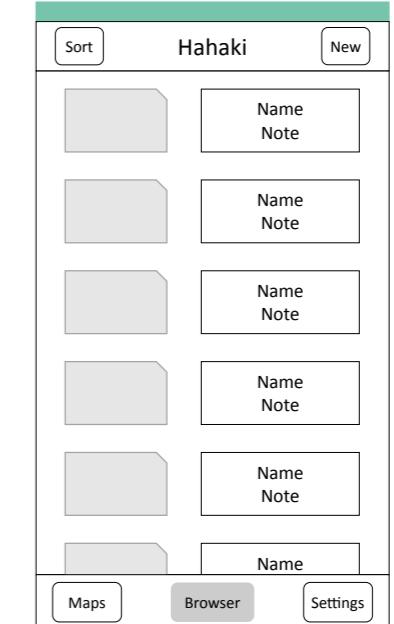
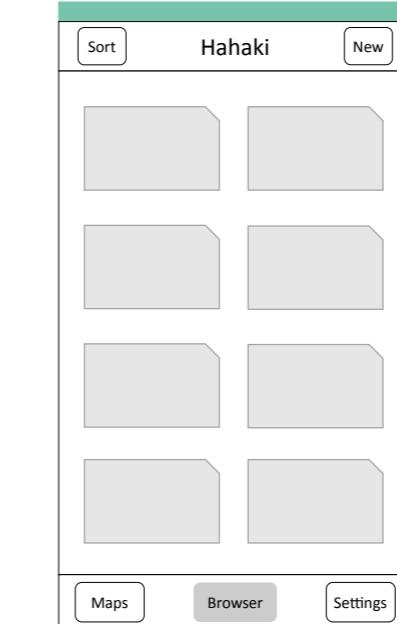


Homepage

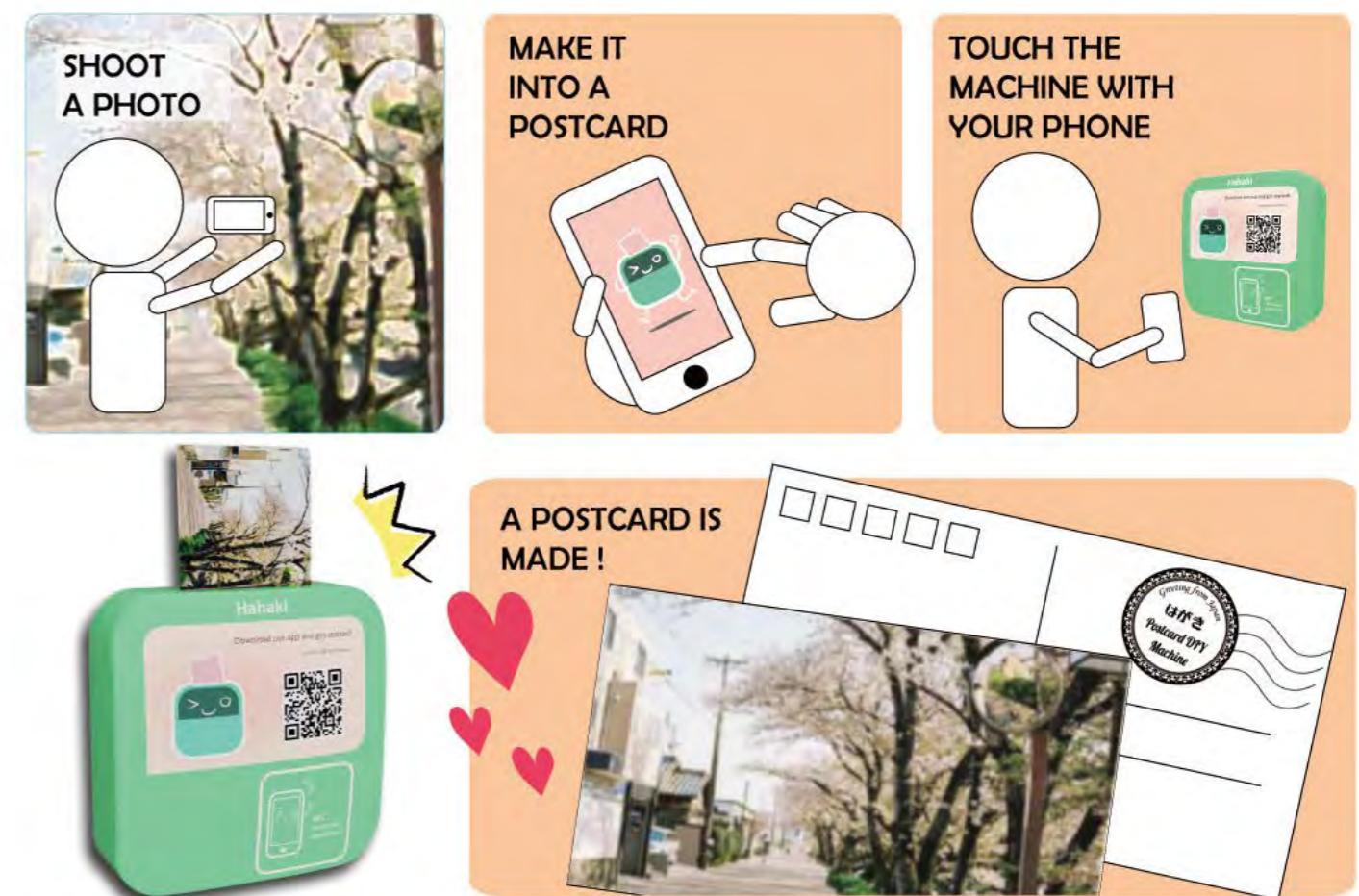
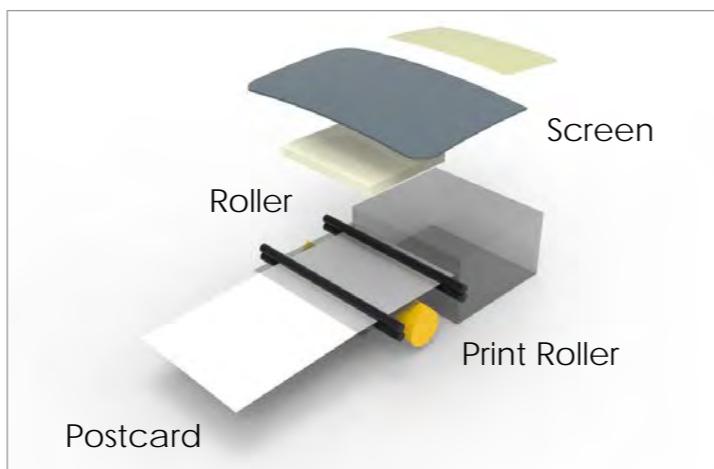
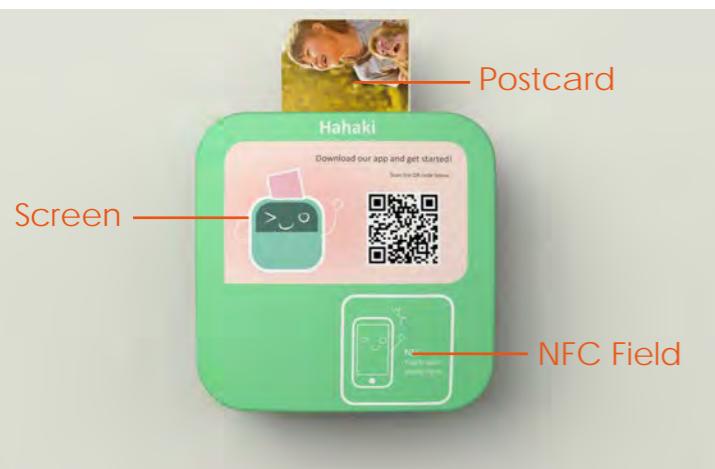
Create A New Card

Print Your Card

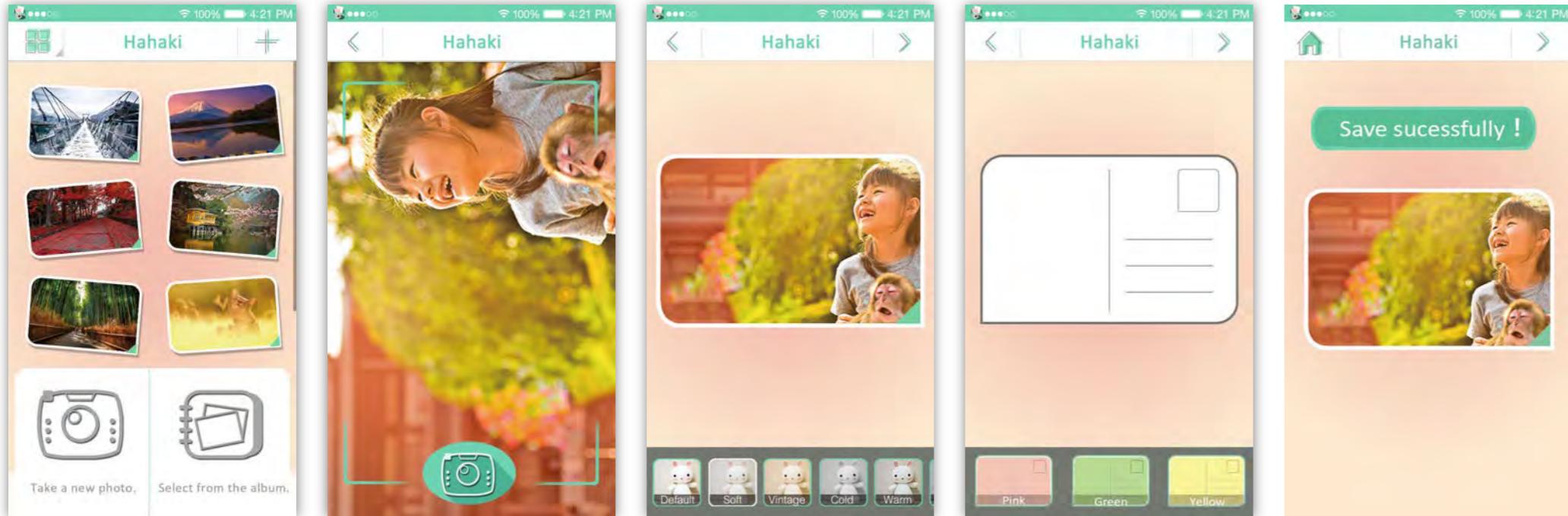
Prototype



Hahaki



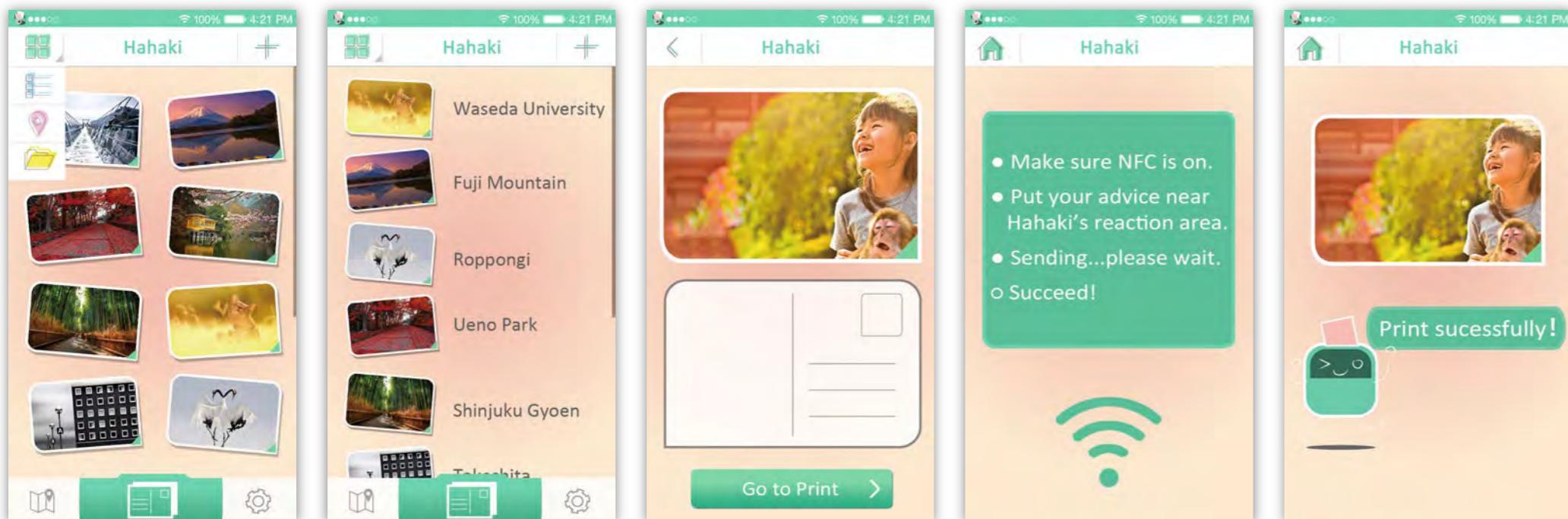
Make A Card Yourself



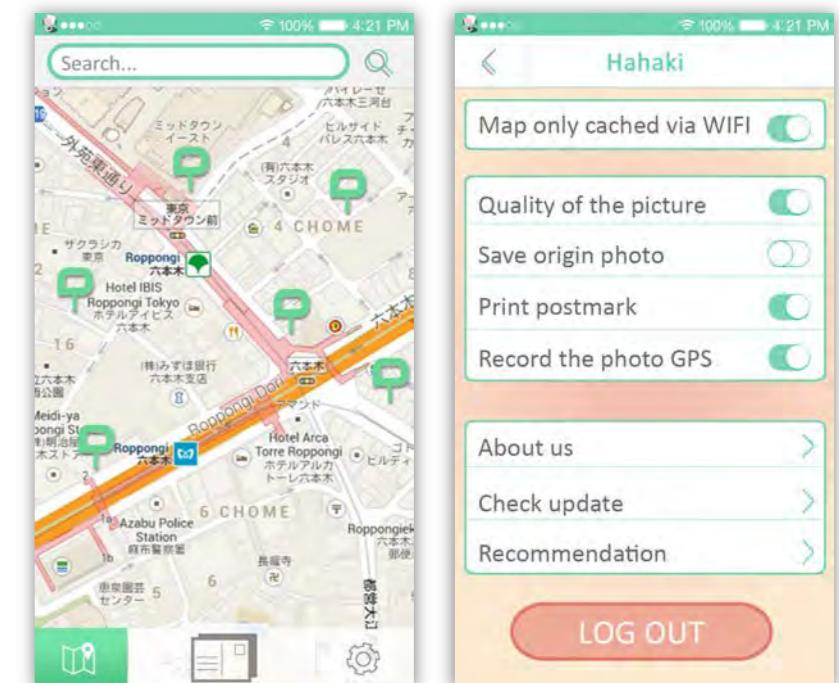
Hahaki



Browse to Print



Maps and Setting





Group Work |

AERO 2013

**Jan. 2013 - Sep. 2013
Bodywork Designer, Aerodynamics Engineer**

Introduce the all-new racing car, with jet-inspired design, AERO-2013!

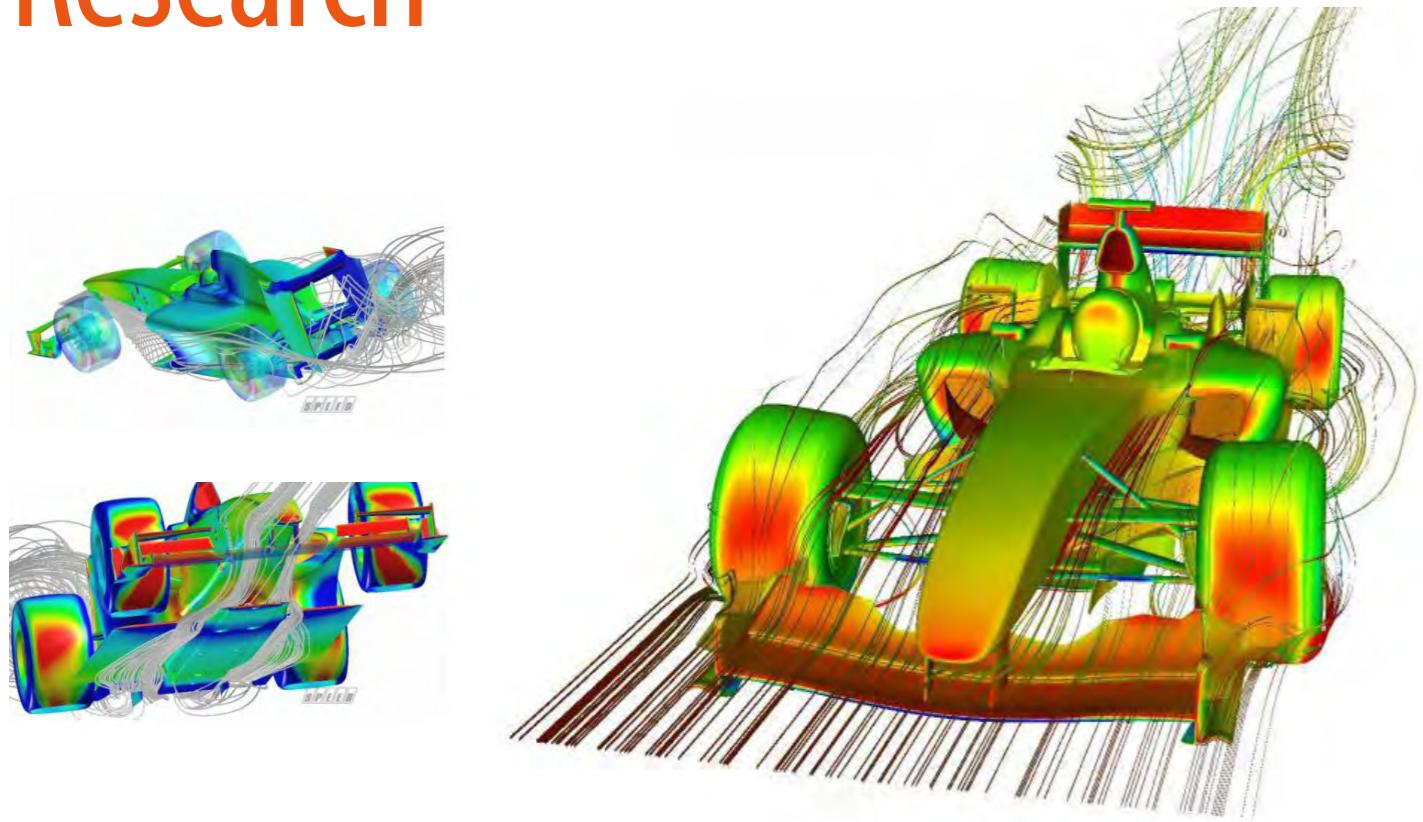
It was designed and fabricated for Formula Student China 2013 season. The design took consideration of aerodynamics and requirements from rules and other parts beside a nice appearance.

I was mainly in charge of the car's bodywork and wings. We evaluated their aerodynamic effect by CFD. Then I participated in the fabrication.

Our team won 8th out of 53 teams in FSC 2013, the best ever.

AERO-2013 was showed on Auto China 2014 (Beijing International Automotive Exhibition).

Research

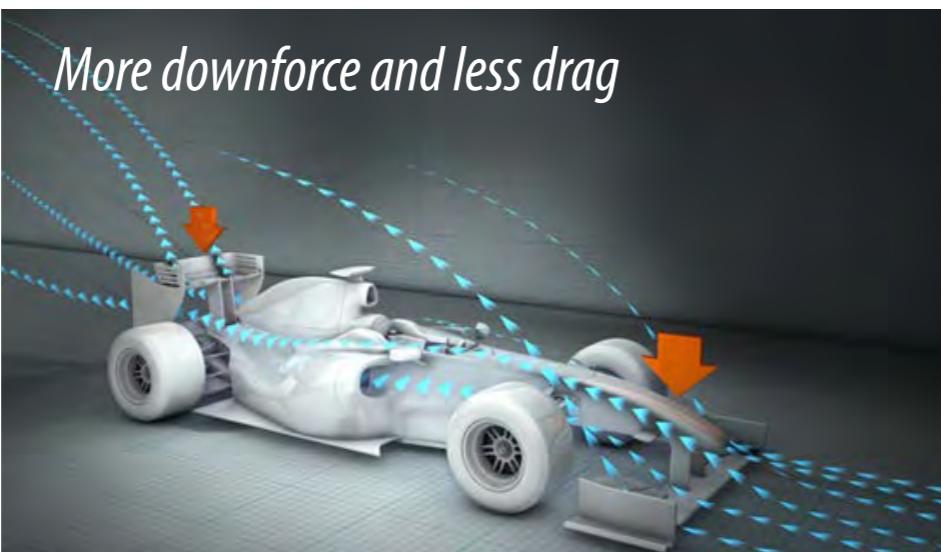
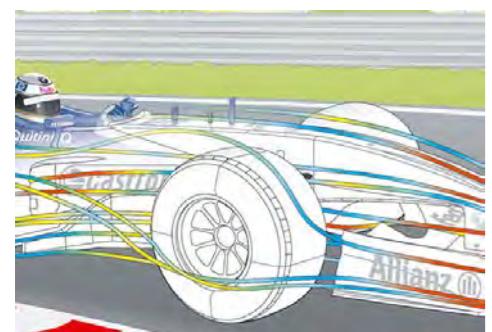


Aerodynamics in racing

Aerodynamics grows more important. In fact, a modern F1 car has almost as much in common with a jet fighter as it does with an ordinary road car. So does the Formula Student. It has become key to success in the sport.

Designer's concerns

The aerodynamic designer has two primary concerns: the creation of downforce, to help push the car's tyres onto the track and improve cornering forces; and minimizing the drag that gets caused by turbulence and acts to slow the car down.



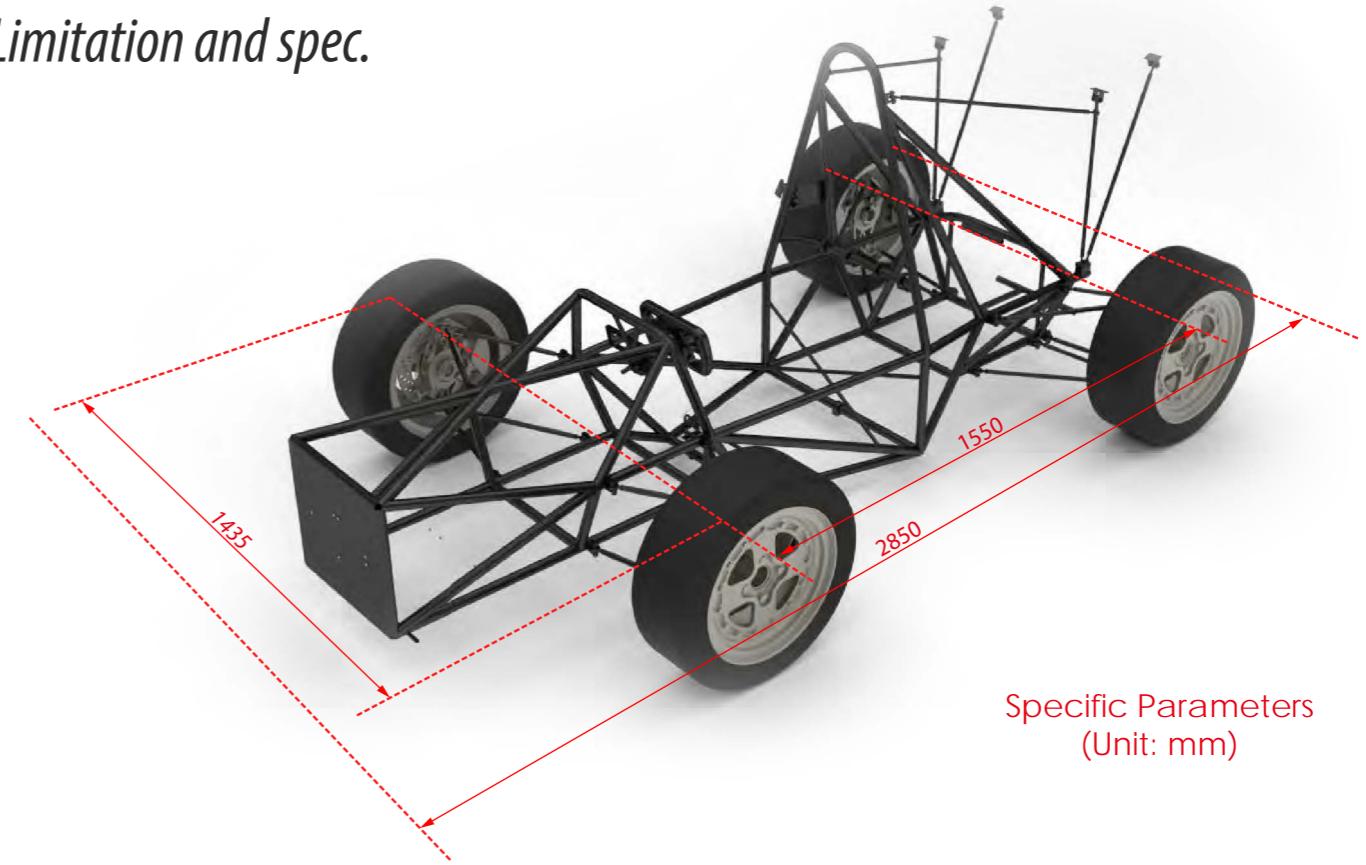
FSAE and FSC

Formula SAE® is a worldwide student competition of car design and manufacture first organized by SAE International. Formula Student China (FSC) is the relevant competition in China.

FSC requests each team to follow the FSAE rules to design and fabricate a kind of small, single-seat Formula style racecar within one year.

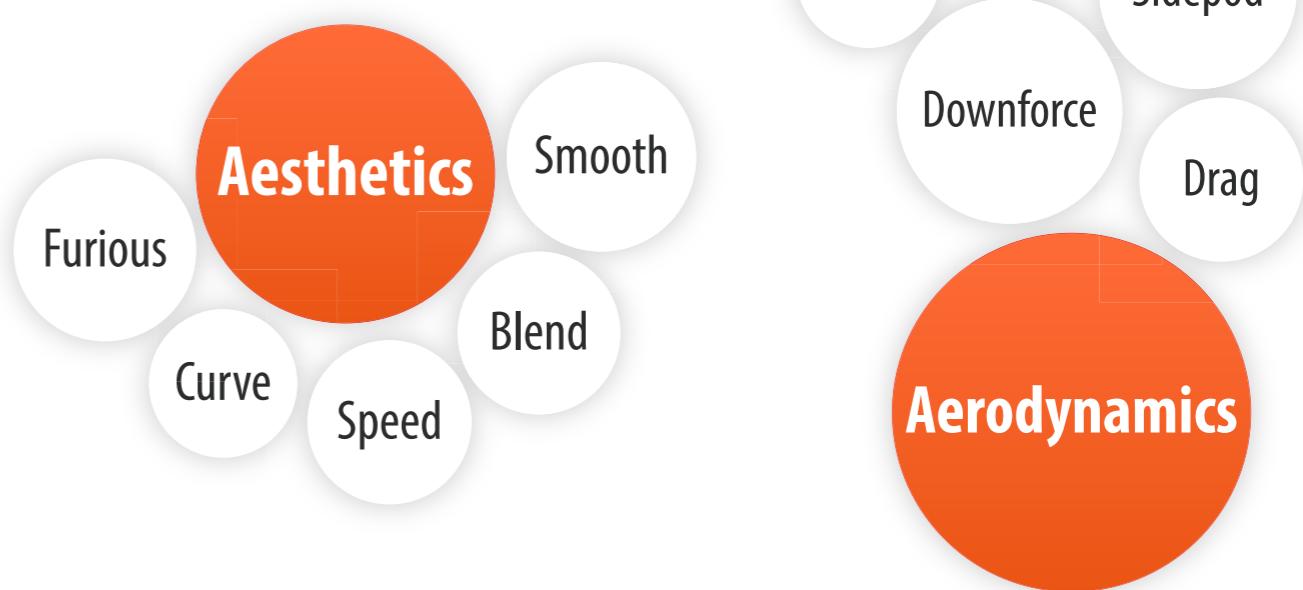


Limitation and spec.

