

DESIGN OF TRAVEL LUGGAGE FOR WORKING WOMEN

Industrial Design Project 2

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PROJECT BRIEF

Project Title :

Upscale Travel Luggage For Working Women

User :

Upper class Working Female

Age : 22 to 40 years

Urban area

Aware about current fashion & trends

Passionate about travelling

APPROVAL SHEET

The Industrial Design Project 2 titled “Upscale Travel Luggage For Working Women ” by Abneet Chauhan, is approved for partial fulfilment of the requirement for the degree of ‘Master of Design’ in Product Design.

Guide.....

Chairperson.....

Internal Examiner.....

External Examiner.....

Date.....

CONTENTS

1 My Objective

2 Scope of Project

3 Design Process

4 Research

Luggage

History of luggage

Terminology

Classification

Types of luggage

Material / components

Currently given Features in luggage

Luggage & interaction

Packing your luggage

Working woman

Some Statistics About Working Women

What the working women is today

Work & women

Associated culture

Feminine characteristics

Upscale Products

Characteristics & associated culture

Travelling

Airline Baggage rules

5 User study

Semantics Study

Luggage showroom visit

Survey

Questionnaire

Interviews

Examine

Decided features/ components to keep in product

6 Ideation

Idea sketching

Selected ideas

Basic structure

7 Final product brief

8 Form

Image board

Form factors taken into account

Concept generation

Evaluation

Refinement

9 Final concept

10 References

ACKNOWLEDGEMENT

Prof. R. Sandesh under whose valuable guidance this project has been conducted. I sincerely acknowledge his inspiration and expert guidance at every stage. I would like to thank him for his suggestions and support throughout my project work.

He not only helped me open my mind to the various avenues possible but also promoted me to explore areas that I once believed to be beyond my scope. His support in all forms (from ideas to books to moral) is invaluable to this project.

Prof. Chakravarthy for his support.

Prof. Ram Chandran, Prof. Athvankar and Prof. V. Bapat for their time and suggestions on my project.

A big thank you to Shailendra, Girish, Atul Paranjpey, Divya, Darshan, Apporva for their suggestions, help and company.

MY OBJECTIVE

My objective in this project is to learn design process that involves systematic research, planning and its implementation, towards reaching a level that brings actual feasible product. This product will solve not only the targeted user's problems but his emotional need also.

Apart from redesigning and modification of existing luggage, there could be new innovation with in the boundaries of semantics.

SCOPE OF THE PROJECT

Our country is in a transition phase of transforming itself from a traditional to modern global society. Gender equality, women empowerment etc. are driving this globalizing world. Today's market is almost equally contributed by both kind of products, gender based goods & non-gender based goods. More number of products are coming with the tag of "for man only, for women only."

Mahatma Gandhi said "Man and women are equal in status but not identical". Their needs are very different, because they are different in nature. During travelling woman carry more number of items in compare to man, even for small trip they need to have their entire wardrobe. Saying delicately for any occasion they wear a particular color of dress with matching shoes and accessories.

Luggage has become more than what its conventional function is. For some, luggage is a representative of owners status, style. It is a part of trend and fashion, which changes with time. In current luggage patterns, experiments with colors and textures of materials are being done.