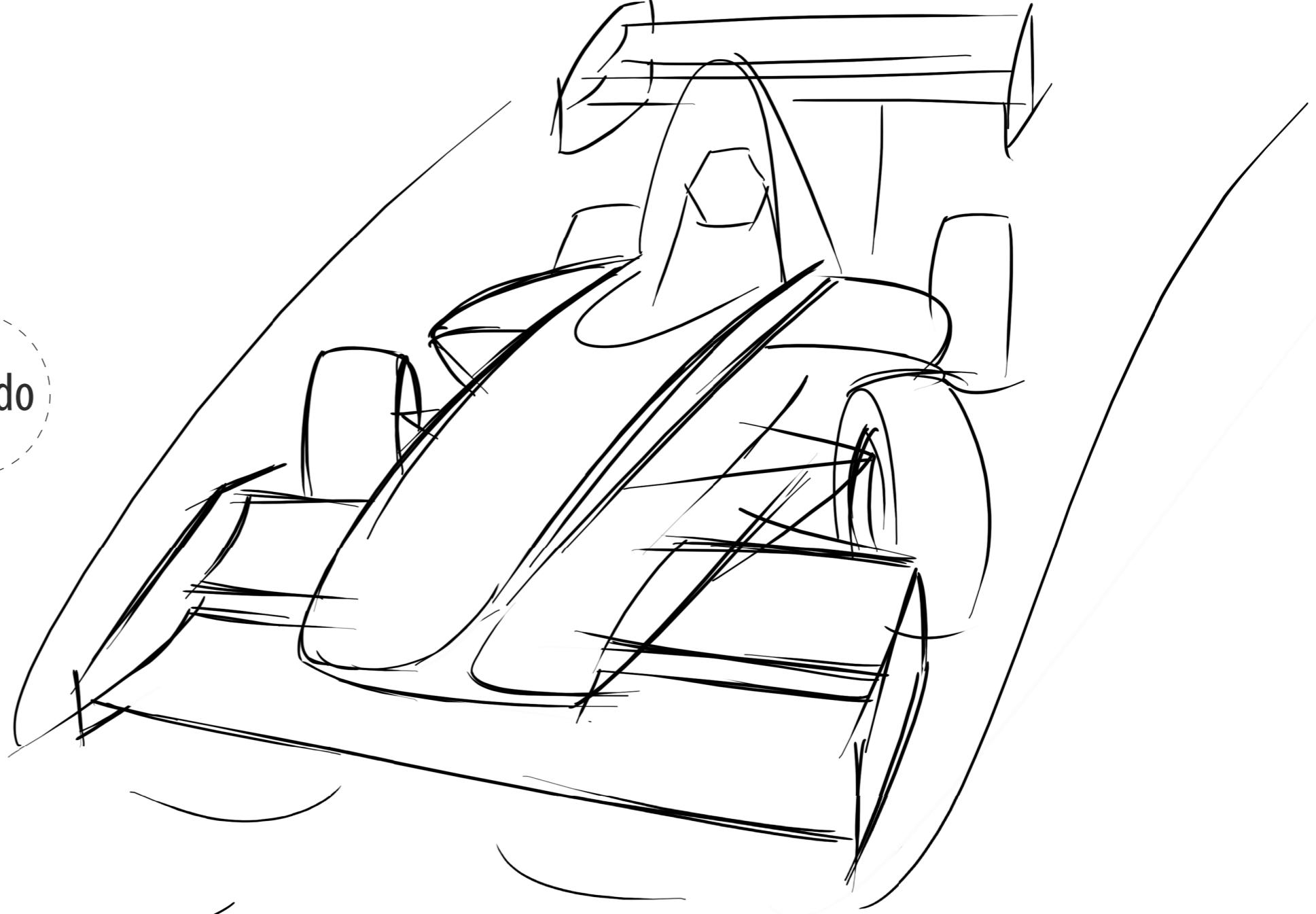
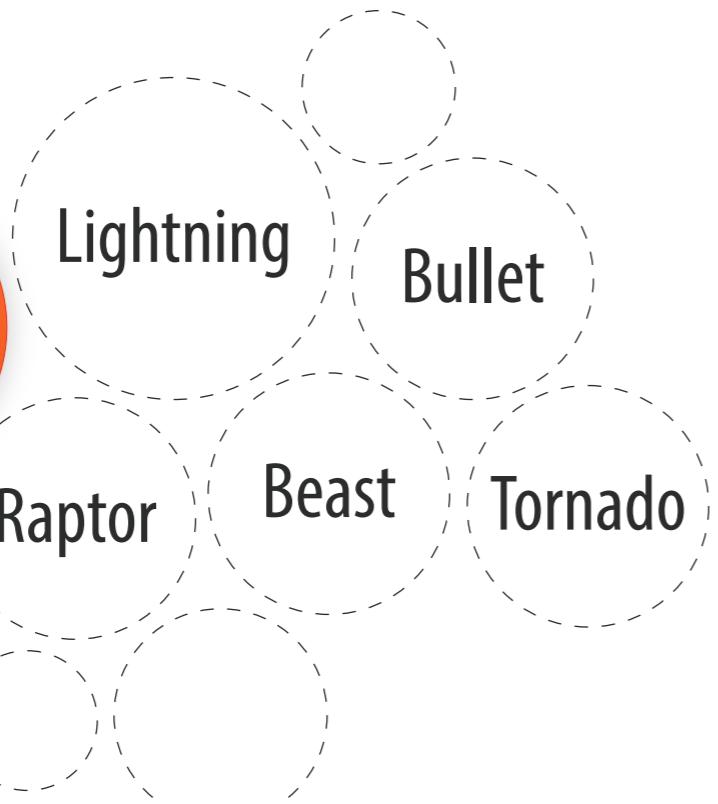


Specific Parameters
(Unit: mm)

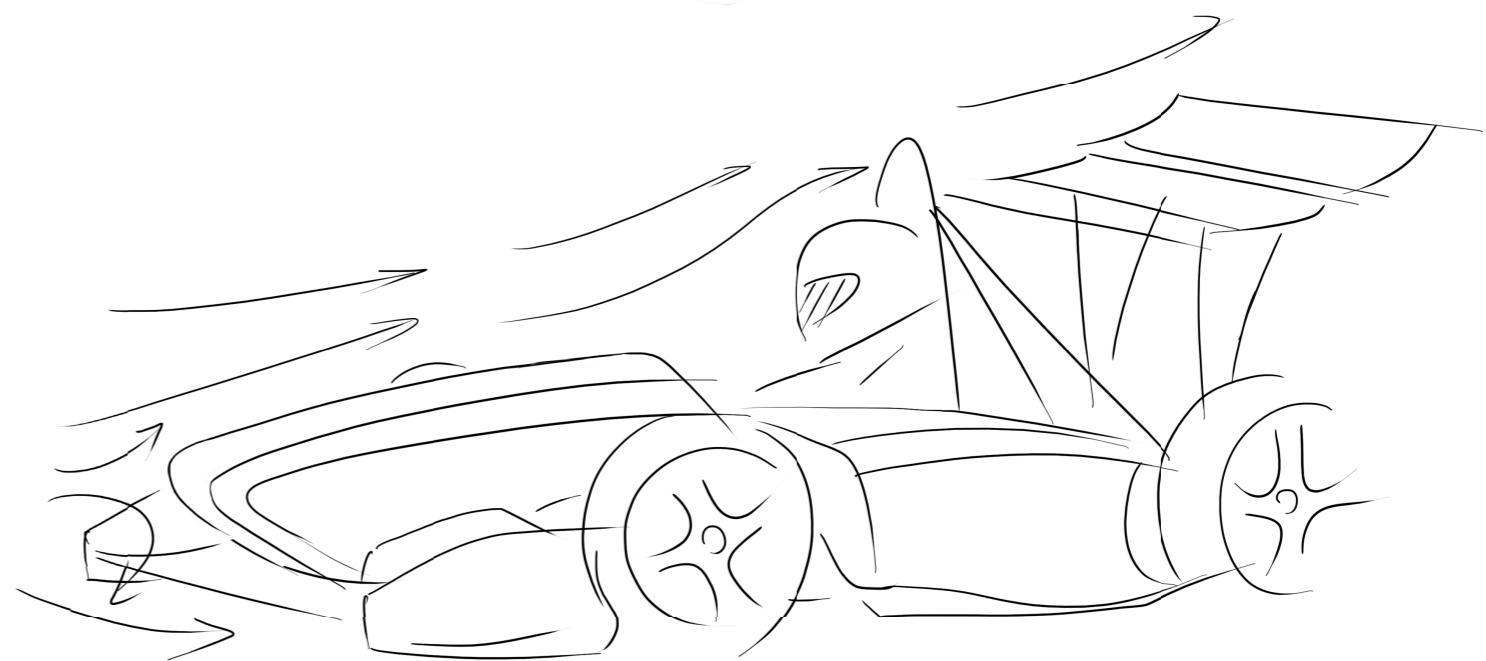
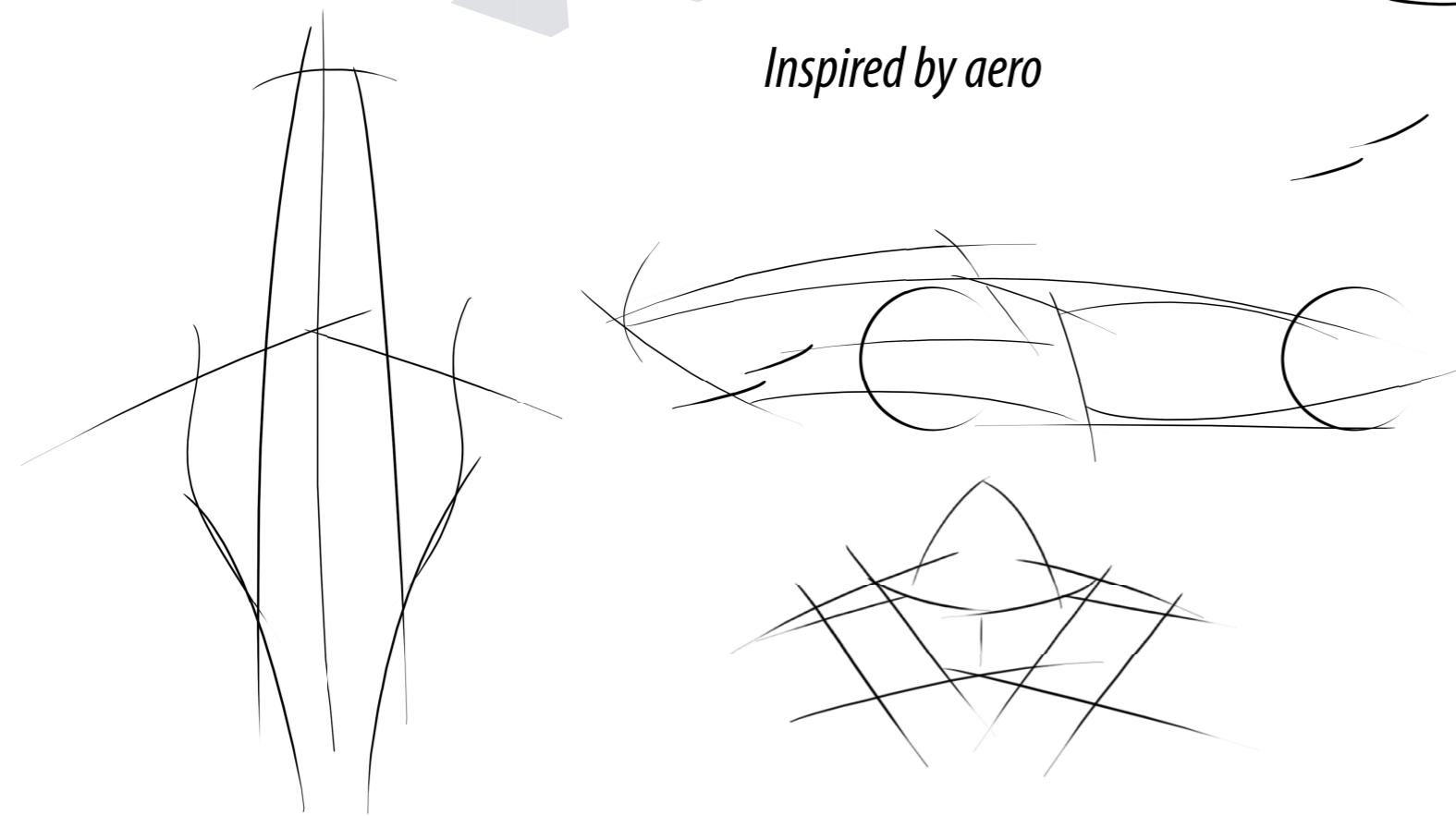
Demand



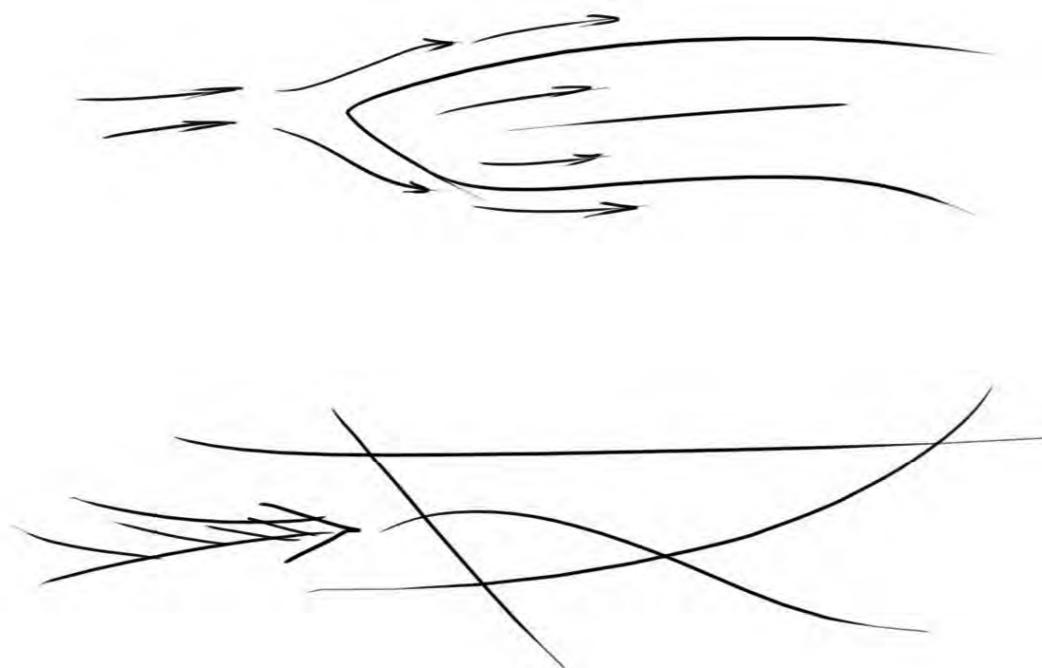
Sketch



Inspired by aero



Implement Evaluate



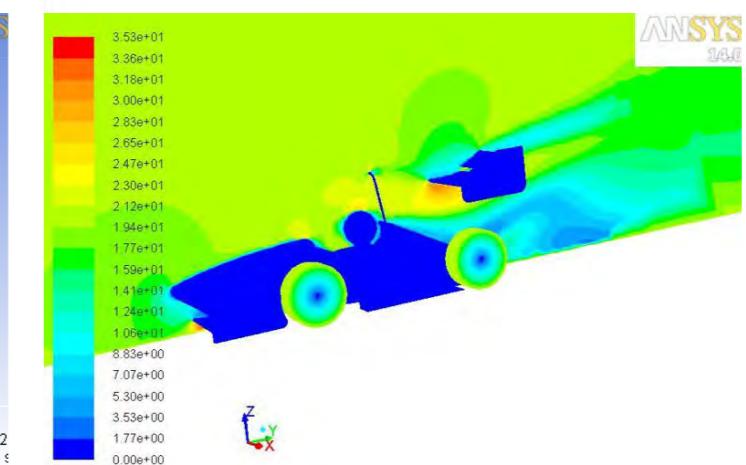
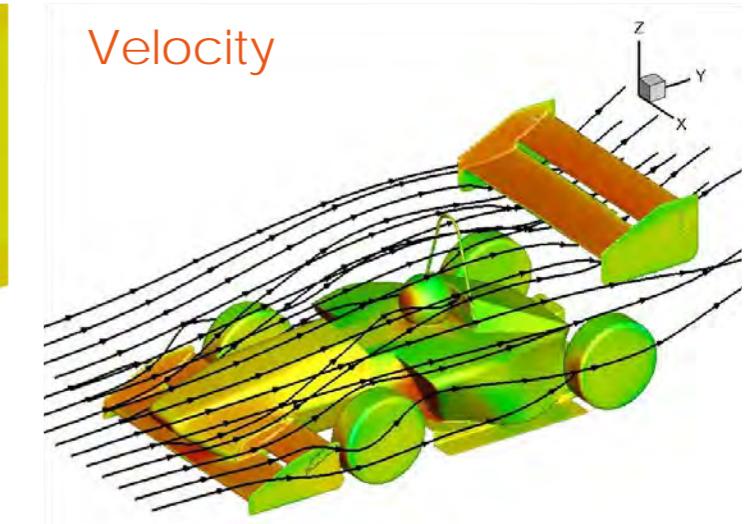
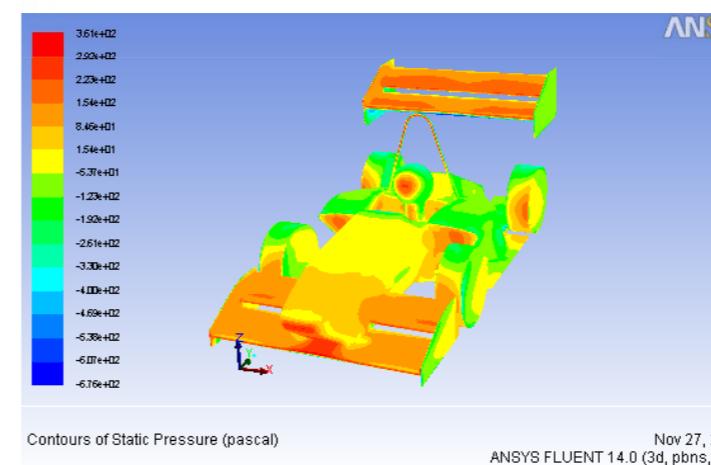
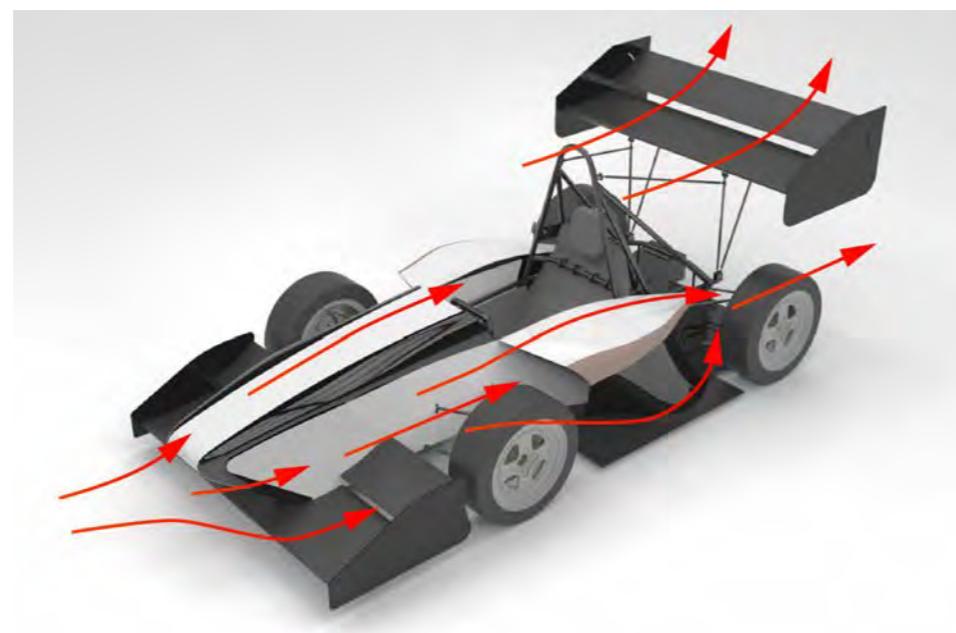
Nose:
Less Drag

Sidepod:
Steer Air Flow

Consideration

Sidepod's internal space is a narrow-wide-narrow construction, and that help cooling system work well and air current exhausts rapidly.

Sidepods' winding external surfaces steer the flowing air and neat airflow decrease drag; plain fused blended surfaces decrease the lift and make car stable.



Conclusion

We've tried many possibilities and this is a part of data. The results showed that the rear wings created strong downforce and that's our very goal.

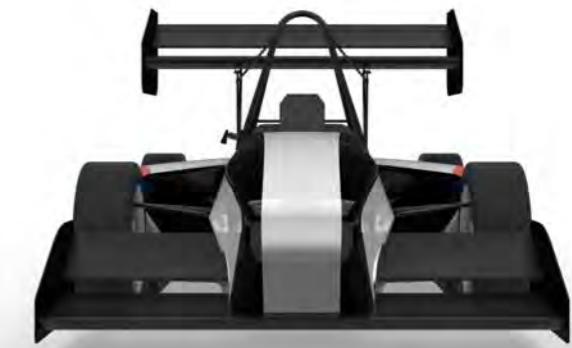
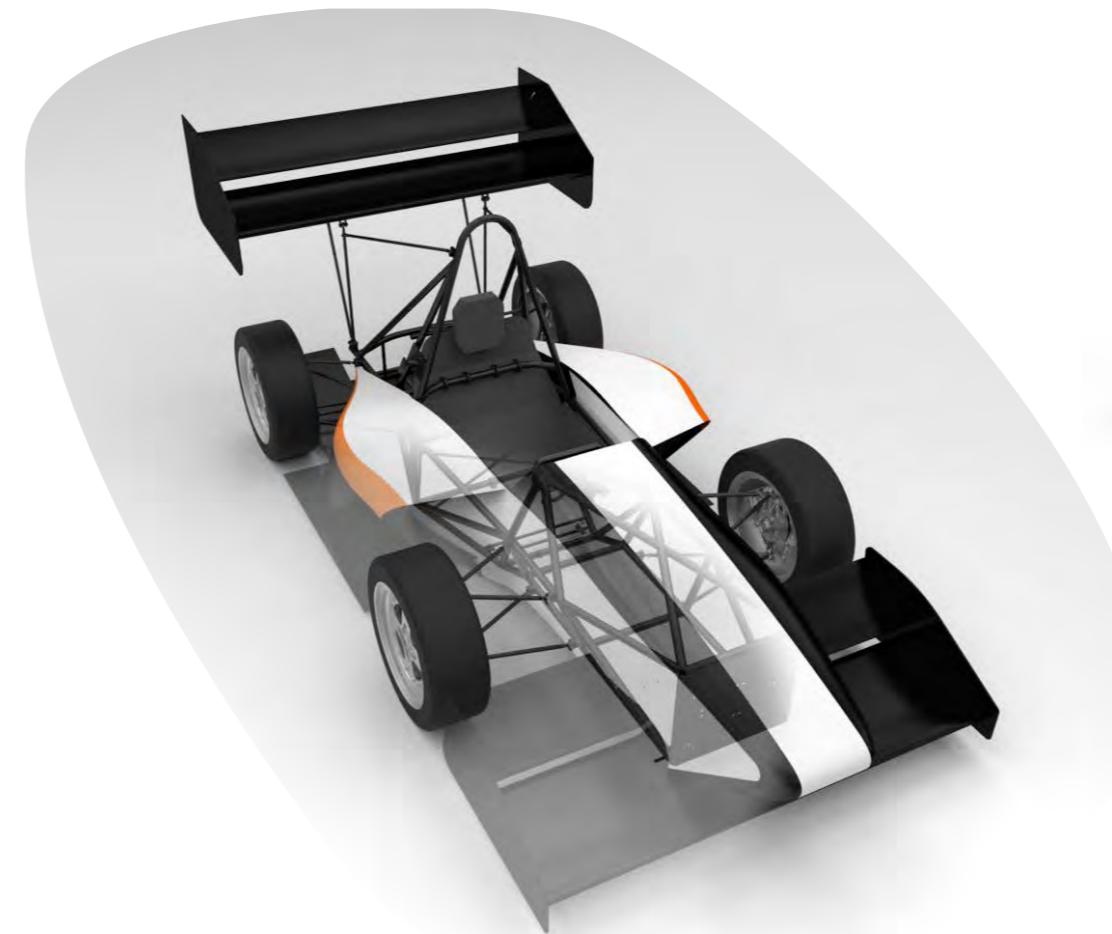
However, the head of body created extra drag and the rear created some slight lift. We still need to refine and evaluate.

Computational Fluid Dynamics

ANSYS Fluent were used to help us.

We simulated and tested, then compared the rough data. By analyzing those simulating results, we finally chose an effective aerofoil profile, wings' angle and position. It can also evaluate the design of bodywork.

Render



We made the wings by ourselves in own workshop and manufactured the bodywork with the help of professional artisans.

Wings were made of carbon fiber while bodywork was made of glass fiber. So they are both light and firm.

My design fitted other parts and maintained reliability.

AERO 2013



Fabricate
Glass Fiber
Carbon Fiber

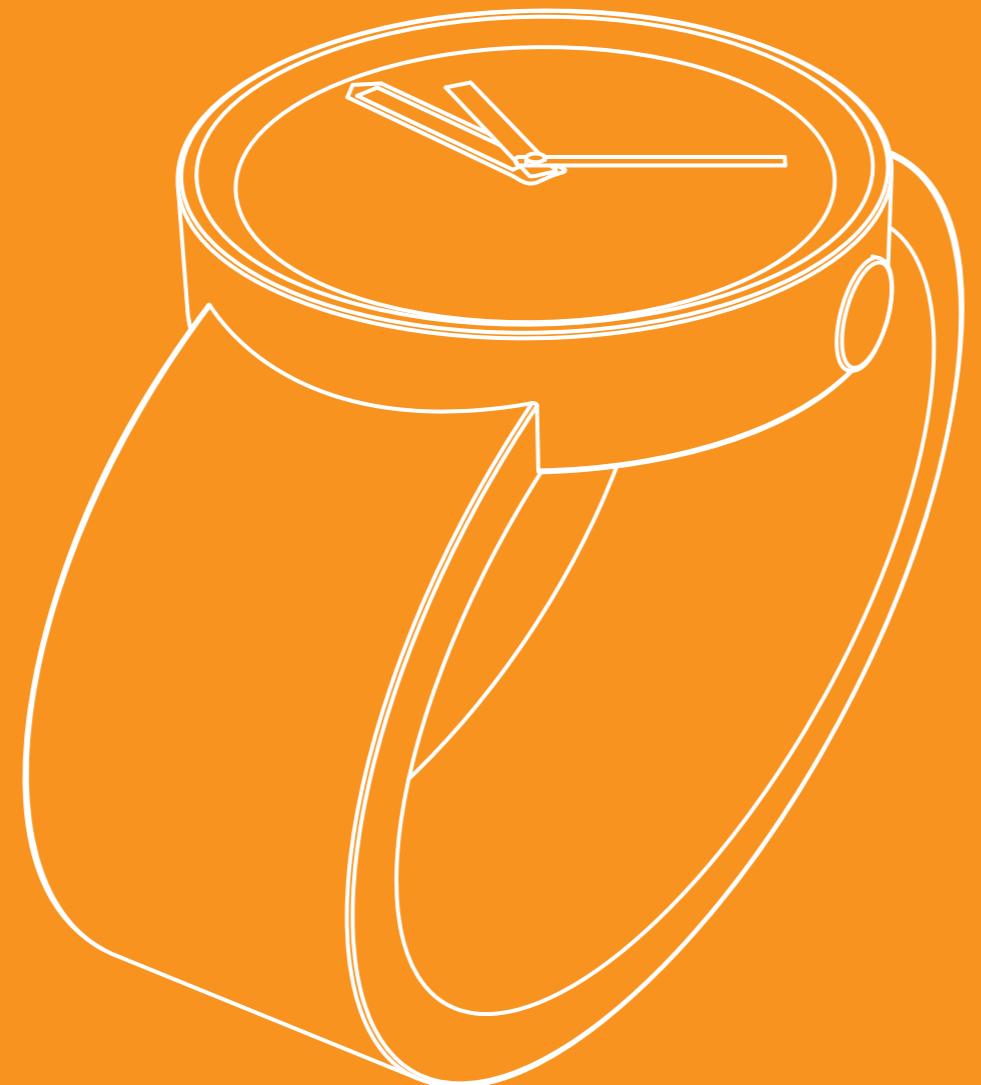


AERO 2013

In FSC
In Auto China



Won 8th out of 53 teams.



Health Watcher

Jan. 2013 - Apr. 2013

Health watcher is a wearable device monitoring your healthy condition and gives advices or call for help.

In the modern age, noncommunicable diseases become the major health threat. Unlike the communicable diseases caused by various virus and bacteria, NCDs have certain known factors. So they are more likely to be monitored.

This health watch have used a direct way showing the overall health condition, with the theme of "racing against time." It helps user keep fit and stay healthy.

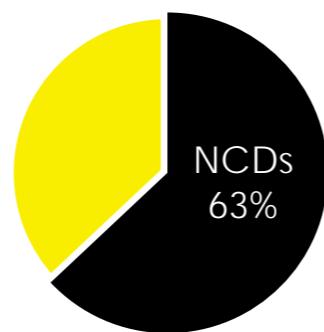
Analyze

NCDs: the major death cause

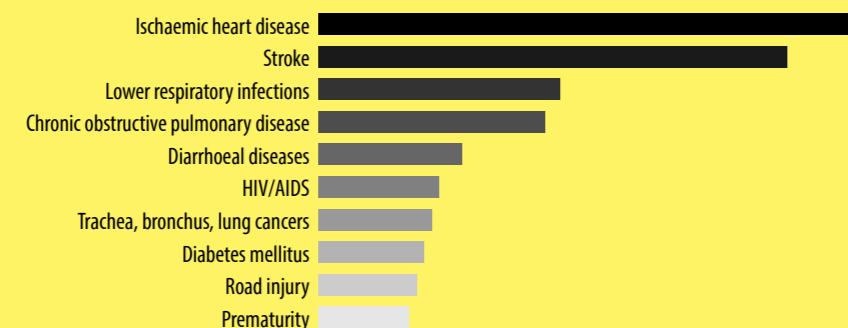
Noncommunicable diseases (NCDs) are the leading causes of death globally, killing more people each year than all other causes combined. Of the 57 million deaths that occurred globally in 2008, 36 million – 63%, almost two thirds – were due to NCDs, and a large proportion of these deaths occurred before the age of 60, during the most productive period of life.

Among the 10 leading death causes in 2011, ischaemic heart disease, stroke, COPD, cancer and diabetes are NCDs.

Death cause, 2008

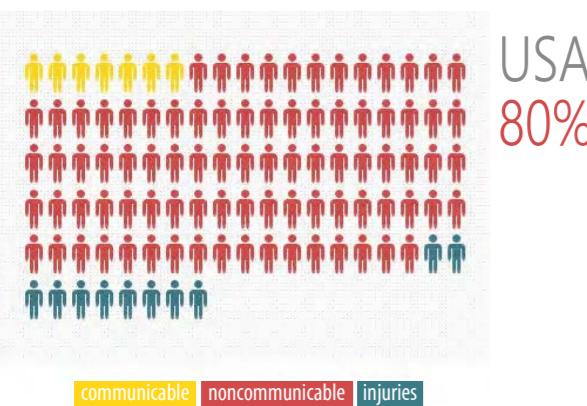


The 10 leading causes of death in the world, 2011

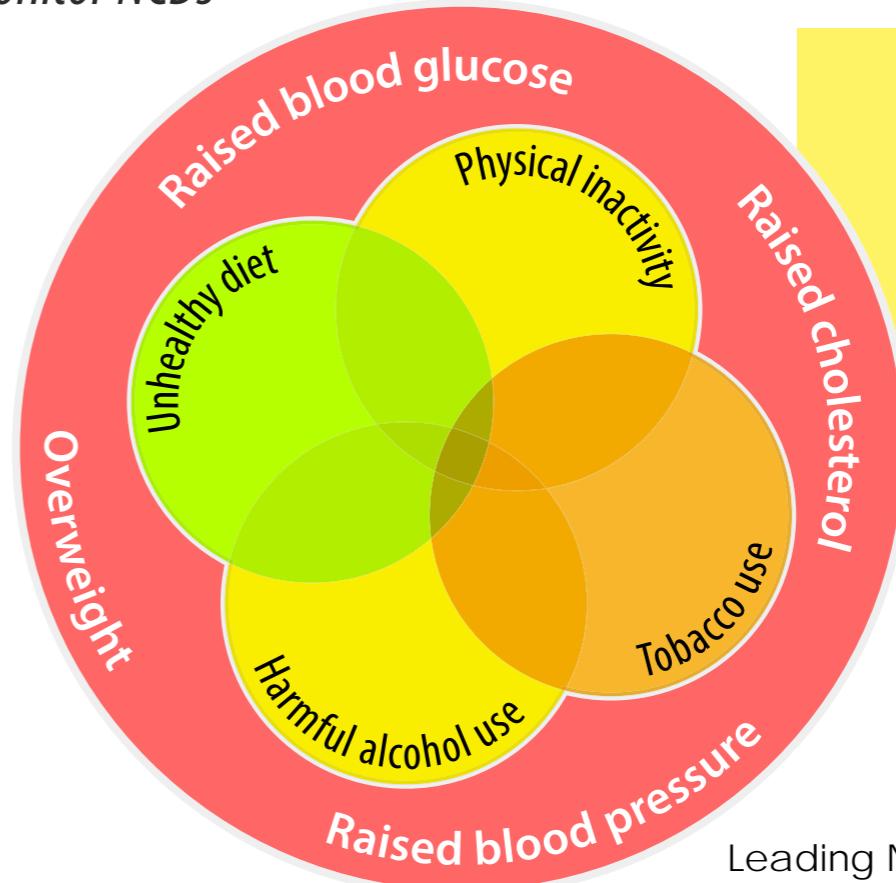


Source: WHO

As the impact of NCDs increases, and as populations age, annual NCD deaths are projected to continue to rise worldwide, especially in low- and middle-income countries. NCD deaths are projected to increase by 15% globally between 2010 and 2020.



Monitor NCDs

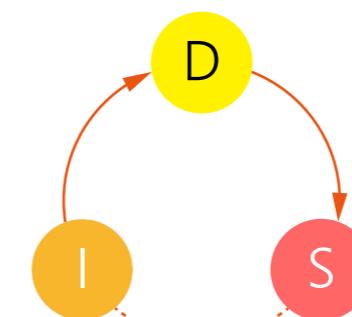


Leading NCDs and major risk factors

(I)ncentives result in (D)iseases and (D)iseases lead to (S)ymptoms.

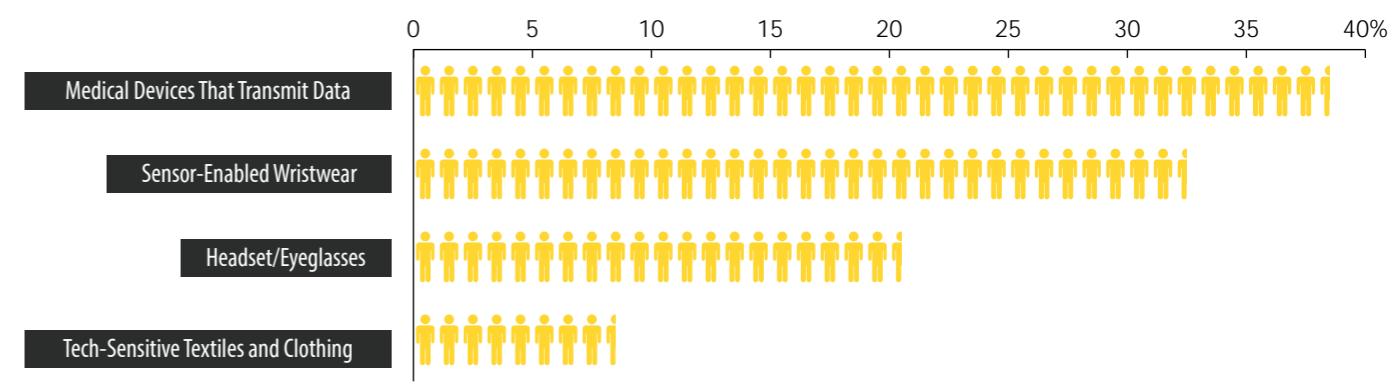
Unlike the communication diseases caused by various virus and bacteria, NCDs have certain known factors. So they are more likely to be monitored.

NCDs have some major incentives, such as unhealthy diet, physical inactivity, harmful alcohol use and tobacco use, and some major symptoms such as raised blood pressure, blood glucose and cholesterol, and obesity.



Wearables

Consumers are interested in Smart Medical Devices and Wristwear



Sensors

Electronic temperature sensor, pulse sensor, 3-axis gyroscope, tobacco and alcohol and other sensors are built in the watch, placed in the belt close to your vessel.

Sensors measure physiology parameter; track your activity; detect nasties linked with disease.

All information is collected and recorded for further analysis.

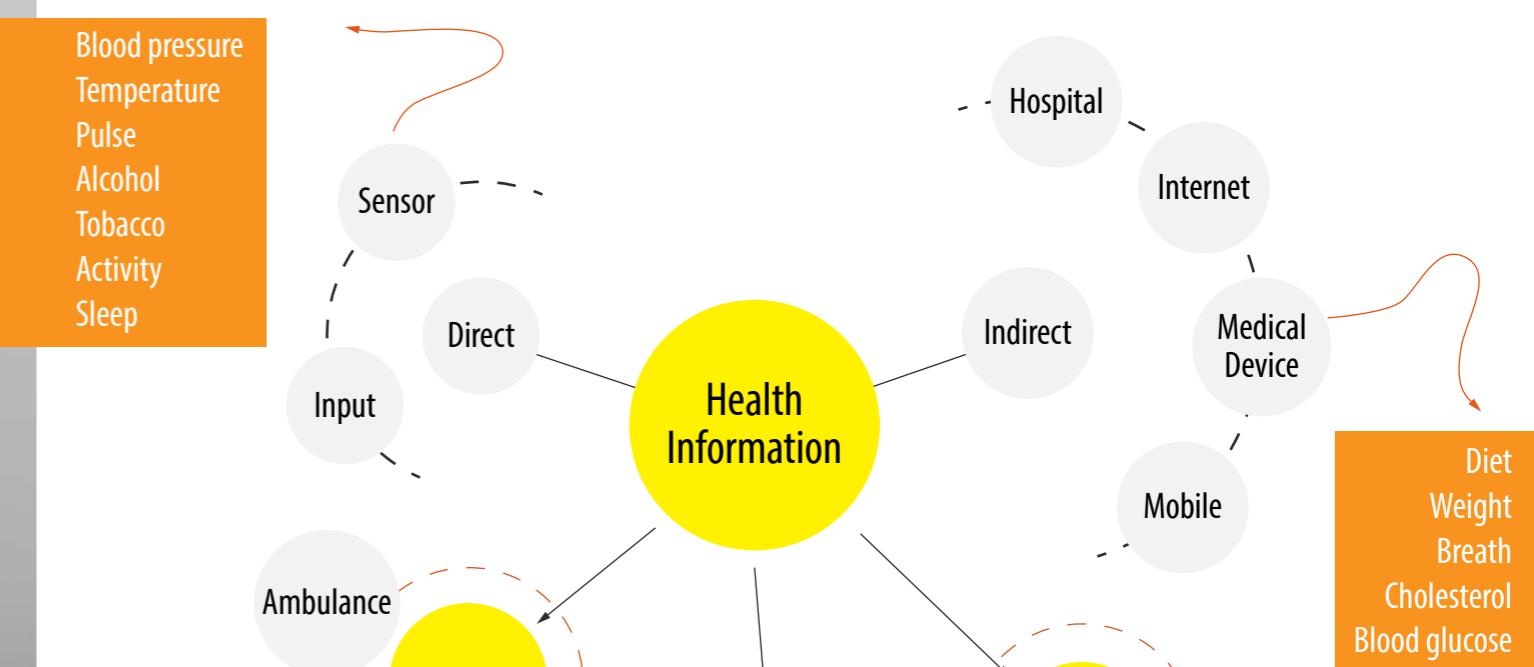


Not just a watch. A watcher.

Wireless

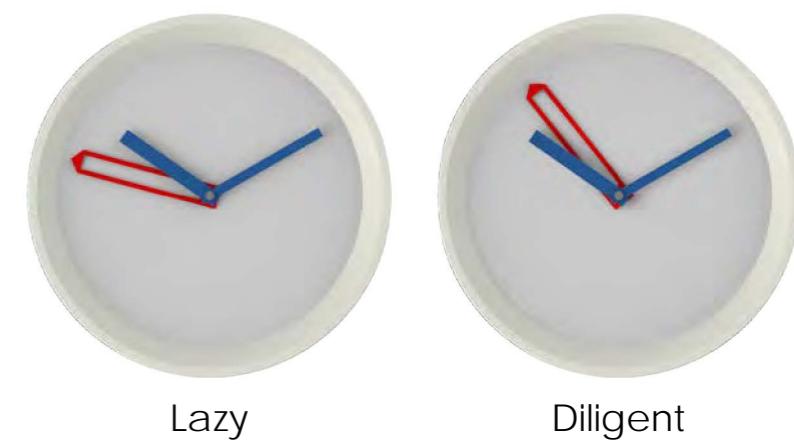
The built-in wireless connection, 802.11n WLAN, helps the watcher syncs with the outside world. When connecting to the Internet, the watcher gets information and exchanges your health data with hospital's database. Besides, it can share information with your mobile phone or send messages via WLAN.

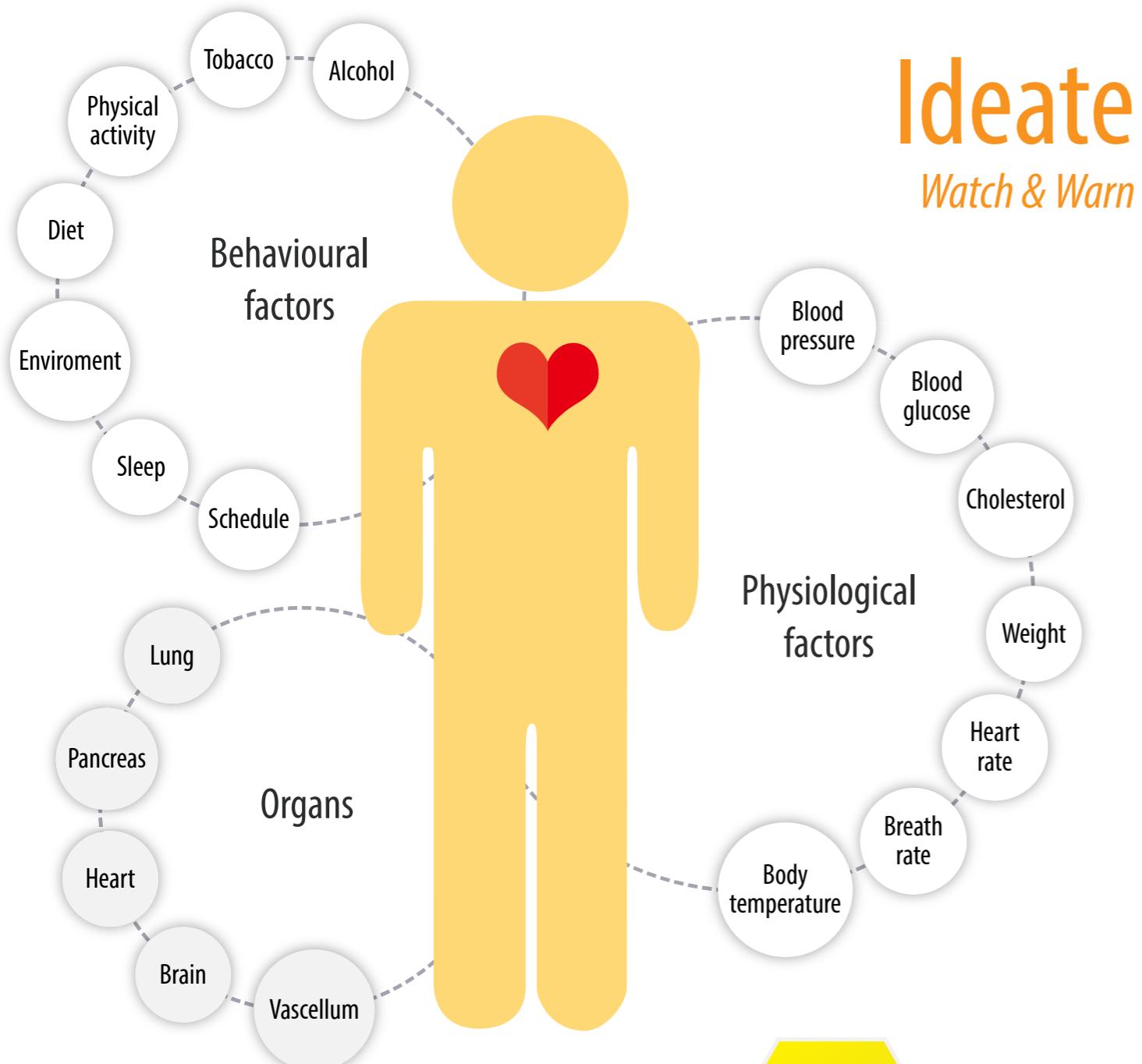
Blood pressure
Temperature
Pulse
Alcohol
Tobacco
Activity
Sleep



Racing against time

The clock hands show the time clearly and directly. The red hand reflects the overall health condition. When it runs slower than the hour hand, it means you lead a too leisure life and need more exercise to keep fit. When it runs faster, it means you may be too tired and need a rest.



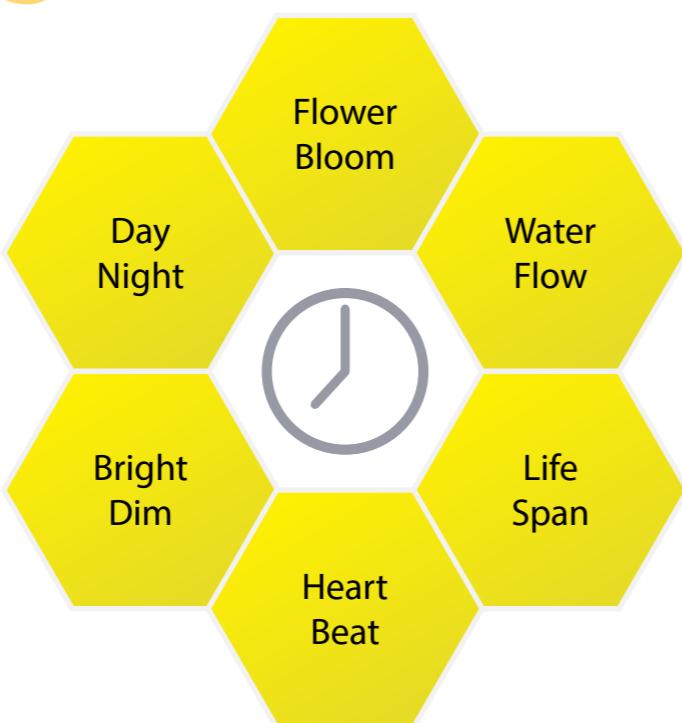


Why a watch?

Wearables could be glasses, bands, watches or something.

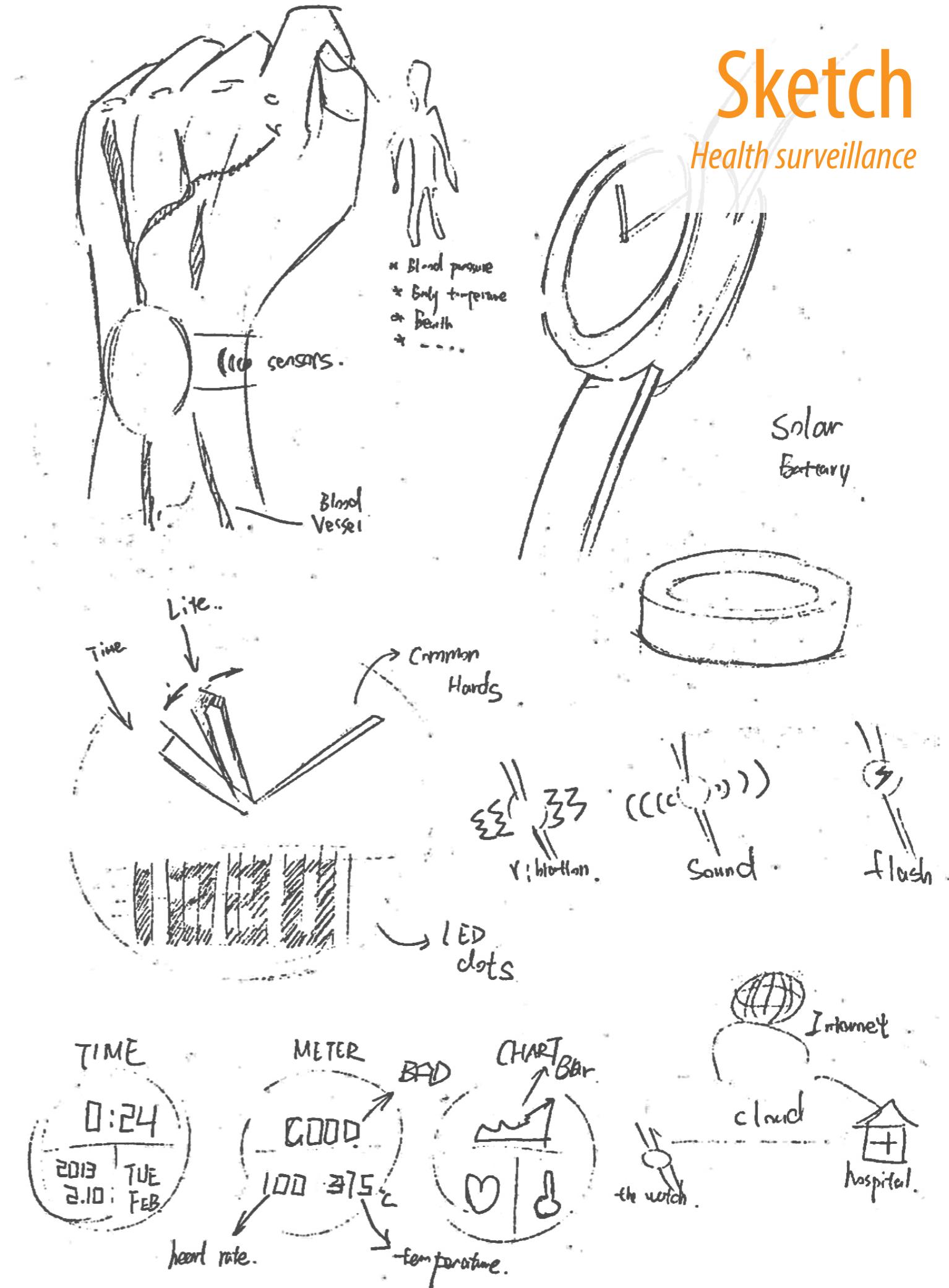
Life is an unknown countdown. A watch shows health condition could warn us. We live, racing against time.

When you run faster than the time, you need a rest or you will feel tired. When you fall behind, you need actions to catch up the time and do exercises.



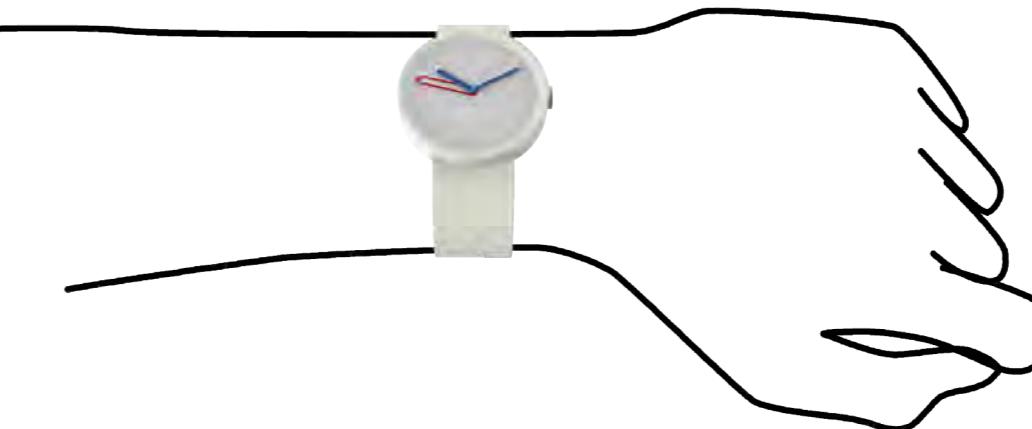
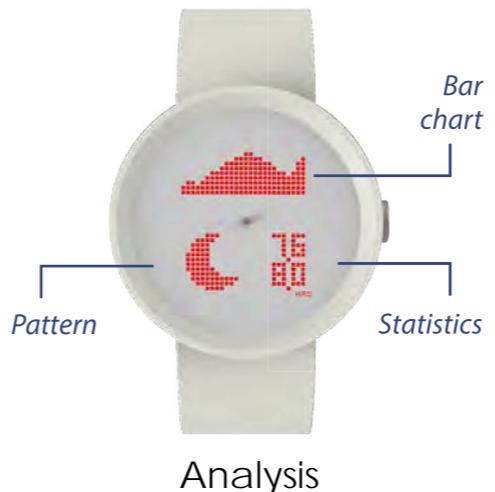
Ideate

Watch & Warn



Health Watcher

Modes



Alerts



Emergency

When emergency, e.g stroke or cardiac arrest, the watcher would confirm it, then send an SOS signal. Or the user could switch the watcher to emergency mode manually.

- Ask for an ambulance.
- Call close contacts.
- Warn with flash and alarm.

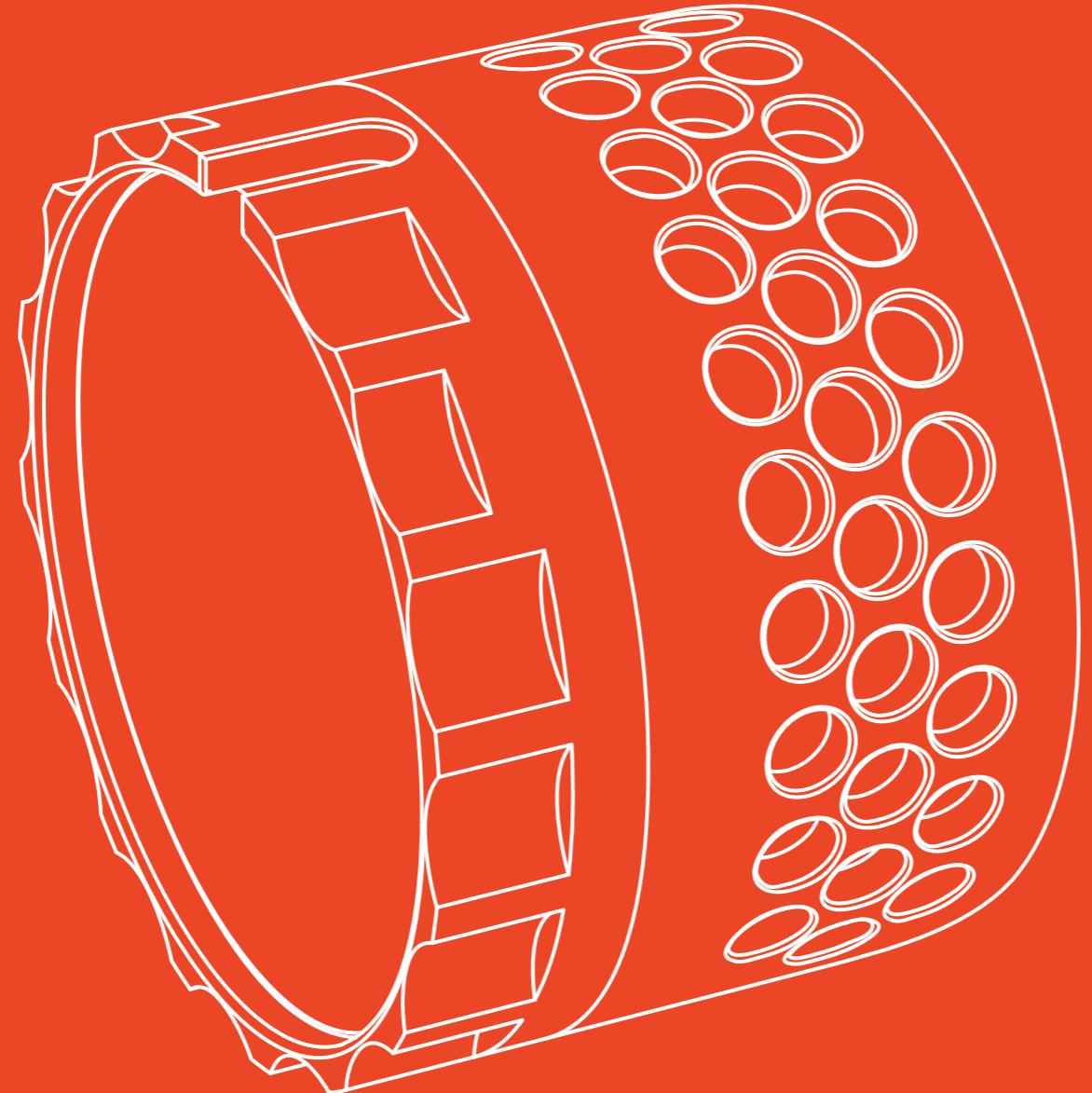


Screens Multiple Sync

See the detailed data and analysis, control and customize your watcher on mobile phones and/or computer.



*Anytime
Anywhere*
Healthcare surrounding you.



ringkey

Dec. 2012 - Apr. 2013

The ringkey is a key that will not get lost.
The ringkey is a ring-shaped key you wear on finger.
It can be worn as a common ring and fits everyone's
finger. Wear it anytime and anywhere, and you need
not take it off even when you use it, so it always
remain on your finger. Also, it is easy to use and
convenient to take.

Red Dot Award Final list.

Analyze

Define



Lose keys: Big trouble

A key is the only access to what the lock guards: safety, fortune, secret or other things which make the key become important. Keys are always important and if it were lost, a lot of troubles would follow. We have to waste a lot of time and energy on looking for the key; if we can no longer find it, that would result in a loss, sometimes permanent.

NEVER LOSE

Investigation: Losing keys is common.

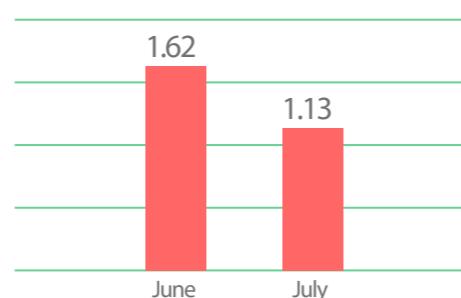
The following investigation tells that losing keys is common in the daily life. A number of people run into the trouble.