DESIGN PROCESS

Design Research

History, engineering, associated culture, mind mapping of diff. factors



User study

User survey, Interviews, Outlet visits



Ideation

Idea sketching, Development of basic structure



Concept Generation

Image board, Form exploration, Evaluation, Concept refinements



Final concept

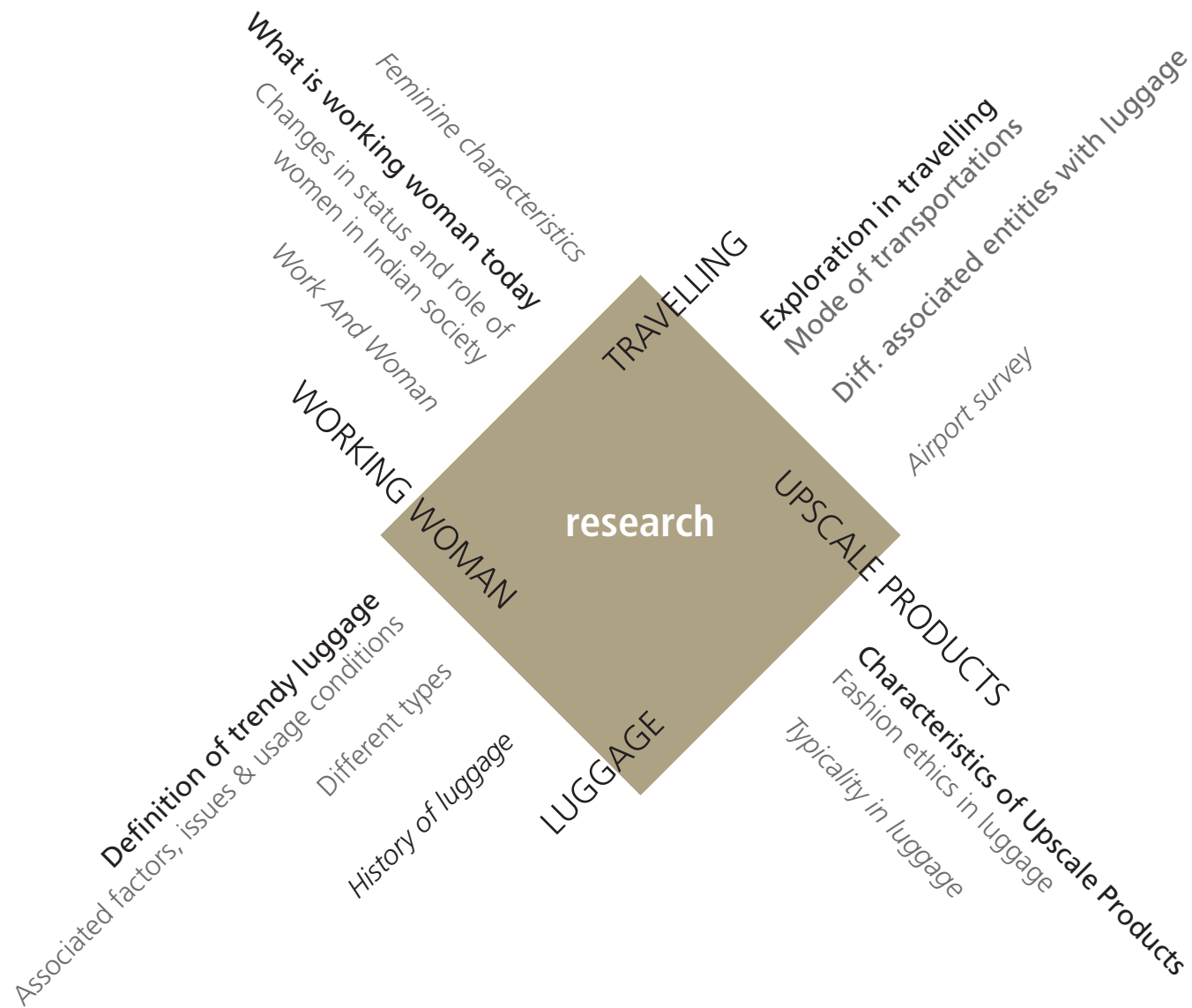
Concept's detailing, Final rendering



Prototype Model

Full scale model

RESEARCH



RESEARCH

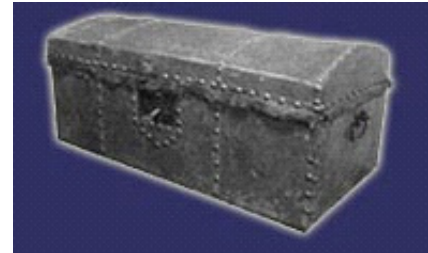
HISTORY OF LUGGAGE

William McDonough, the green architect and designer, said the following:

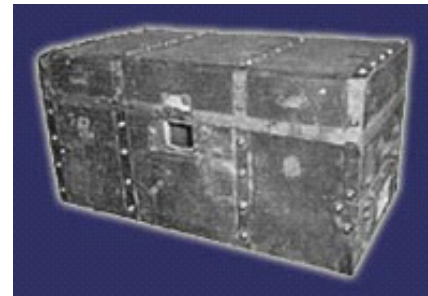
*"Mankind isn't so smart.
It took us 5,000 years to put wheels on luggage."*