This investigation was made in a common university dormitory. It has 204 rooms for 805 male students. (July is the summer vacation so the population would had declined. June is regarded as a common period.)

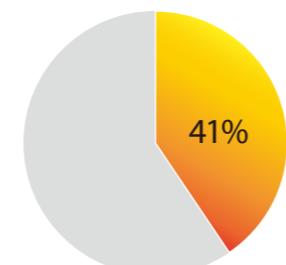
The student could borrow the key to his room from administrators if he unfortunately forgets to carry his key, fails to find it or even loses it. This service is free, and the student would be asked to show his student card and be recorded. So by checking the record we can figure out how many times the keys were borrowed and estimate the data of losing keys.

As the record shows, the keys were borrowed 330 times in June and 231 times in July. On average, every key was borrowed for 1.62 times in June and 1.13 times in July. Supposing that every student borrowed the key no more than once, the ratio of students who borrowed keys to all the students is 41.0% in June and 28.7% in July.

Every key was borrowed more than once



Ratio of key-trouble students up to 41%



To find or not to lose?

A key that never get lost and a key that could be found quickly after lost, which would be better? My design would choose the former. The latter has two extra processes: lost and found, to find is still a waste of time and energy. On the contrary, feature of never-get-lost is simple and prevents the problem at the very beginning. Simplicity is a merit. Ockham's razor asserts that simplicity is preferred to complexity in design.



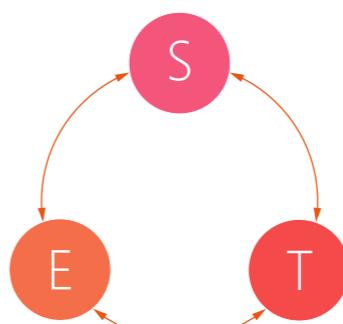
What we care

The senior, the children, the people who have dementia or amnesia may have trouble in remembering every detail and, for example, fail to find their keys. Do doubt even everyone will sometimes do. Locks which identify the fingerprint, the iris or the face are very very expansive, so few people can afford them. We all need a new kind of keys and locks.

SET Factor Analysis

Society

Losing key brings troubles. People don't want to waste time and energy on looking for keys. People appreciate aesthetic key design. Modern people pursuit of a easy and simple life.



Economy

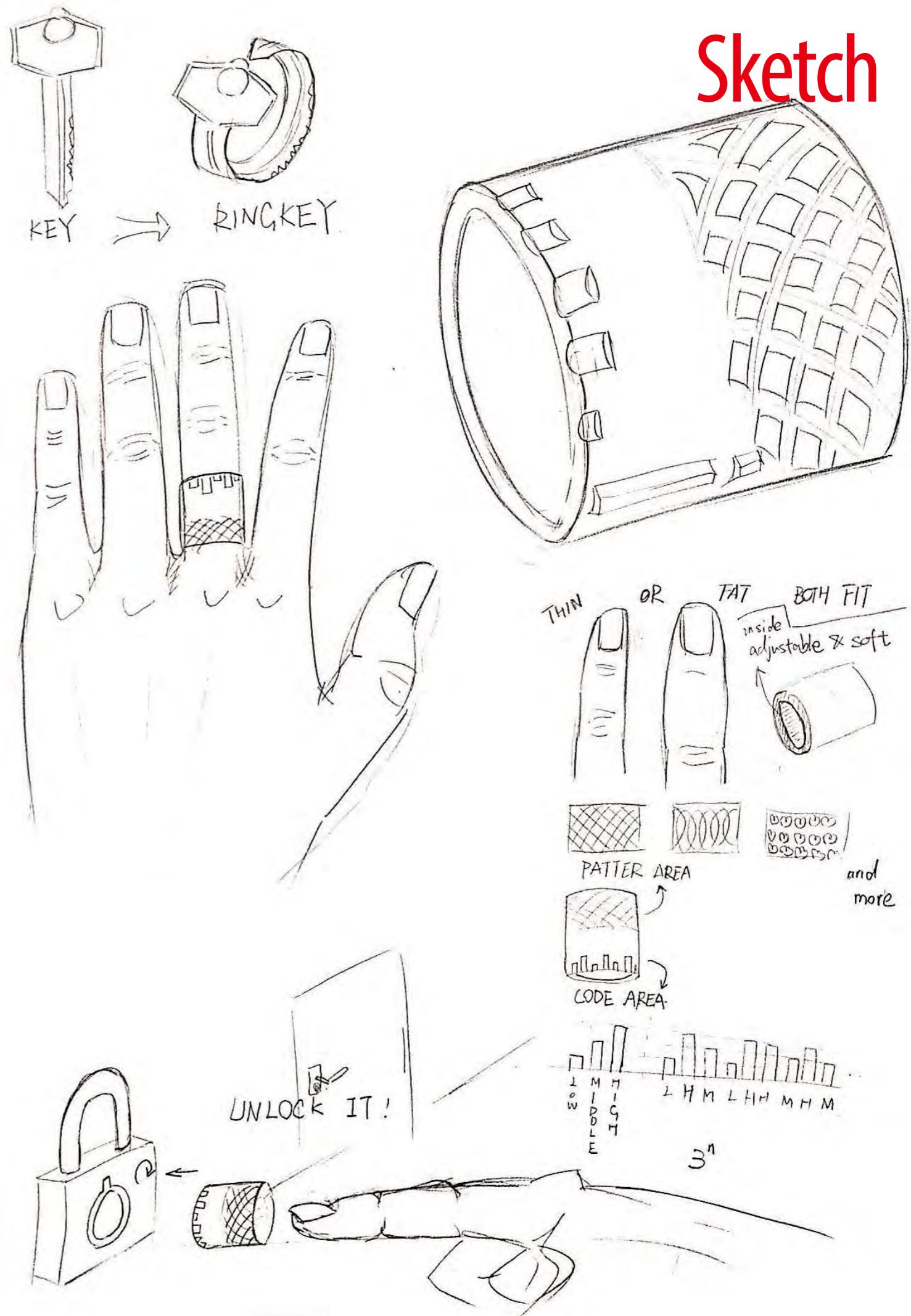
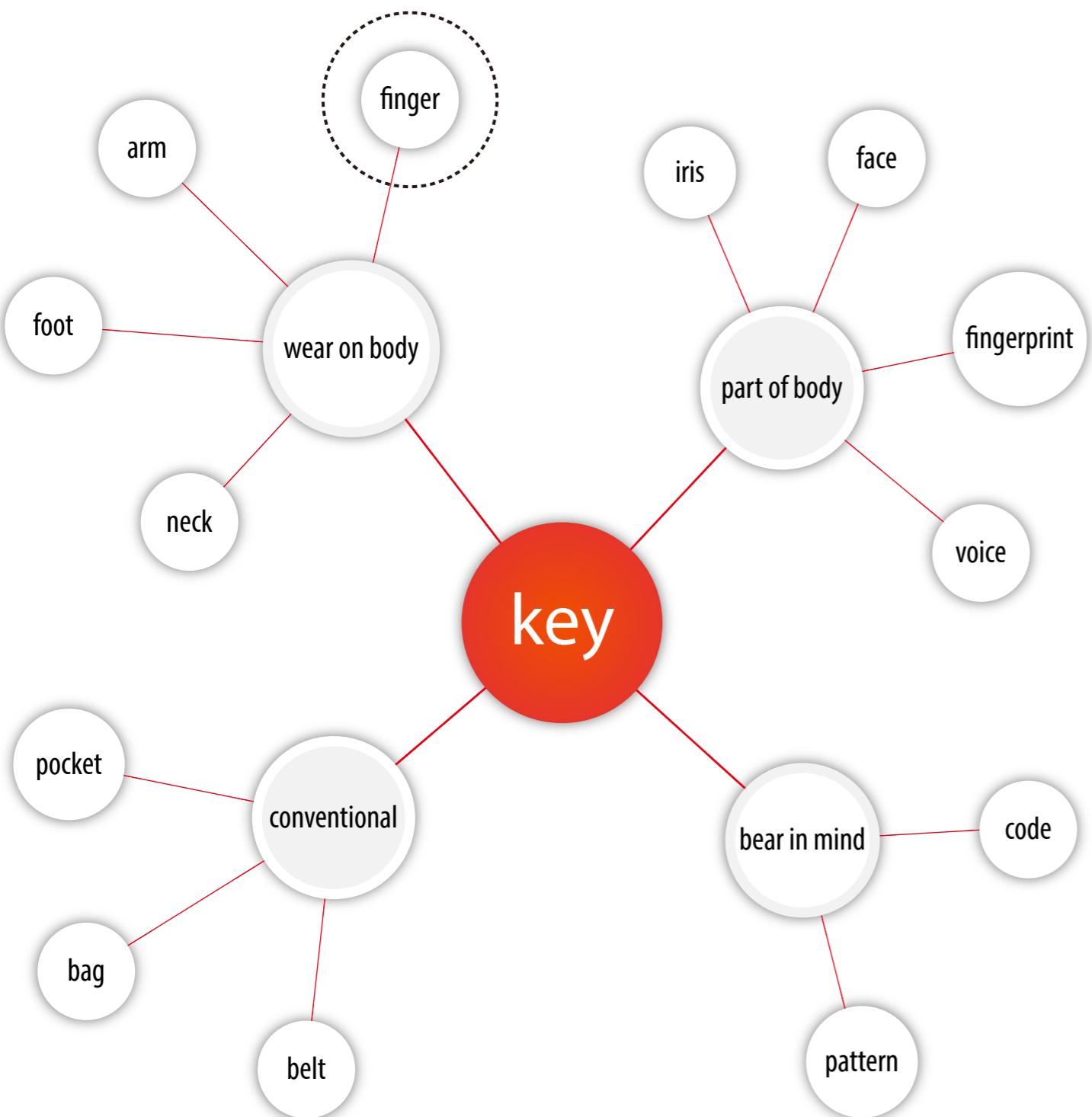
People have a growing disposable income. People are willing to pay more for the convinient and secured keys and locks. Keys with high technology are still expansive.

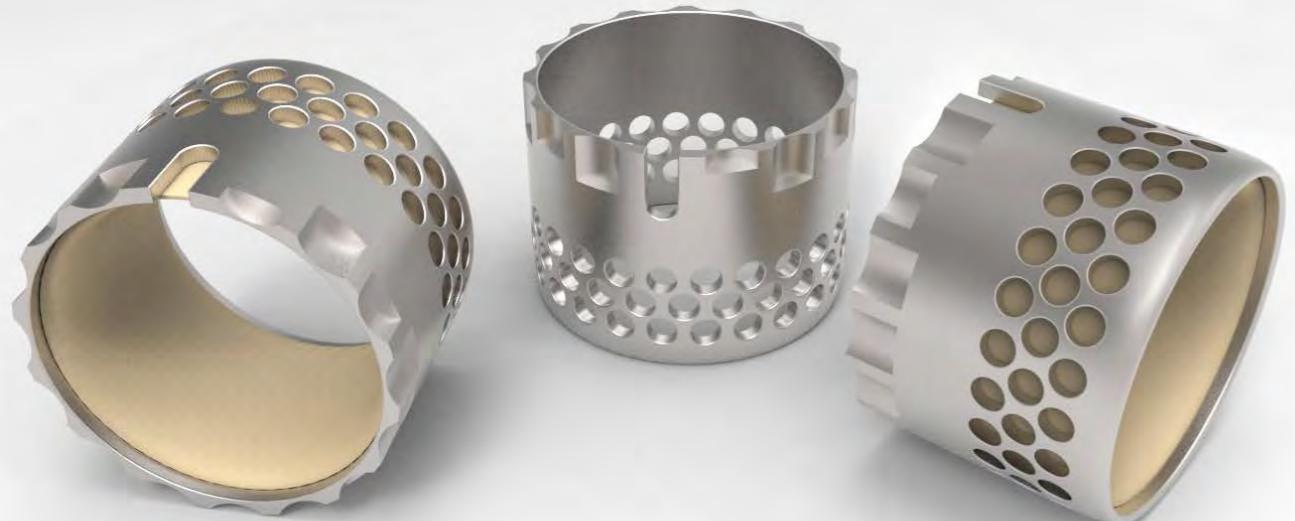
Technology

Nowadays common mechanical machines have strong abilities to manufacture. Biological identification technology is being developed.

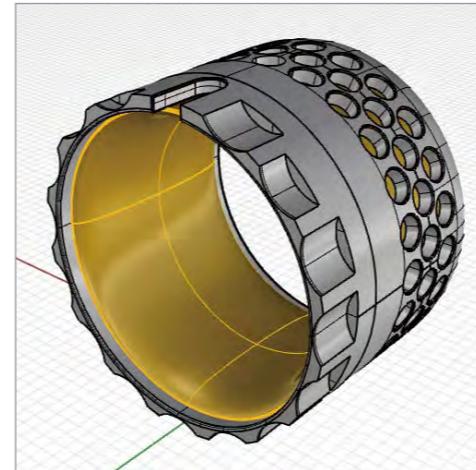
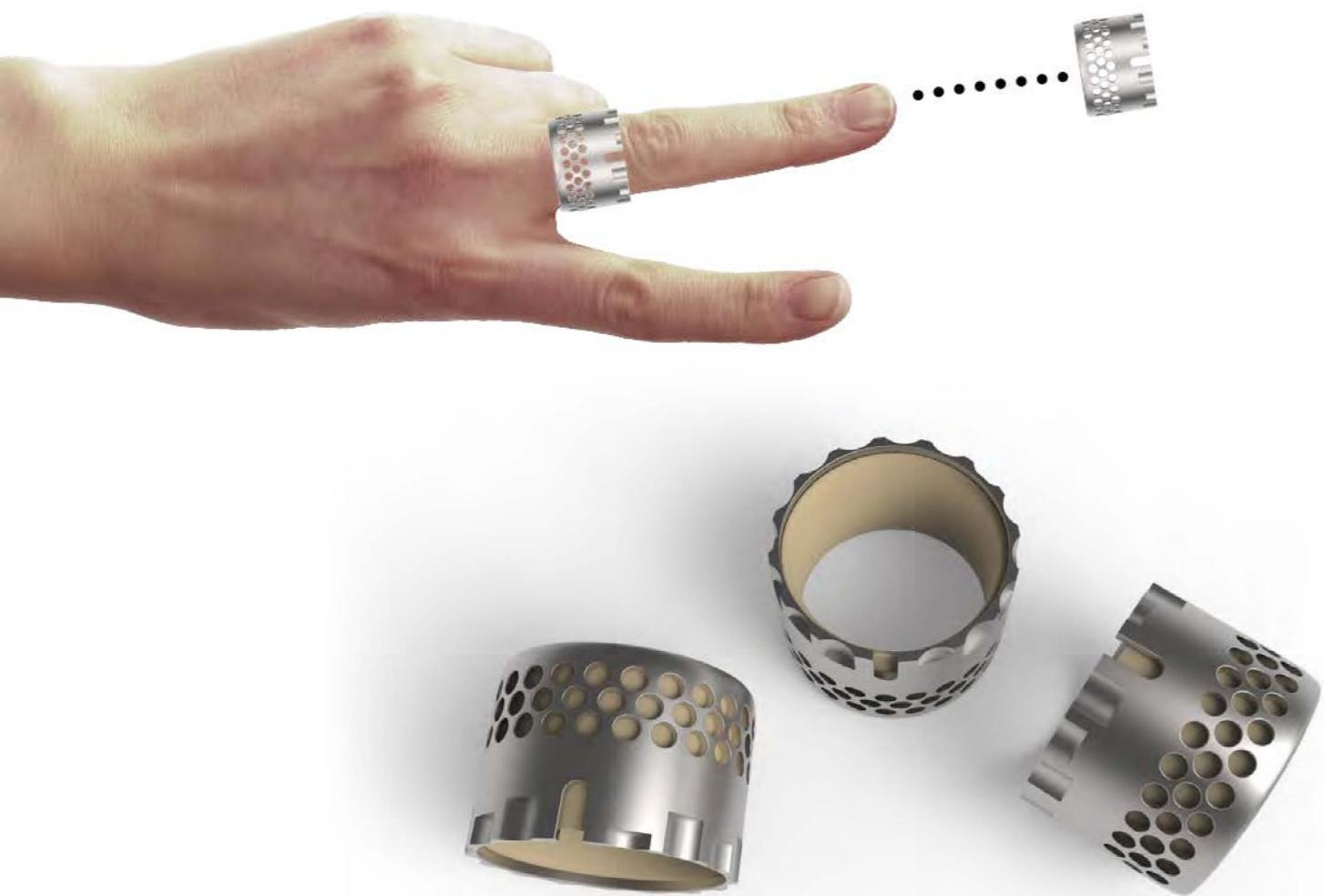
Ideate

Brainstorm Where to put your key?





ringkey *All-new design*
Around your finger, never lose.



Manufacture

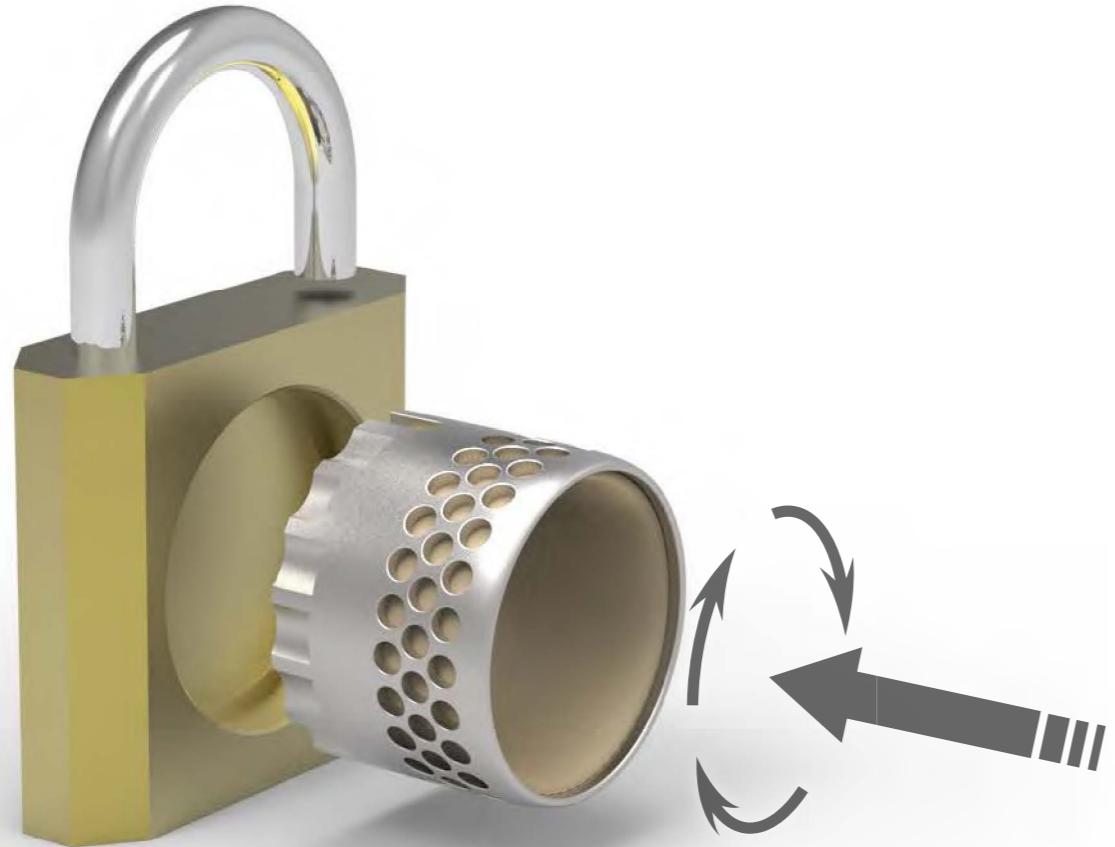
Prototype Made in a workshop.



aluminum
13
Al

Prototype process
Those prototypes were processed by common machine in a Chinese mechanical workshop. They were produced at a low price and a limited cost of aluminum.

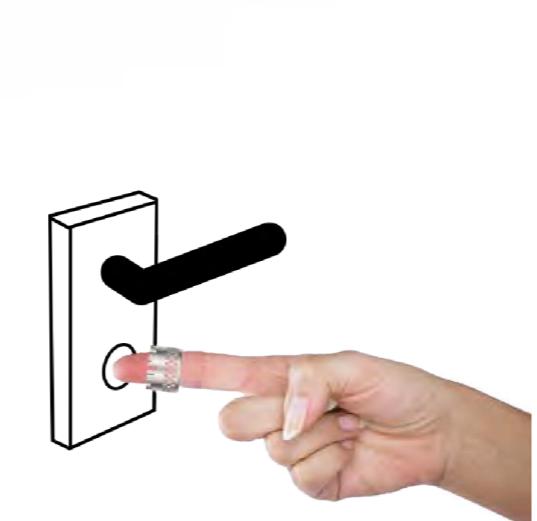
Scenario Easy to find; easy to use.



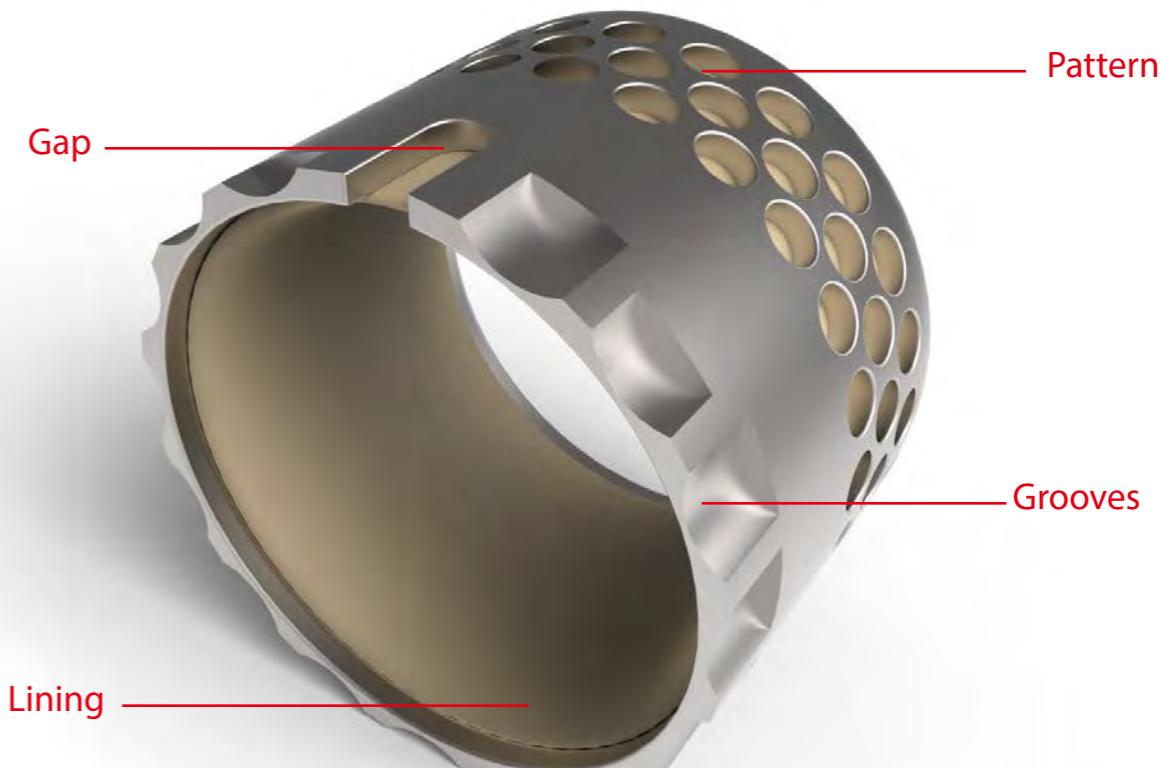
Insert, turn, unlock.

Scenario: open a door

When you come to a door with ringkey lock, you needn't search every bag or pocket to find the key. The ringkey is always on your finger. Simply raise your hand, put your finger with ringkey in the hole and turn the handle, then the door will be unlocked.



Structure Highly secure and affordable.



Grooves

15 grooves of varying length are built at the end of the shaft: shallow, medium or deep. So every key has $3^{15}(>14\text{ million})$ different possibilities of shapes. They guarantee safety and reliability.

Pattern

Increase friction and ornament. A user can choose a kind of pattern he/she likes.

Gap

It helps place the key at a right angle to insert the lock and different shapes make the key more complex.

Lining

Different internal sizes suit all fingers. It is usually made of soft and comfortable leather or cloth, which users can choose.



Ecological compatibility

The ringkeys are made of common metal such as steel, brass, aluminum and etc. Those materials are recyclable and cheap.

They don't make use of expensive high technology, so the price of ringkey can be lower than \$1. Everyone can afford it and it will bring great profit to producers.



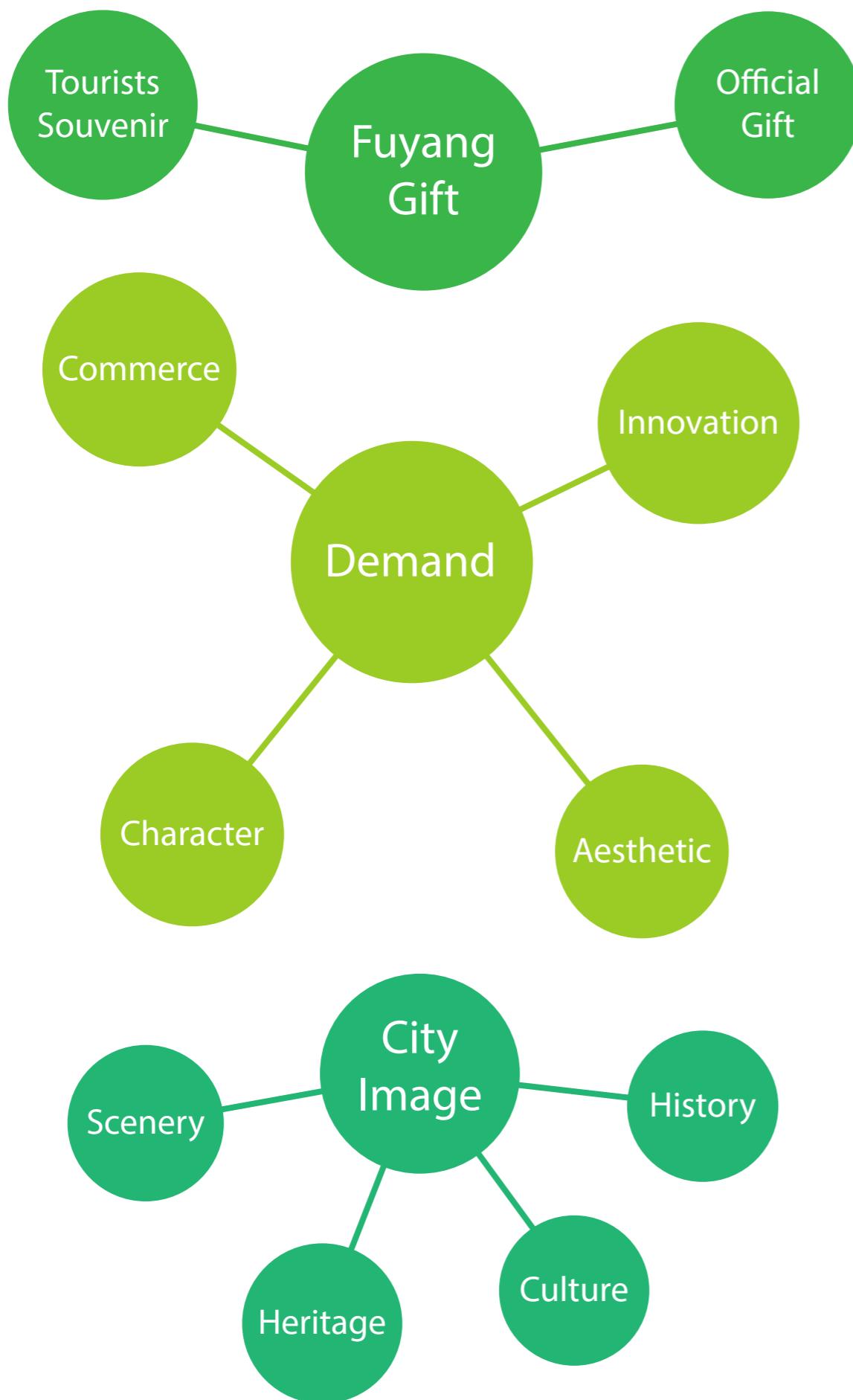
Nov. 2012 - Dec. 2012

This is a wonderful scroll, conventional and austere appearance masking its secret.
When the first time you open it, it is only an empty white scroll painting, traditional and ordinary.
As time goes by, at the left corner appear fragment of landscape, river and mountain.
More scenery follows.
As a travel, scenery changes along with path, river flowing and mountain growing.

emerging painting

Research

Situation



Demand

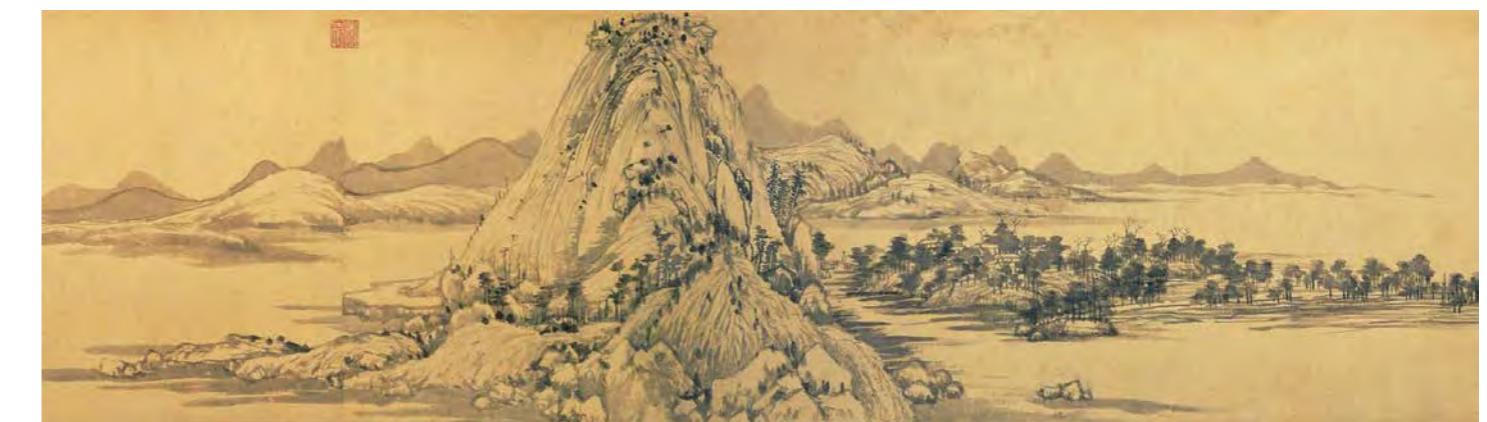


Gift of Fuyang

Fuyang is a small city in eastern China, in the region ever named Fuchun. In the recent years, the city government intends to show the city's characteristic culture and scenery to the world, so a design competition was held to attract designer and good design as a gift of Fuyang.

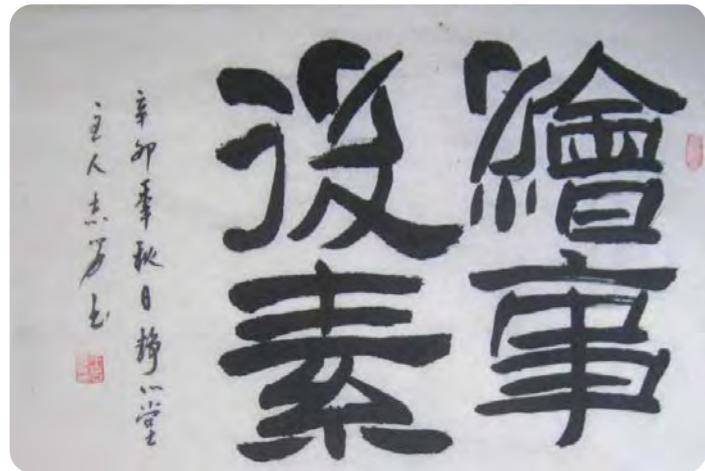


Define



Dwelling in the Fuchun Mountains

This masterpiece, painted in 1347, is considered as one of the 10 most famous Chinese painting throughout the history. This scroll is an idealized panorama of the Fuchun Mountains west of Hangzhou, where now is Fuyang, its bush and ink were highly admired as the best representative of Chinese landscape painting.

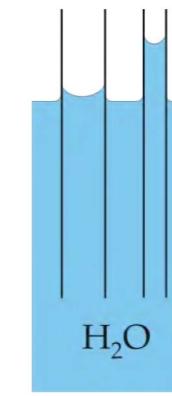


"Paint after sketch."

Confucius said: "Painting after sketch." That means a wonderful paint must have a excellent sketch first, and further achievement should have a firm foundation. In traditional Chinese culture, people attach great significance to the essence of something, rather than the appearance.



Denser
the fiber is
Deeper
the color is



Capillary action

Capillary action, or capillarity, is the ability of a liquid to flow in narrow spaces without the assistance of, and in opposition to external forces like gravity. The effect can be seen in the drawing up of liquids between the hairs of a paint-brush, in a thin tube, in porous materials such as paper, in some non-porous materials such as carbon fiber, or in a cell.

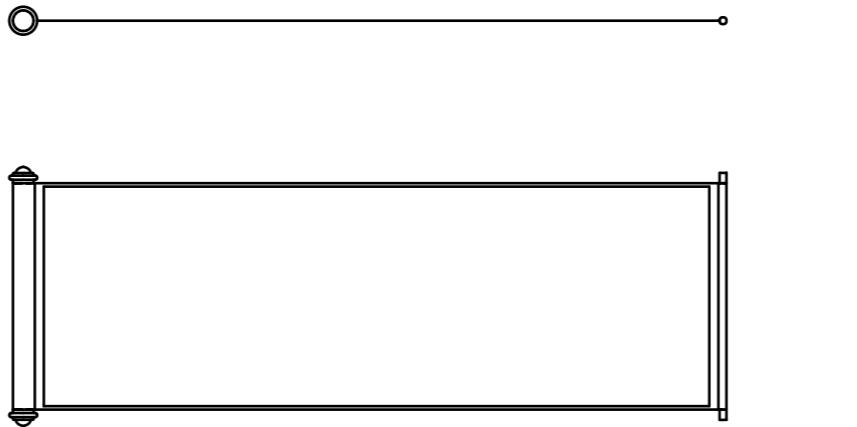
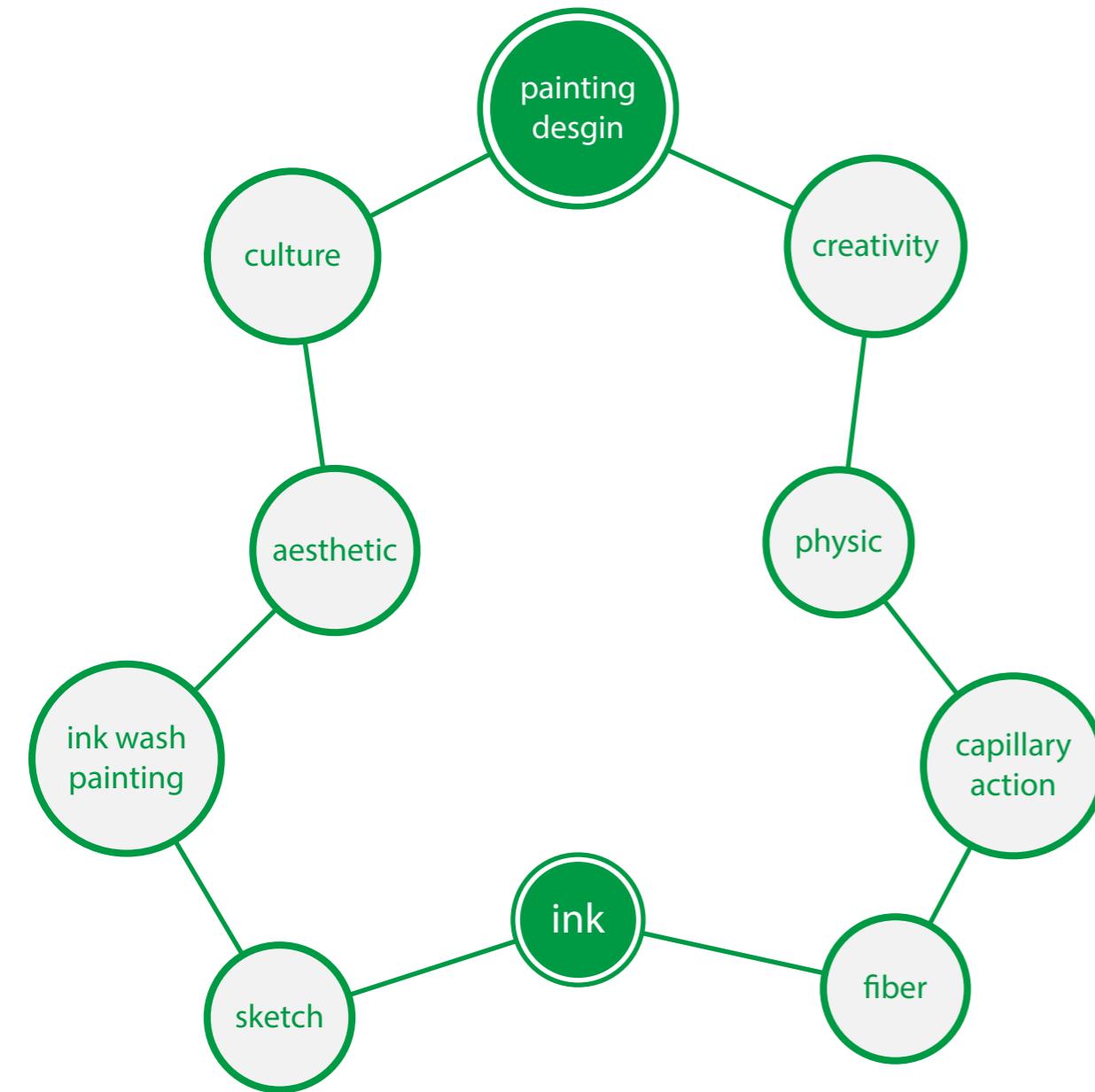


Ideate

Implement

Brainstorm Combination of culture and creativity.

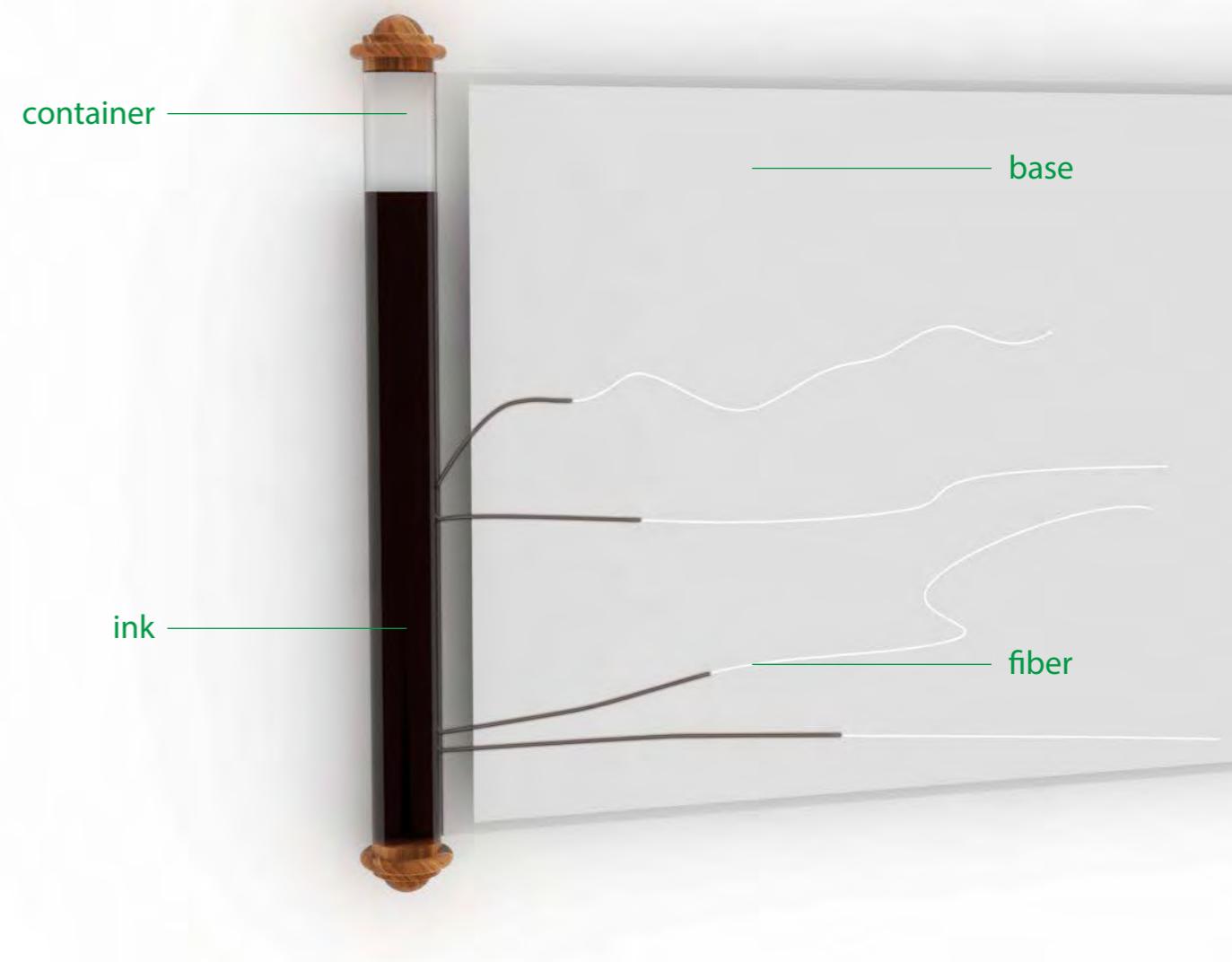
Dwelling in the Fuchun Mountains is a excellent representative of Chinese traditional ink wash painting. Ink wash painting, also known as literati painting is a Chinese type of brush painting. Only black ink - the same as used in Chinese calligraphy - is used, in various concentrations.



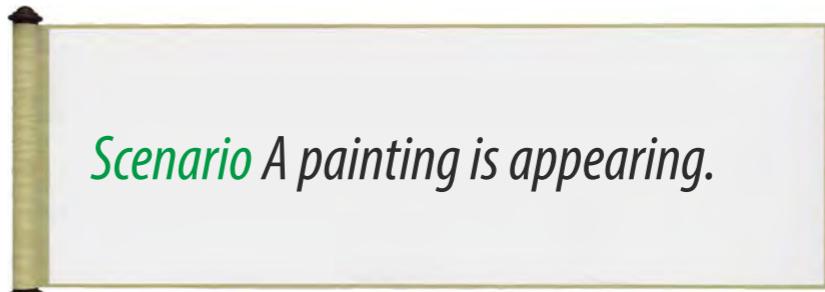
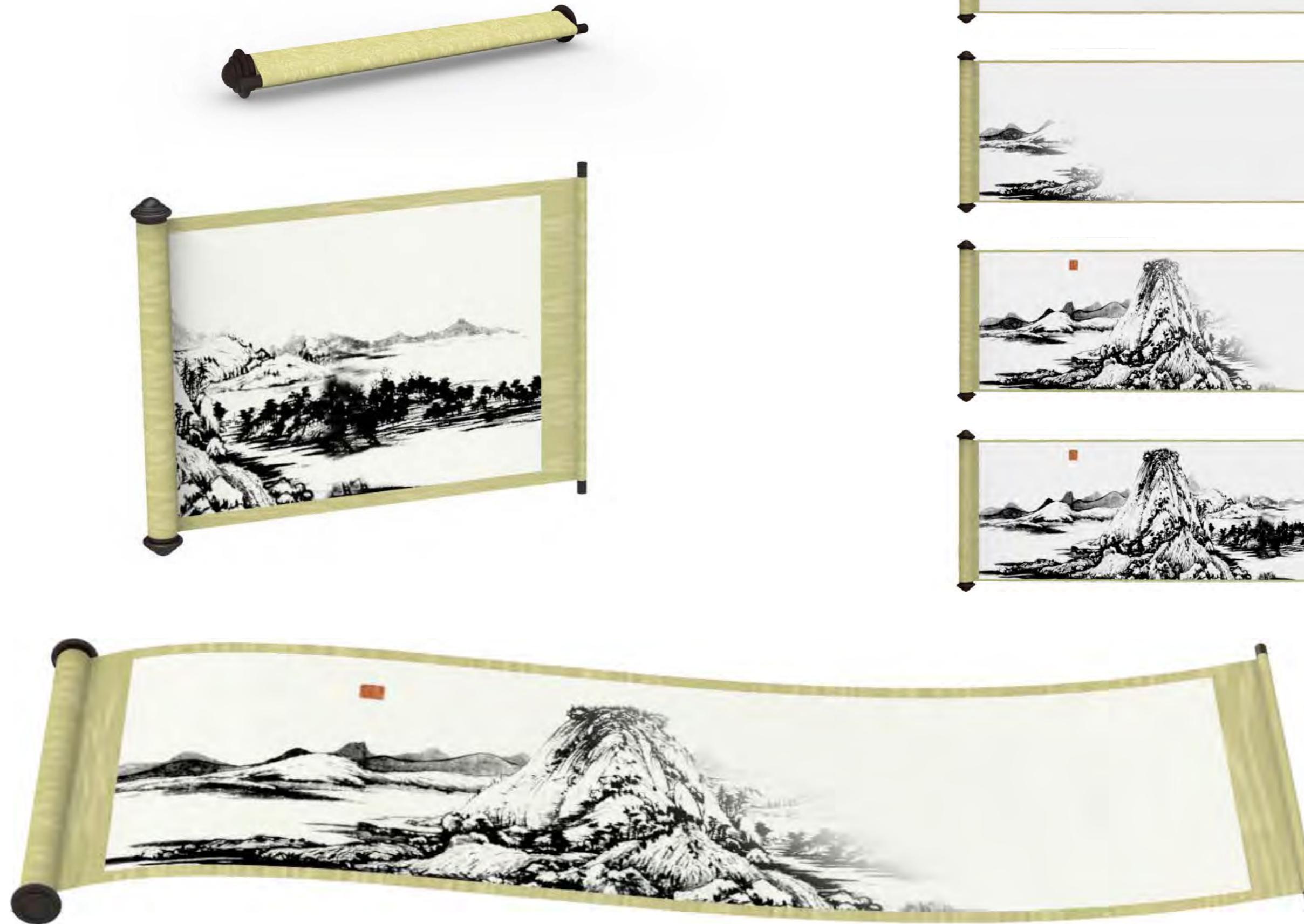
Construction Physic law behind.

Construction and physic principle

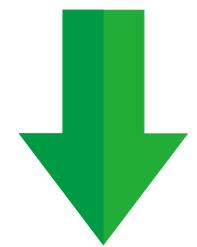
The painting base (paper) is made of the hydrophobic material which does not absorb ink while the sketch is made of porous fiber. When adding ink to the container, the fiber makes use of the capillary attraction, pushing up ink automatically along the arranged fiber. The fiber is placed on the base in the shape of painting so when ink dyes the fiber, it will form a landscape painting.

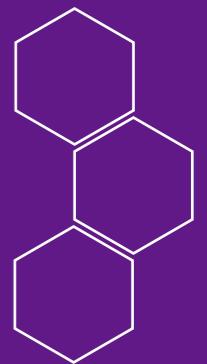
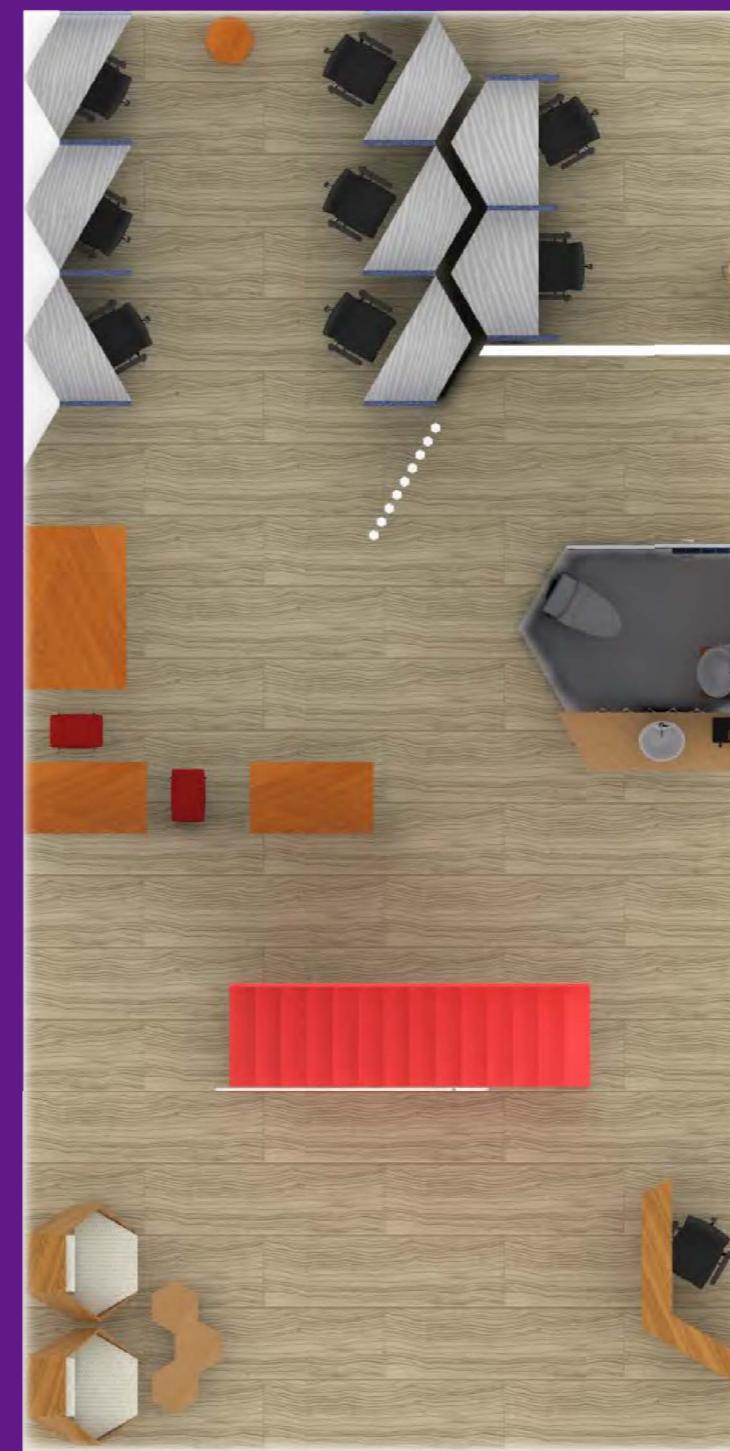
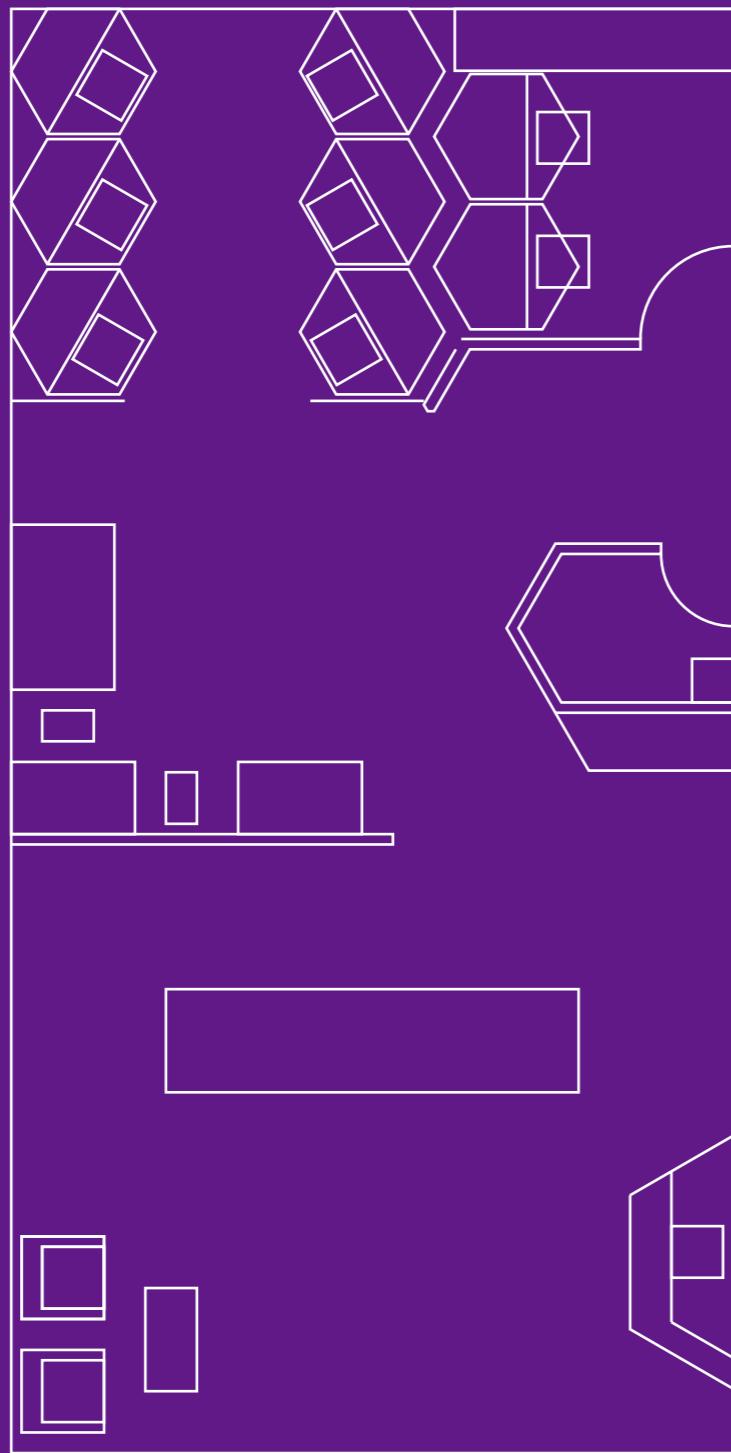


emerging painting



A week





hive studio

**Apr. 2013 - Jul. 2013
Interior Designer**

Hive studio is a enjoyable workplace intended for start-up team or small company.
It provides space for 6 designers, 1 boss and 3 staffs.

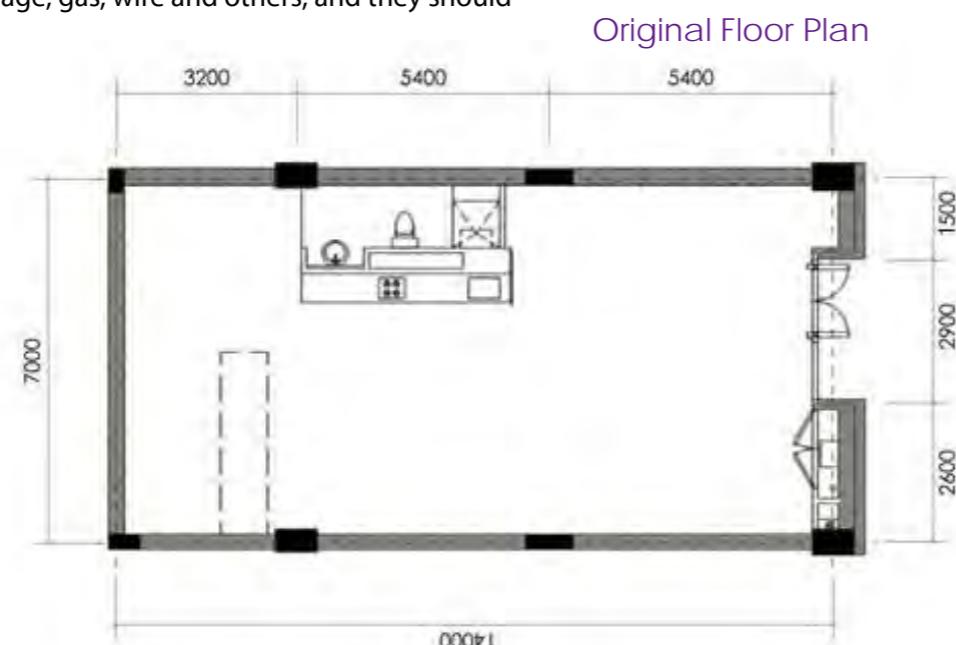
It is full of hexagon elements so I call it hive studio.
A hive is workplace of bees and bees are teamwork-ing and hardworking, which is important for a lifeful team.

Analyze

Limitation and requirement

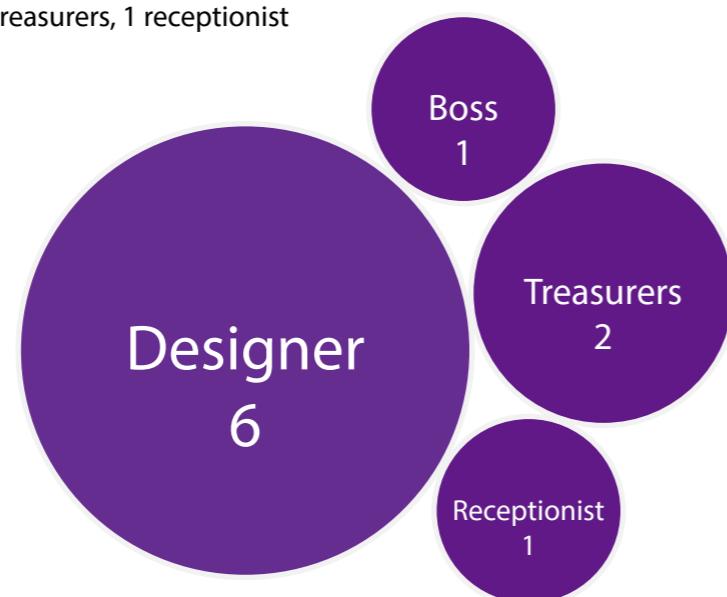
Limitation and analysis

As the floor plan shows, the original room is 14 meters in length, 7 meters in width and 5.7 meters in height. Its area is about 118 square meters. This big room has two windows: The big one is at the front of the room and also the entrance; the small one is a skylight at the top away from the entrance. The room have tubes for water, sewage, gas, wire and others, and they should not be changed if possible.



Define

The project is to convert the big room into a design studio. The original room is high enough to be divided into two floors so there will be more space. Considering the room's size and a studio's staff, it is able to accommodate 10 people, including 6 designers, 2 treasurers, 1 receptionist and 1 boss.

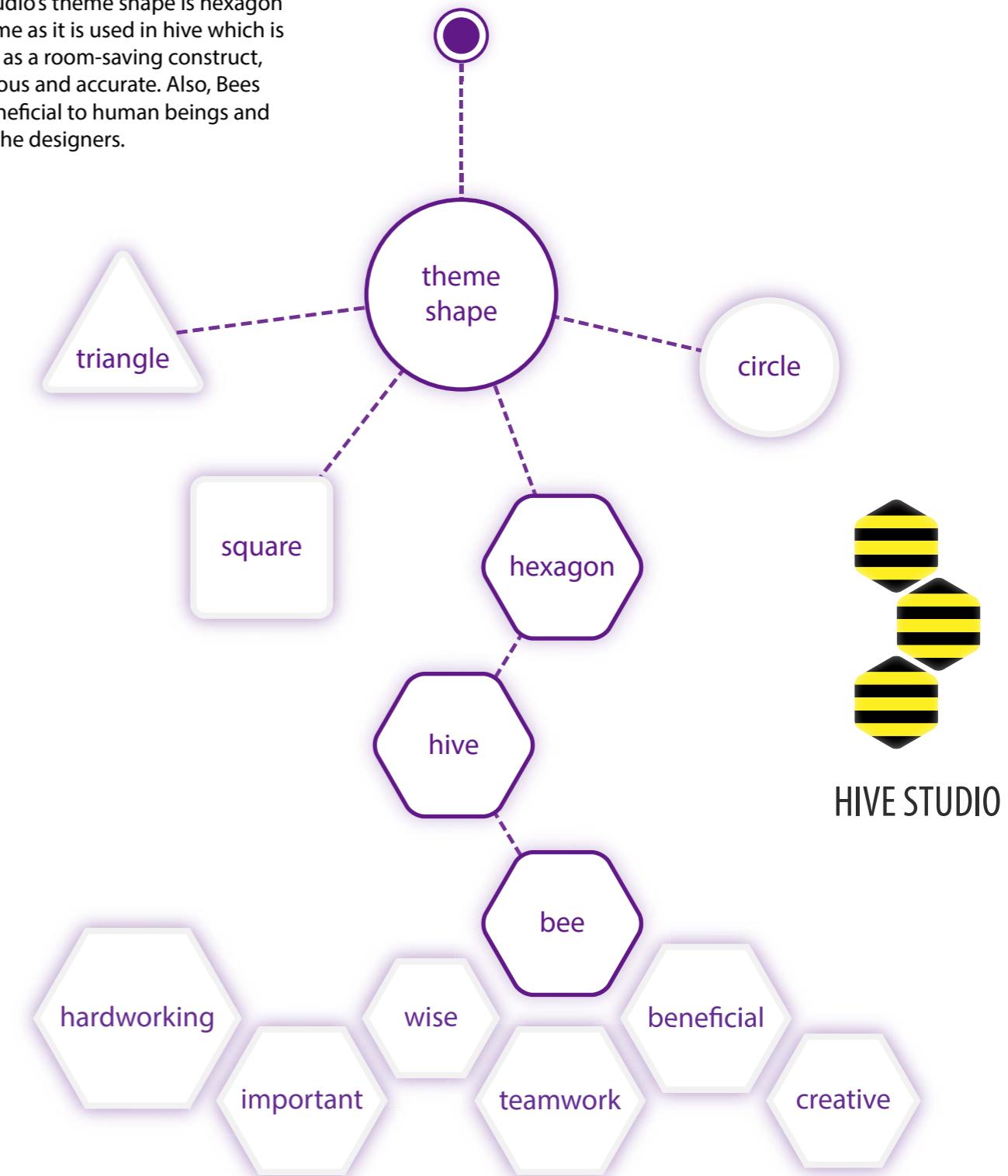


Ideate

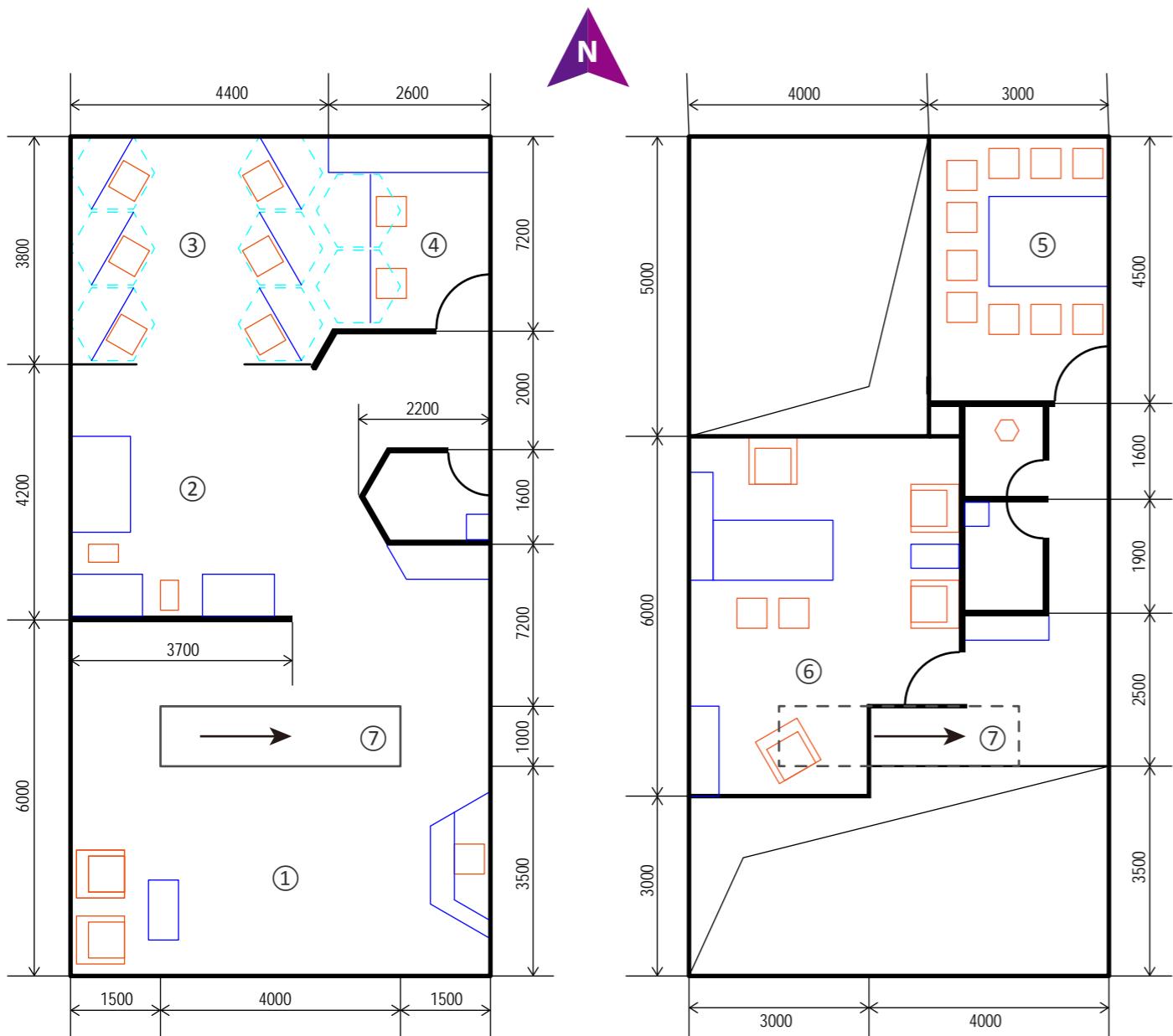
Theme of shape

Bees buzz.

The studio's theme shape is hexagon the same as it is used in hive which is regard as a room-saving construct, ingenious and accurate. Also, Bees are beneficial to human beings and so do the designers.



Implement



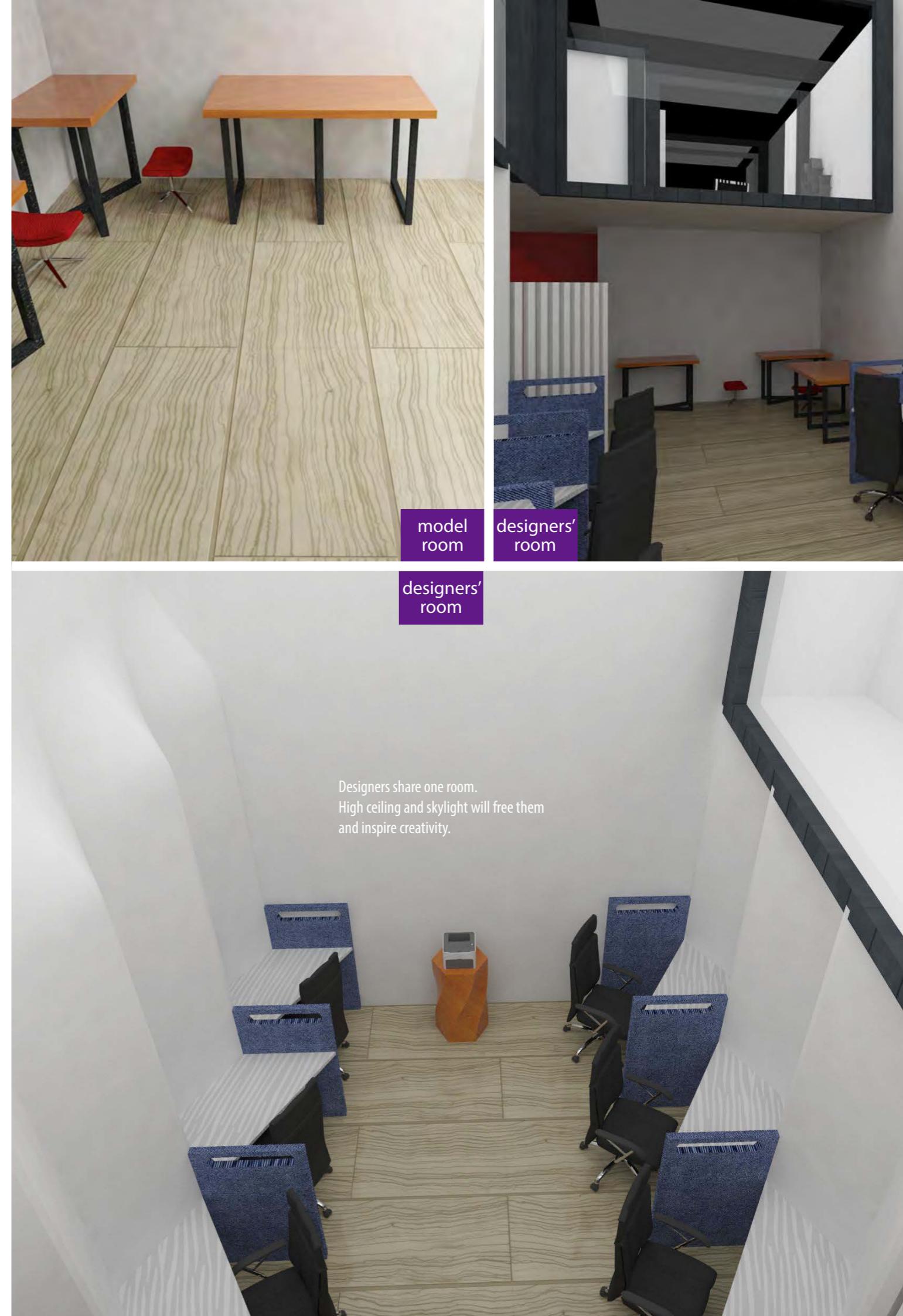
Hive studio

(Unit: mm)

The studio is divided into 2 floor.

On the first floor, there are hall(1), model room(2), designers' room(3) and treasurers' room(6). On the second floor, there are conference room(5) and boss's room(6).

The stairs(7) are in the middle of the hall.



washroom



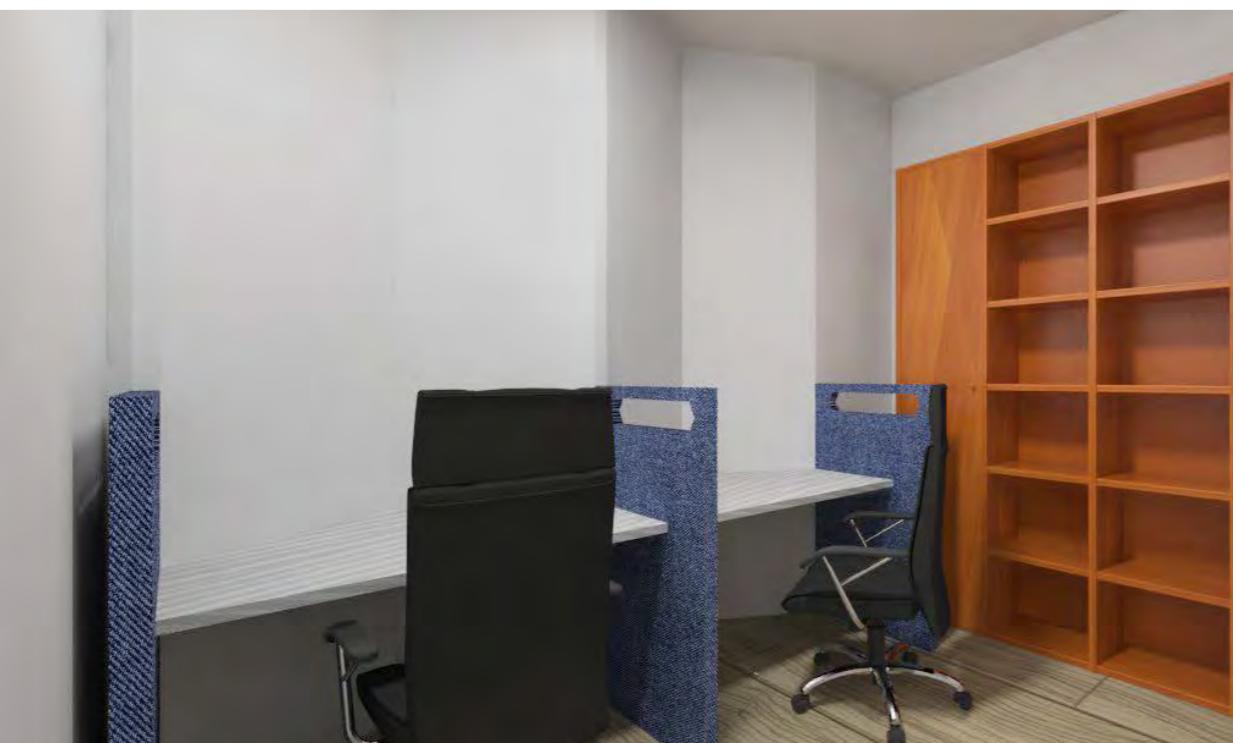
Washroom's door will light to inform others when it's locked

boss's room



The boss's room is on the other floor, quiet but next to the designers, and has a good view of the whole studio.

treasurers' room



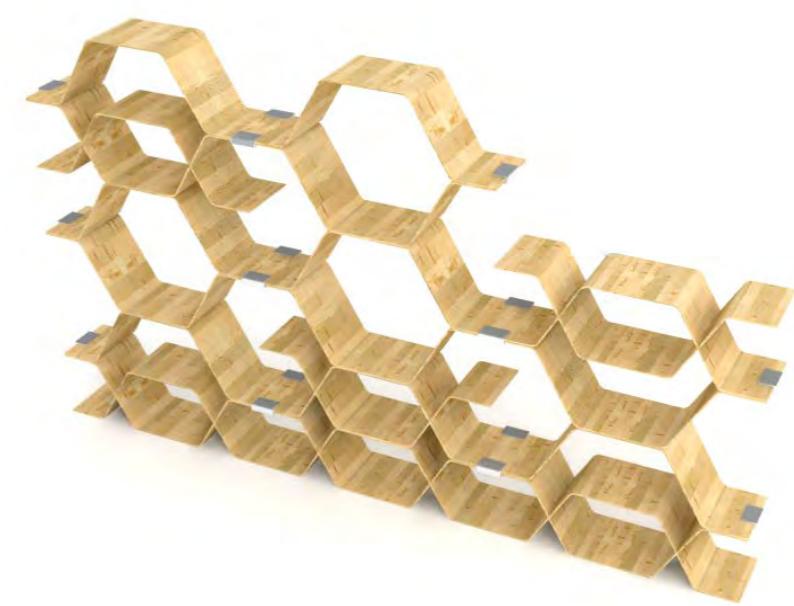
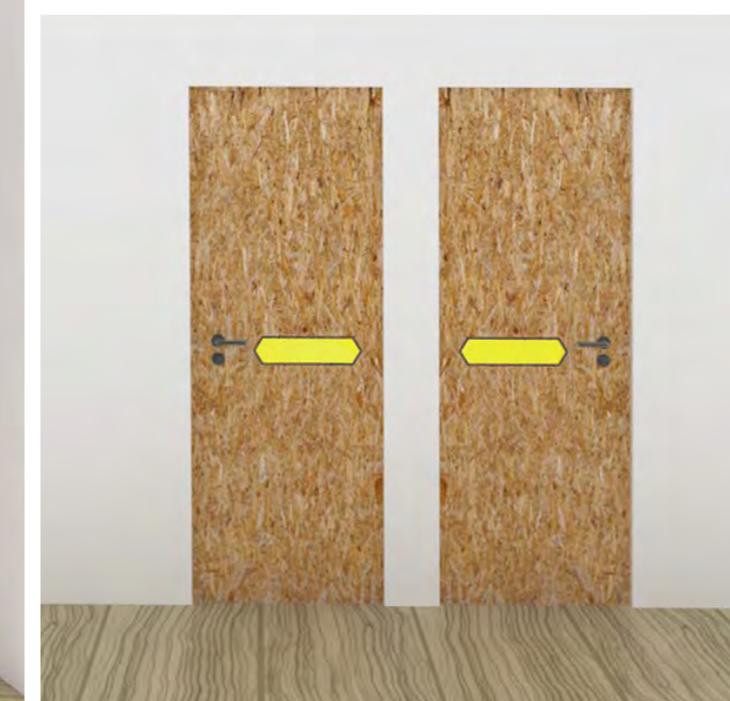
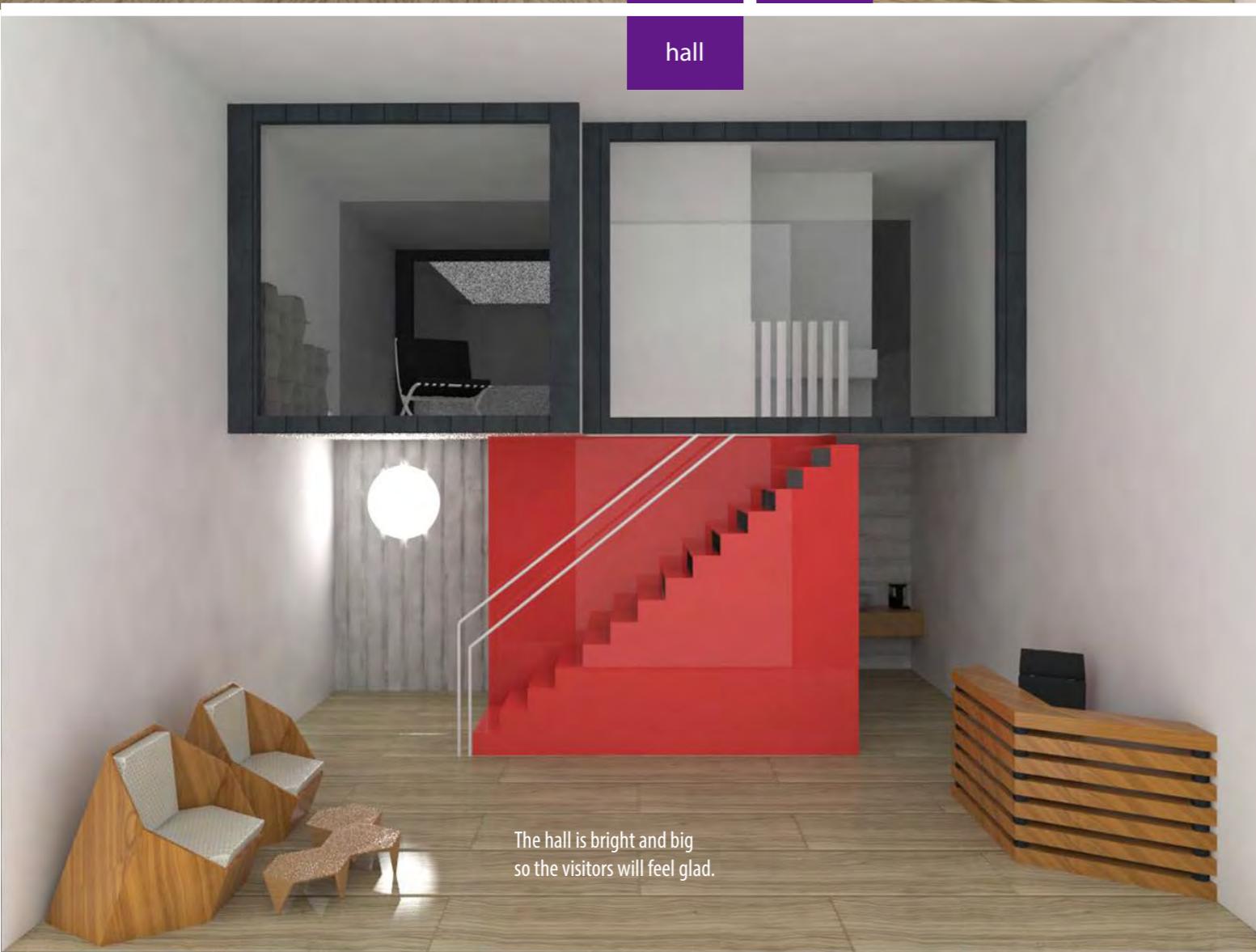
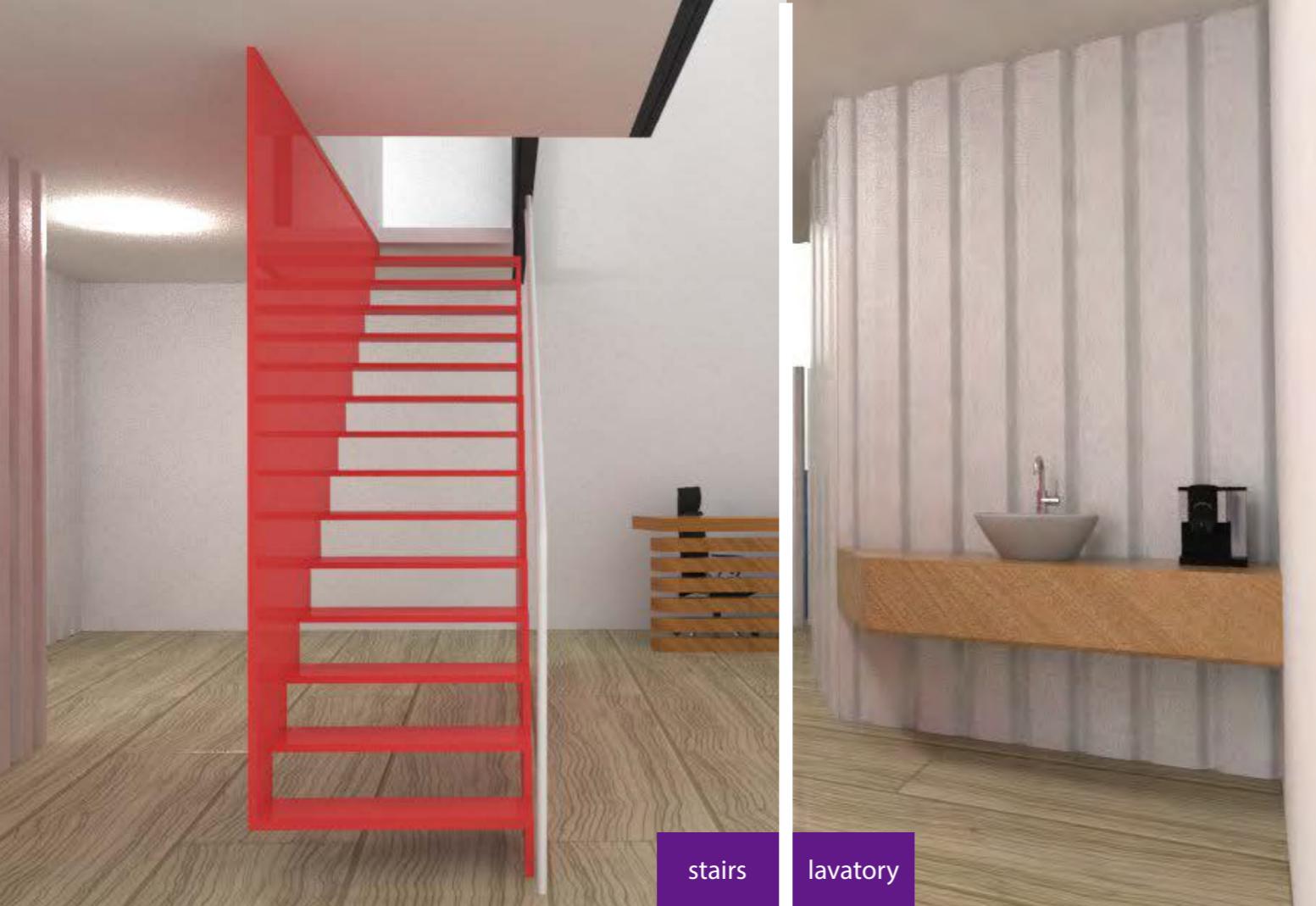
treasurers' room



boss's room

conference room







dododo

Dec. 2013 - Nov. 2013

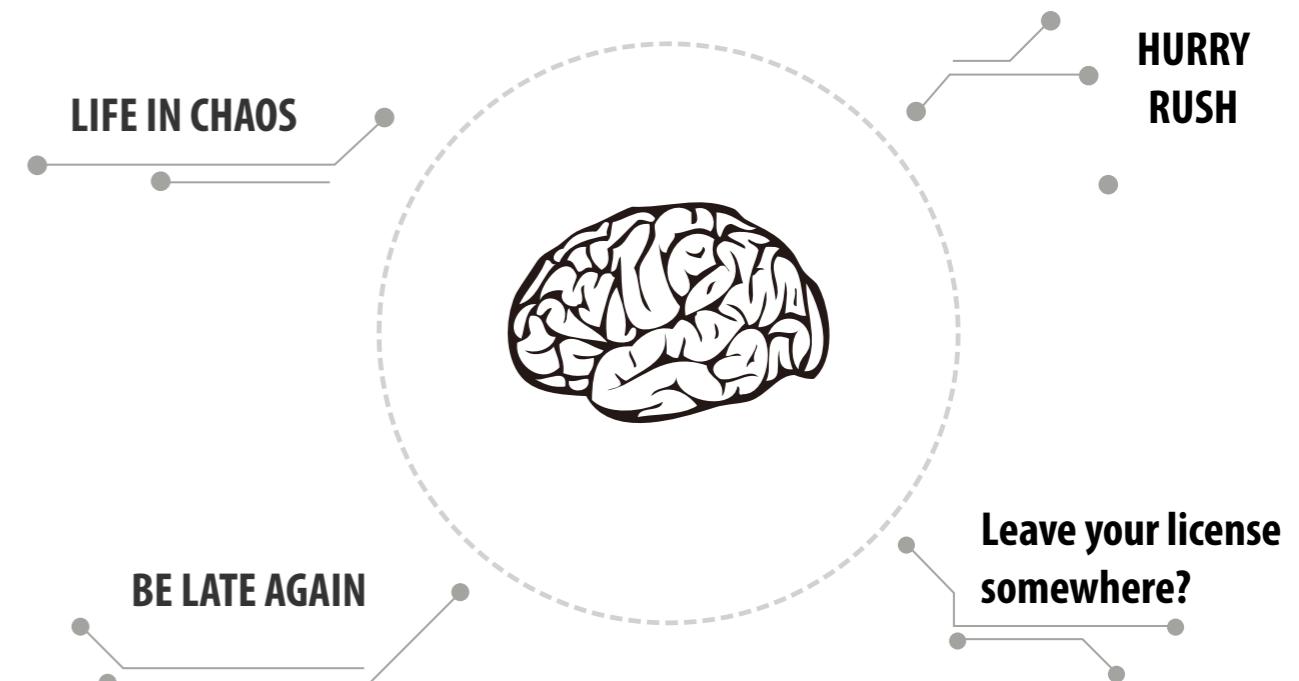
It is a application on the smart mobile phones.
It is a to do list with improved visual identification system. With that you would be able to judge whether the task is urgent or important.

Dododo

Research

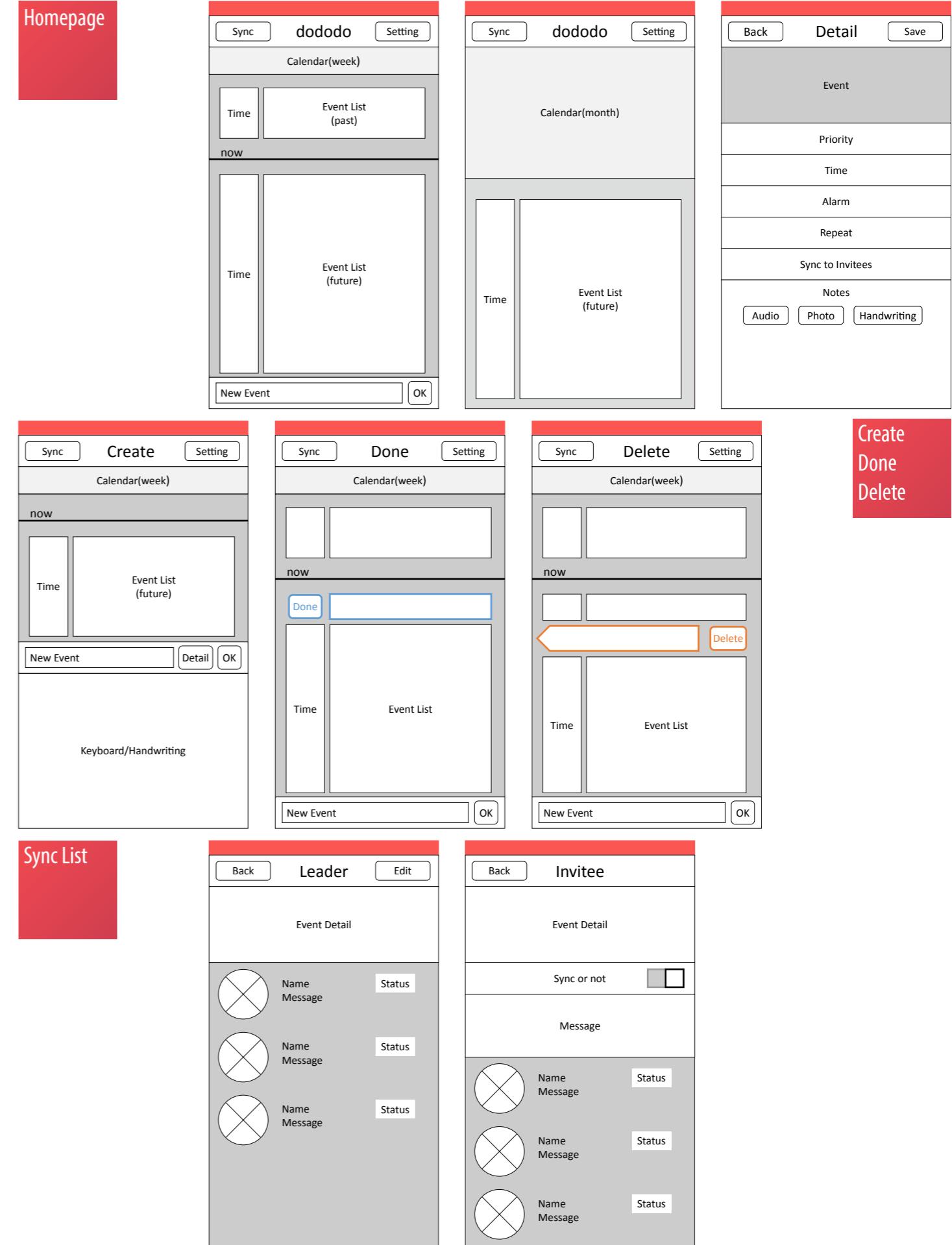
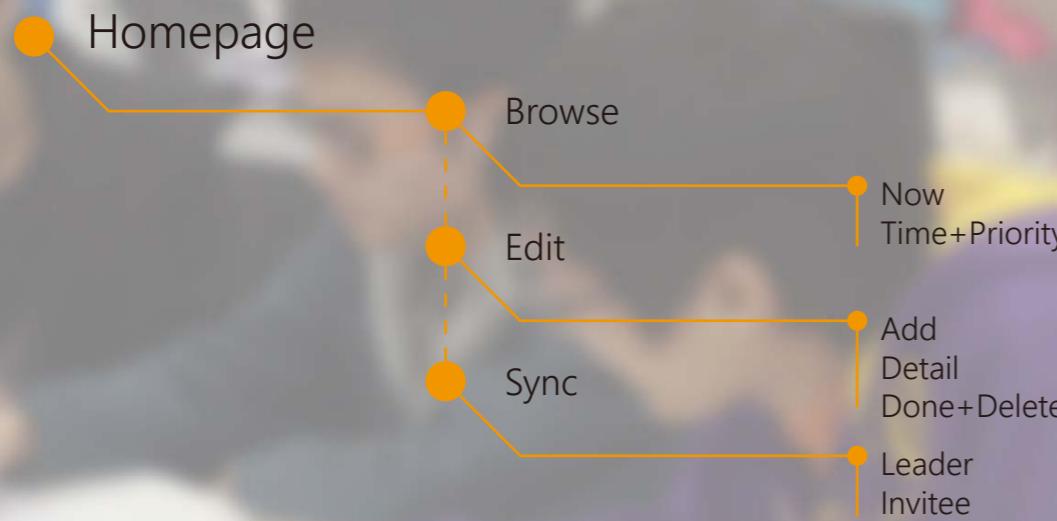


Trifles make your life in chaos?
Always hurry and rush?
Lack of a schedule?
Leave your license somewhere?
Be late again?



You need something to help you!

Sketch

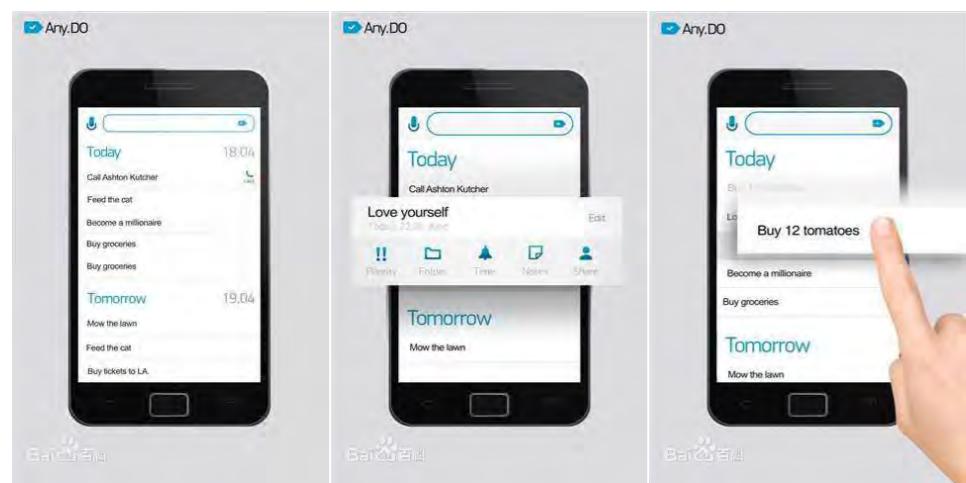


Competitive product analysis



Four quarters

UI is ugly
Not easy to use
Not attractive



Any.DO

Good UI
Too simple operation
Not obvious

Demand:

A visually obvious way
to judge whether the task is
urgent or important

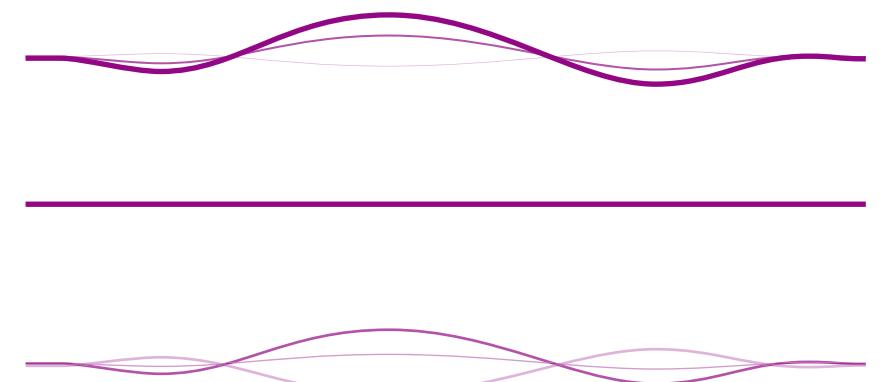
Solution:



Urgency



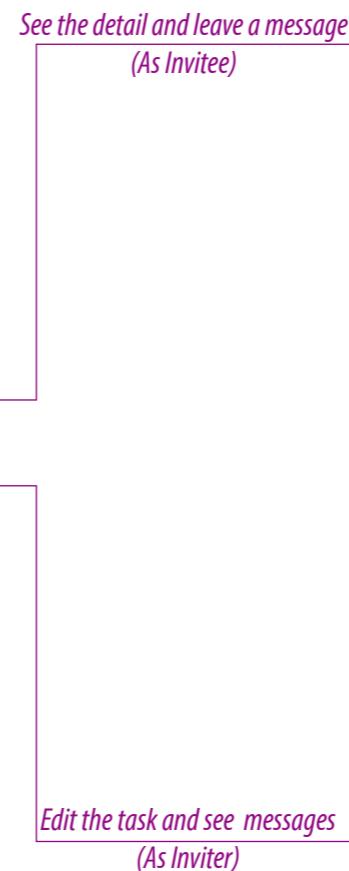
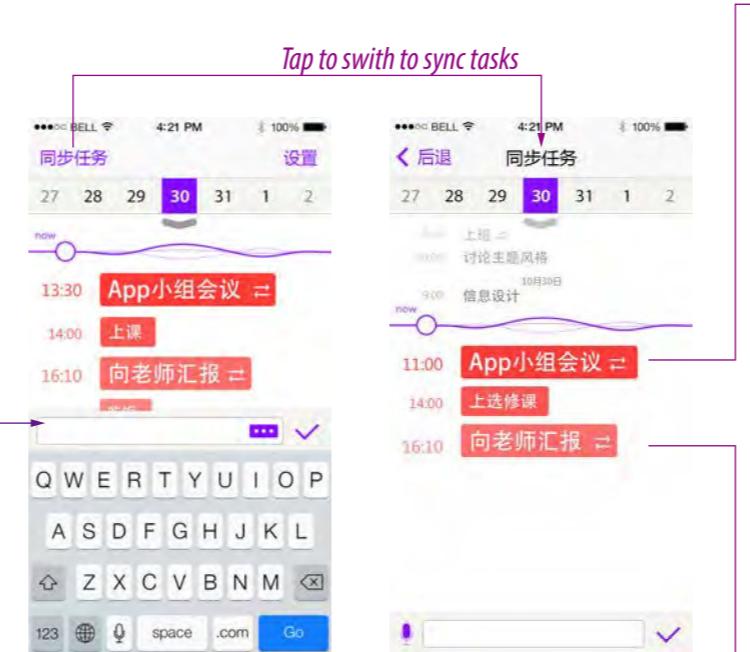
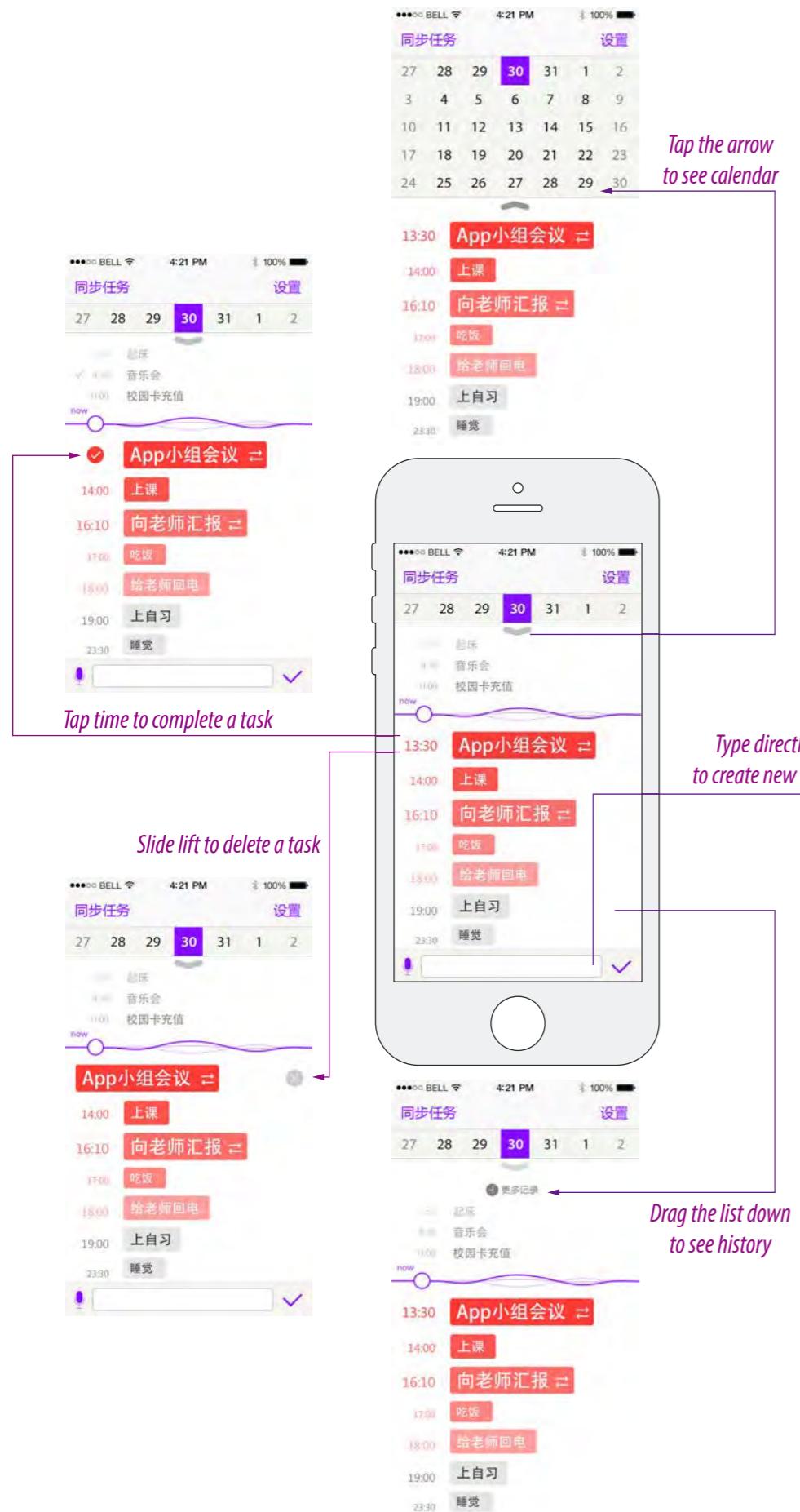
Use the saturation of item color to
illustrate the urgency of the event and
the size of item font to illustrate the
importance of the event.

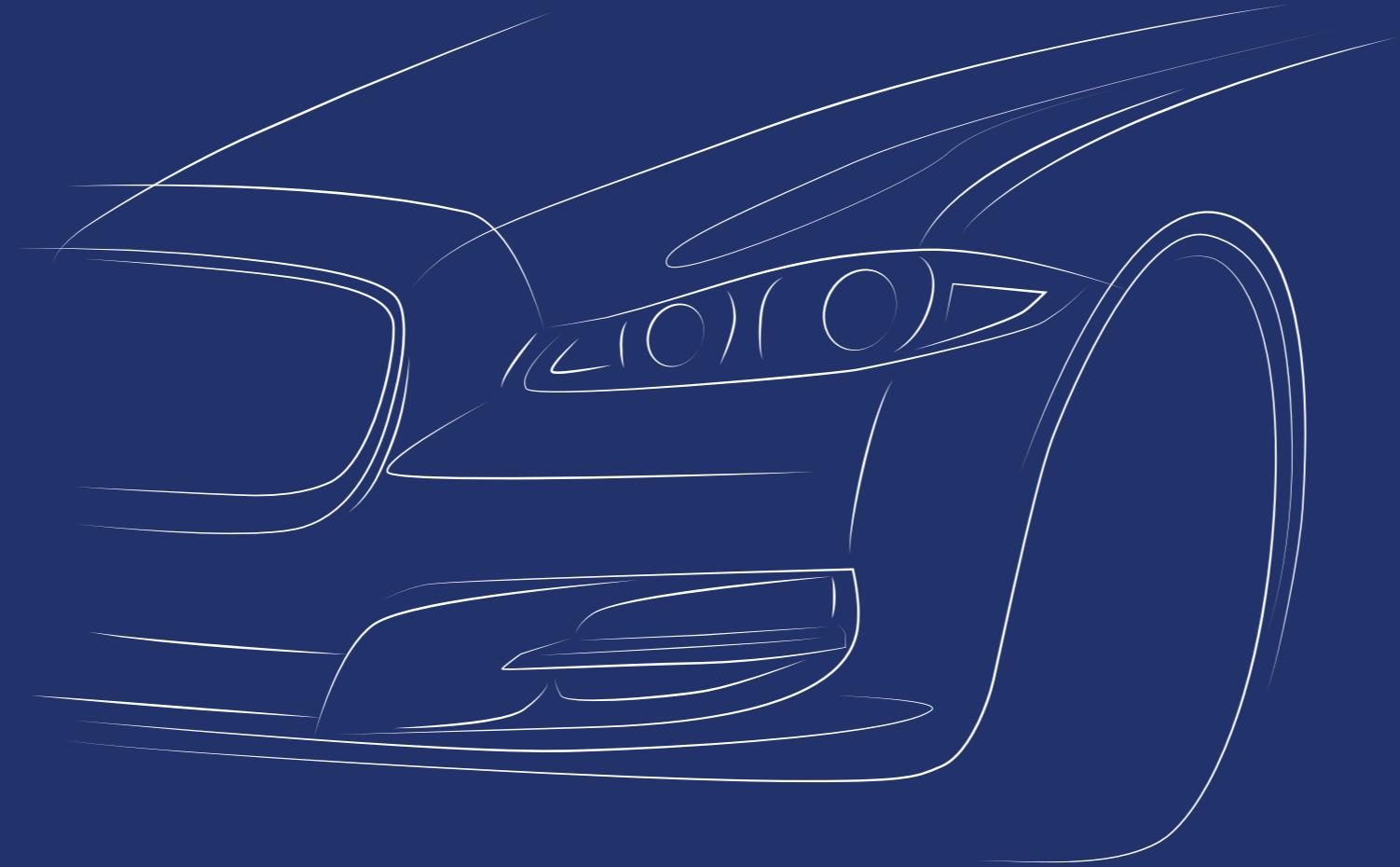


3 status of the NOWLINE

NOWLINE is a dynamic pattern of line,
like a wave, simulating the flow of
time.

dododo

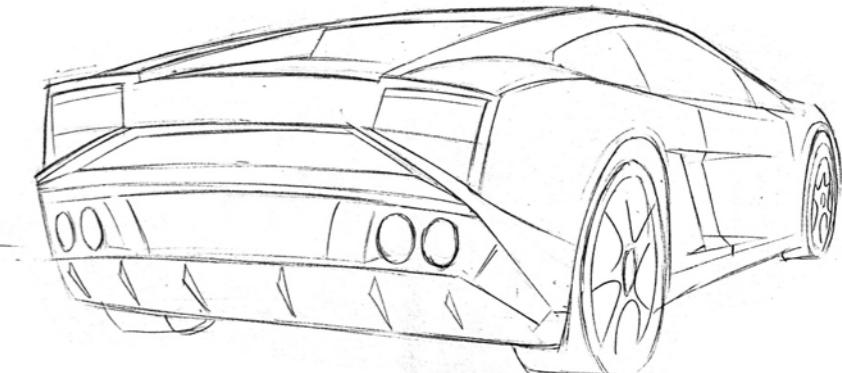
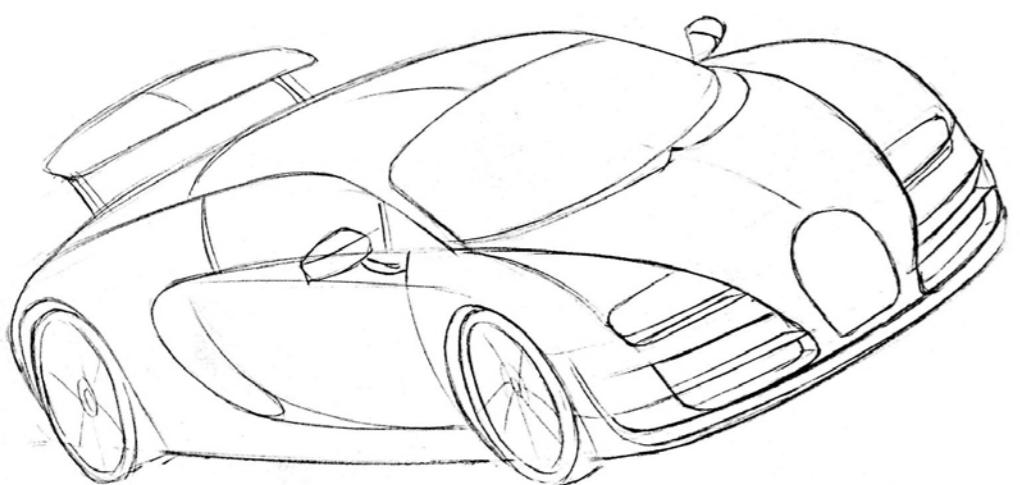
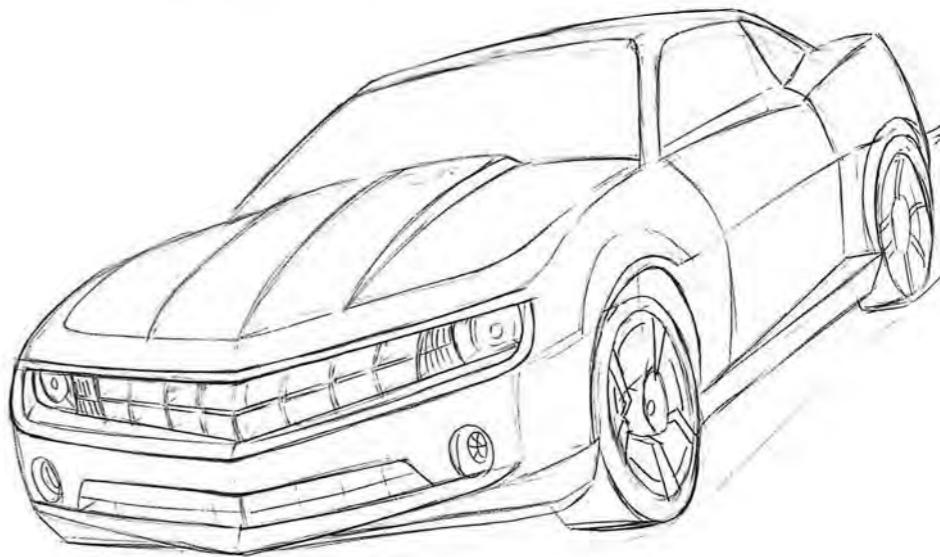
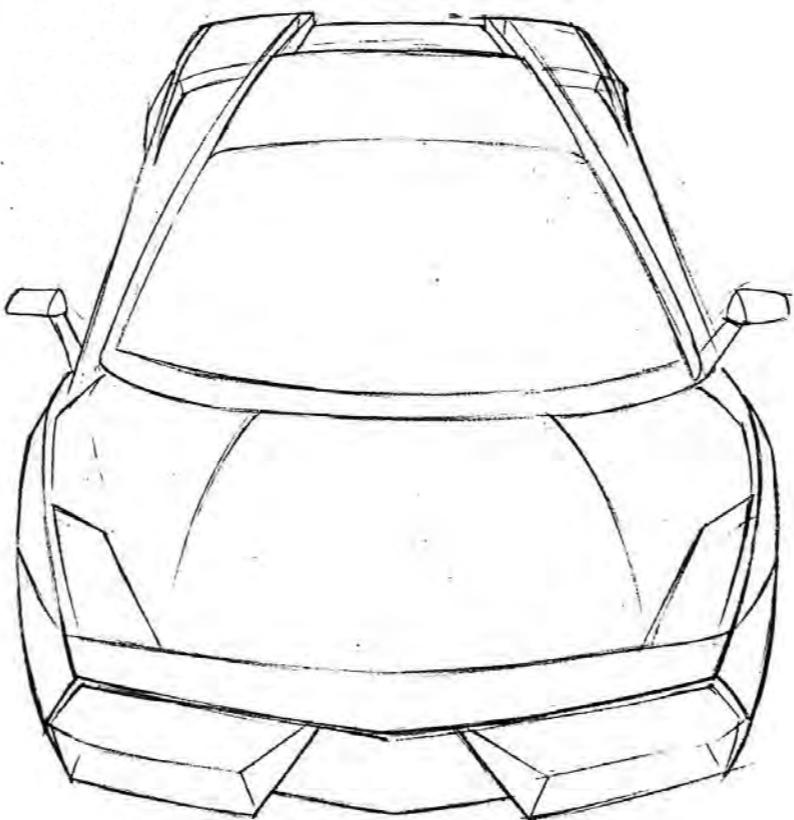
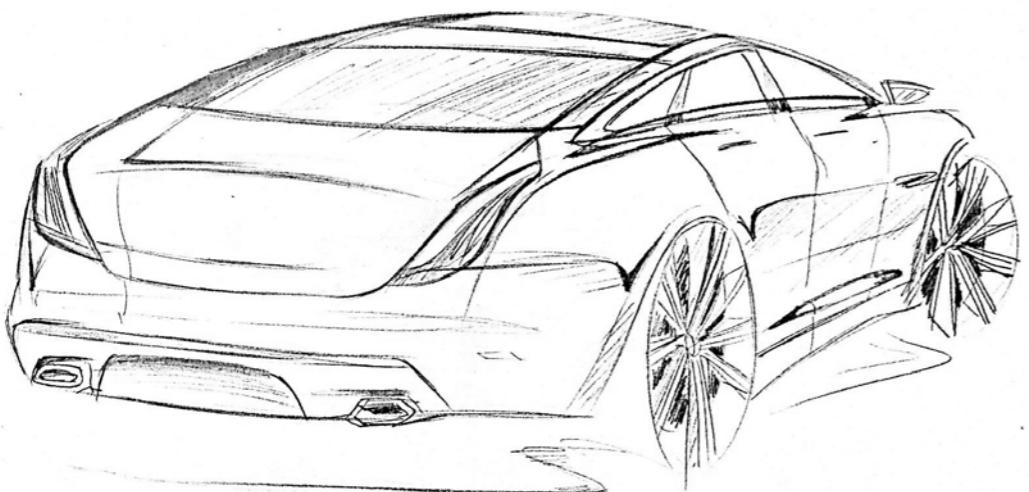
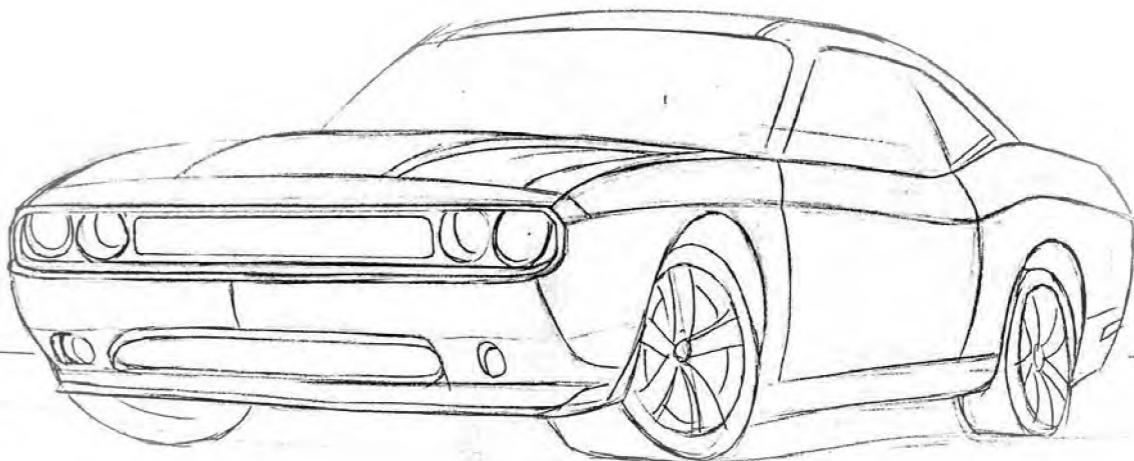
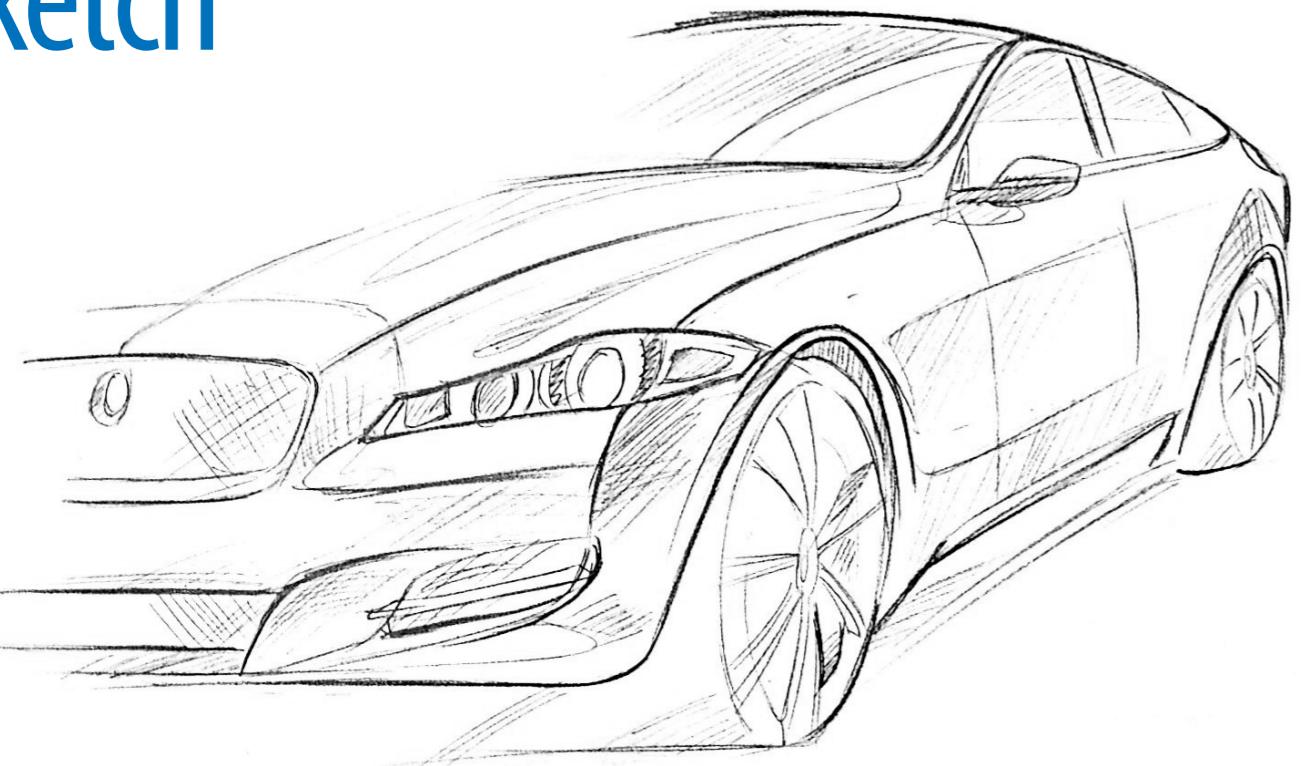


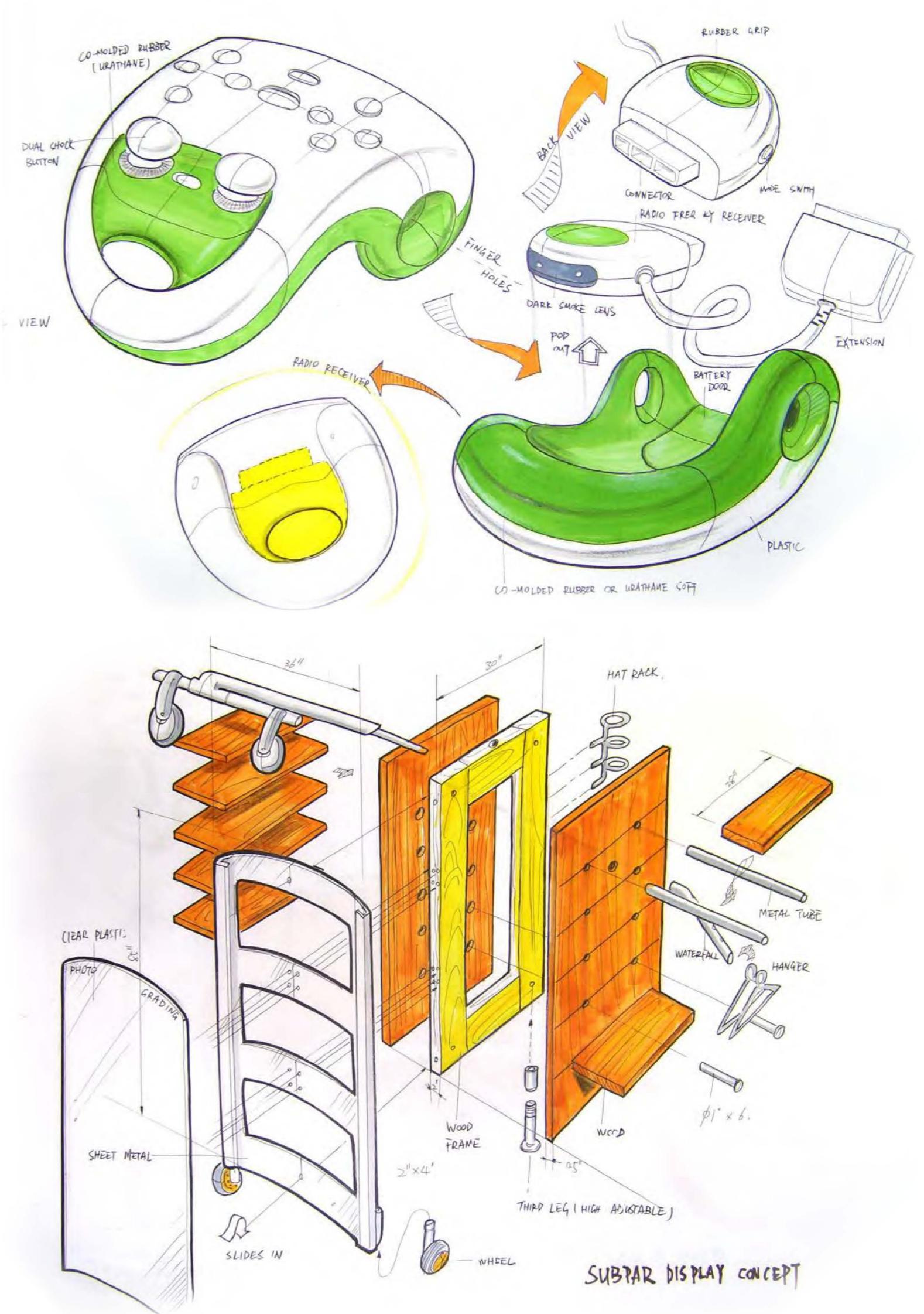
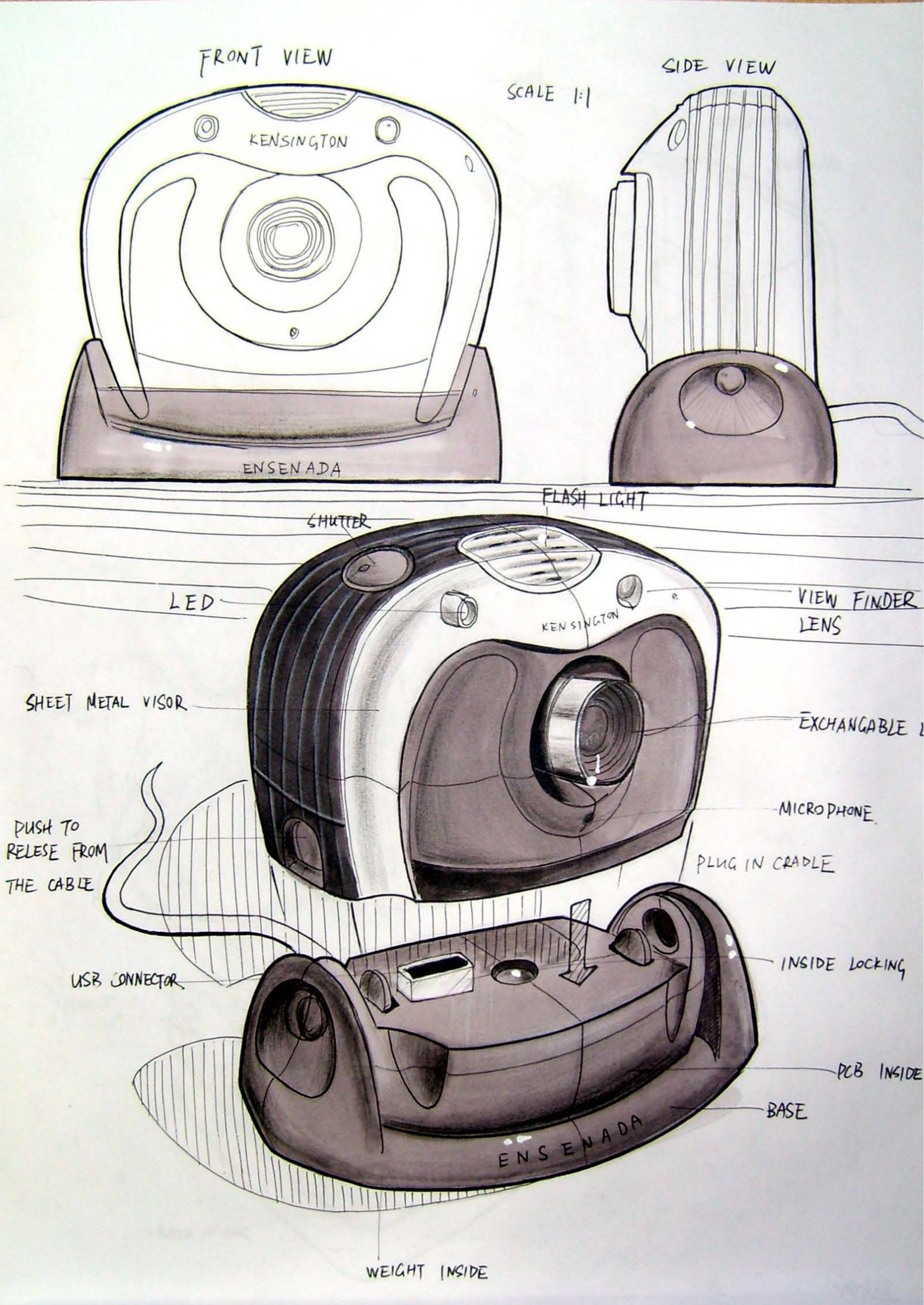


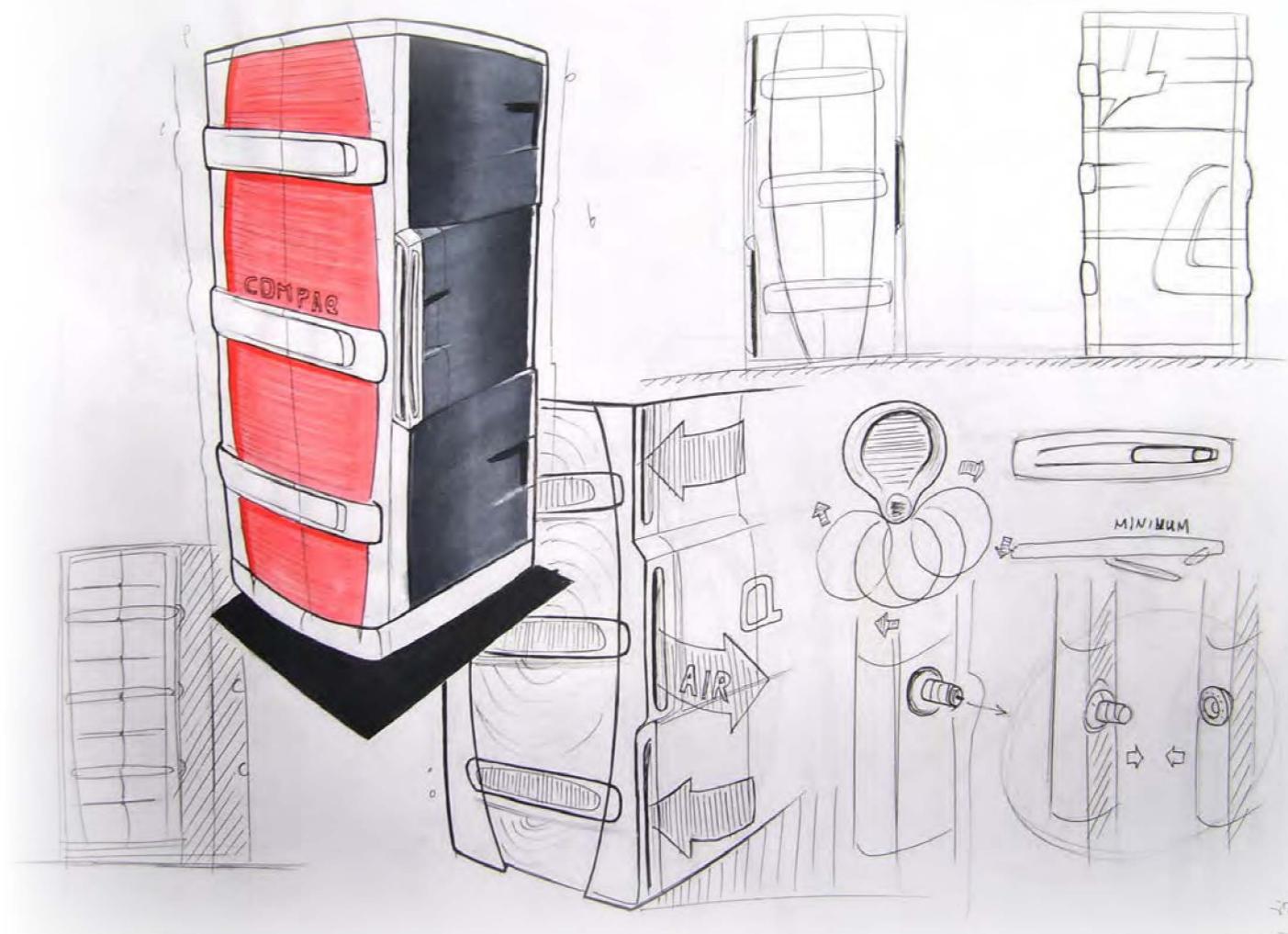
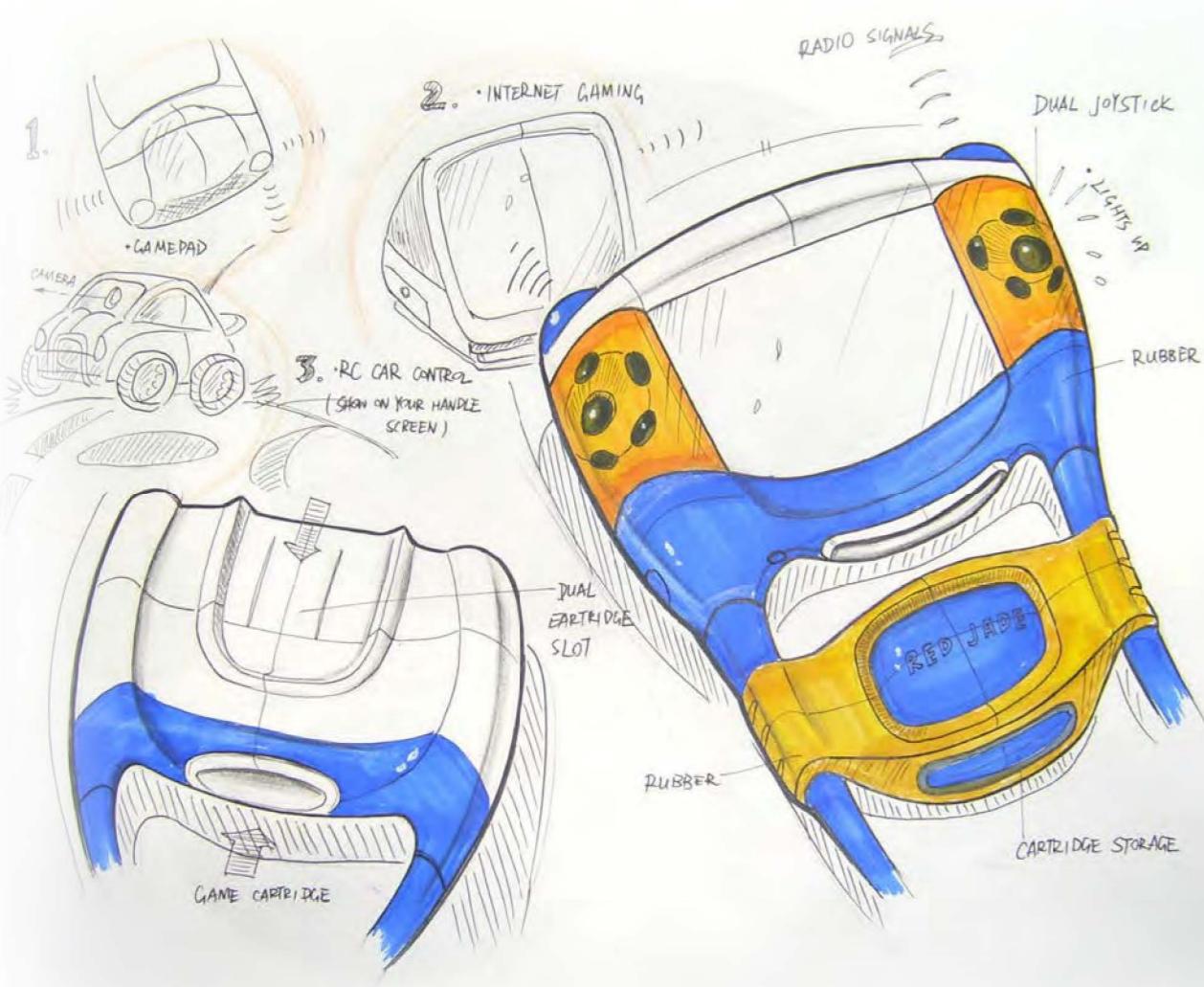
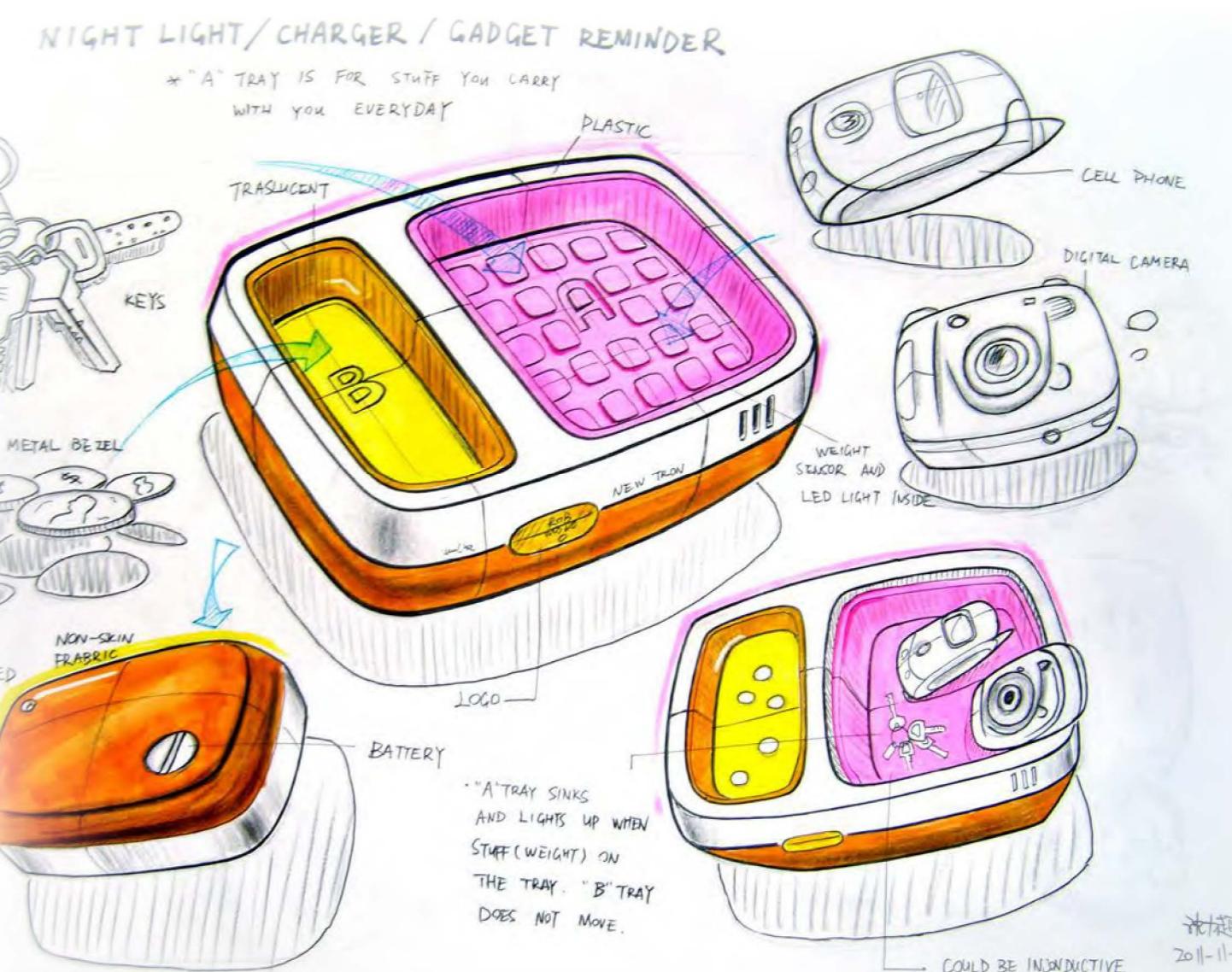
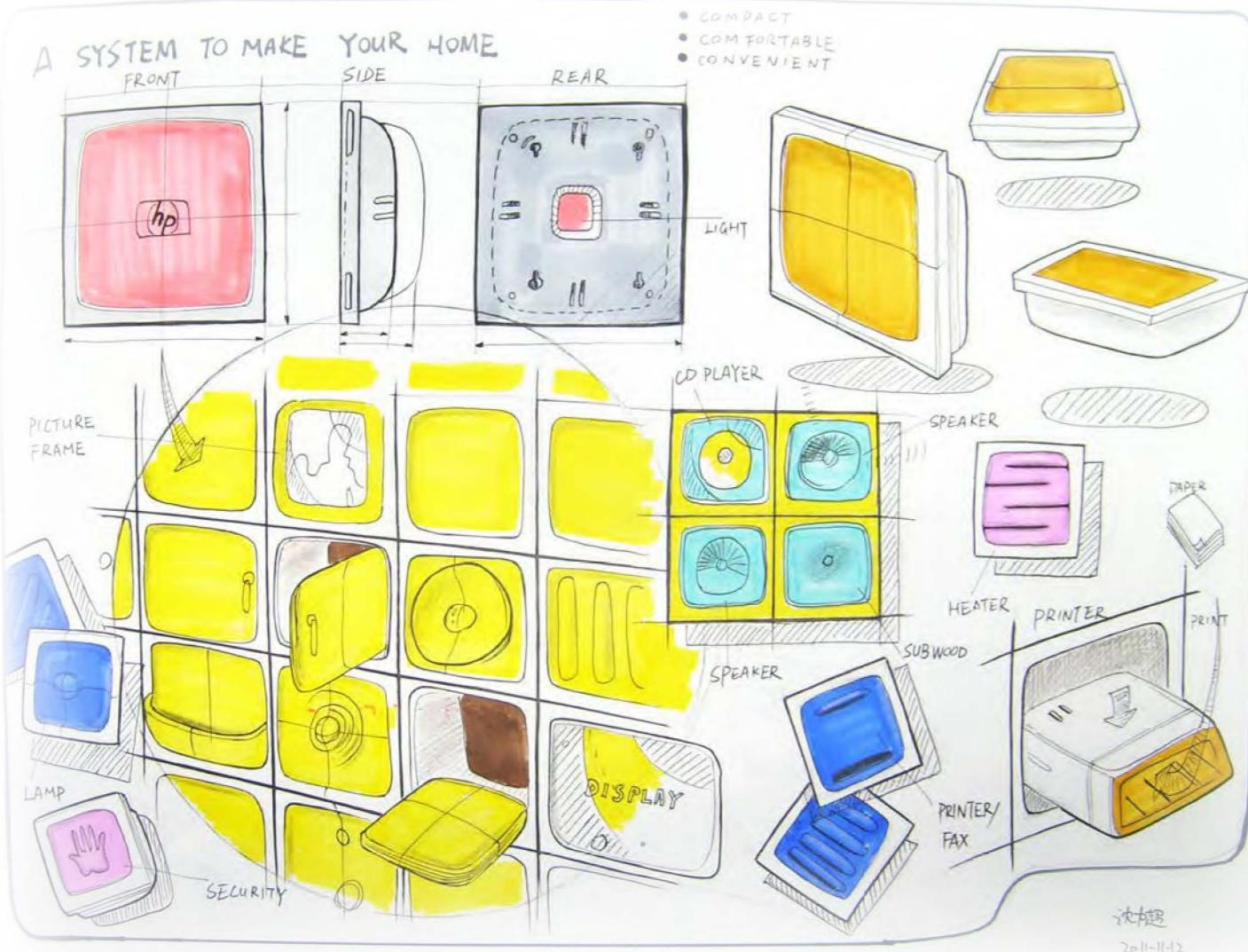
Others

Sketch
Maker
Model
Interior Design
Web Design
.....

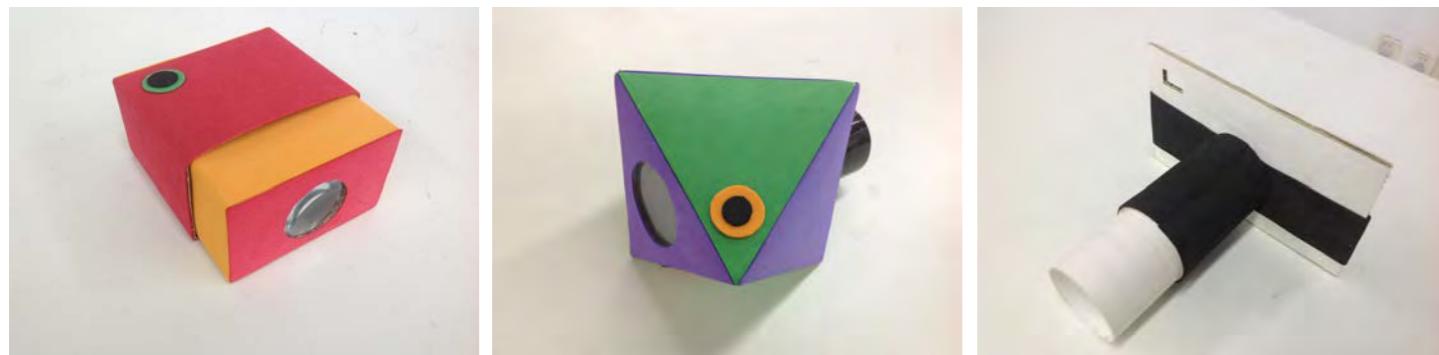
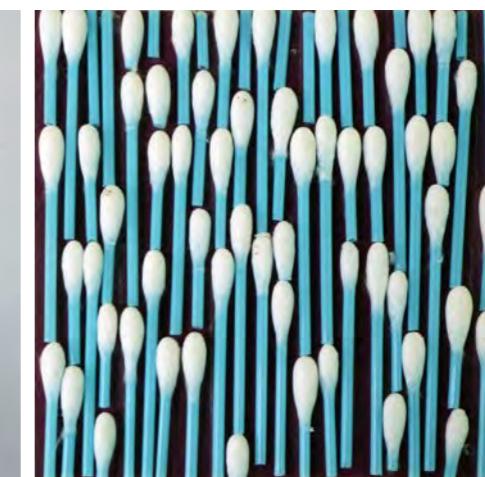
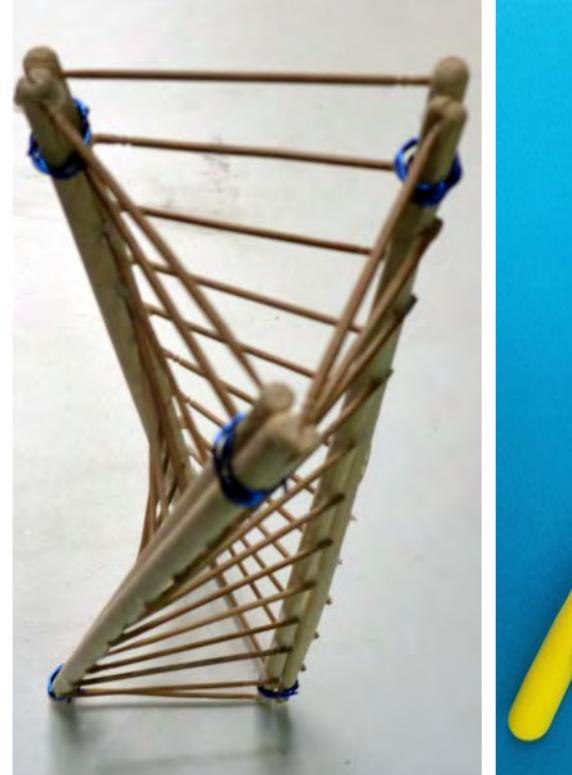
Sketch







Model





PORTFOLIO
ポートフォリオ
作品集