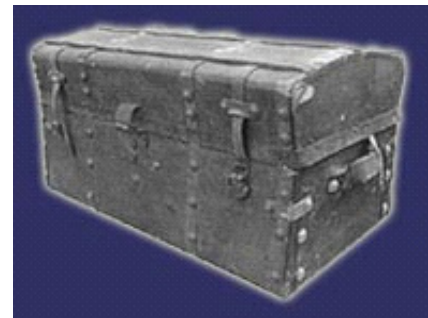
1498, Christopher Columbus would have carried a trunk/chest that housed his clothing and navigation products.



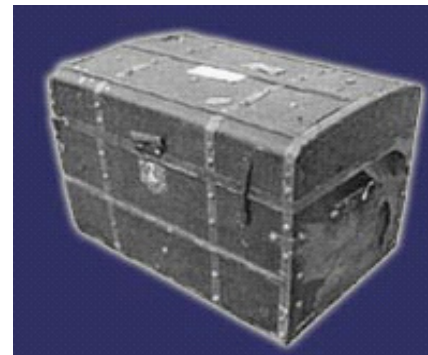
Hide covered or Stagecoach trunk
Hand wrought iron handles and lock. Often has hair on the hide. Many have brass tack decoration and initials. ca.1770 -1840



Leather covered Civil War Era trunk
Usually with leather covering. Often has compartments in the lid. ca.1850 - 1865



Jenny Lind style trunk
Distinctive keyhole shape when viewed from the ends. Named after the entertainer of the era. Generally leather covered. Rolled steel reinforcing straps about 1" wide. Sometime has large brass buttons. ca.1845 - 1870



Curved top trunk
Leather, paper, or canvas covering. Some have fancy brass lock plates. Thin hardwood reinforcing slats. ca.1850 -1870

RESEARCH

HISTORY OF LUGGAGE

The history of luggage might have started with a 'Potli', its a way of carrying luggage by tying it inside a piece of cloth and then carrying that potli on the shoulders, and we can see the example of this in many movies also.



They travel smartly. So does their Samsonite.

Vacation time is a time to indulge yourself with a little elegance. That's why Samsonite Silhouette luggage is so indispensable. It captures your ready-to-go spirit. Adventureous... in time with the jet-age. Form-fitted shape. Self-secure. Stain resistant.

Lightweight magnesium frame. Hidden locks that won't open at the wrong time. And all that extra space inside... nothing, but nothing ever gets crowded. Great? Oh yes go with Silhouette. It's no wonder it's the first choice of smart travelers everywhere.

OXFORD GREY
Pine's 24" Companion \$149.50

LOCHER 20"
Putman \$49.50

DOVER WHITE
Black-Cat 16" \$19.95

Samsonite Silhouette®
The luggage that sets the pace for luxury

Look for the Samsonite logo on all luggage. For more information, write to: Samsonite Corp., Dept. 100, 10000 W. 10th Ave., Denver, CO 80202. ©1964 Samsonite Corp. All rights reserved.



Smart women fly with Samsonite...
THE FAMOUS FLIGHT-PROVEN LUGGAGE!

Samsonite is the standard of travel. For American World Airways, it is a standard series of smart, modern luggage. Because Samsonite's quality is so high, it is the only luggage that can be trusted to last. And many more women love Samsonite's famous Black-Silhouette. It's the only luggage that's so smart, it's so smart, it's so smart.

Samsonite
flight-proven luggage

© 1964 Samsonite Corp. All rights reserved.

These are some of the advertisements that were designed at the time of World War-II, around 1940.

RESEARCH

HISTORY OF LUGGAGE



In around 1950 floral Hawaiian printed luggage came into being. Perfectly placed zippers and plastic handle were in consideration.



Around 1965, there was further development in the design of these bags and now these bags are totally made up of leather and have a better locking system and also there was an improvement in the overall design.



1970's was an age of revolution. It was the time when hard material was used for the luggage. The invention and use of polypropylene made the task of manufacturing hard luggage easy.. This material was easy to use and handle to manufacture hard luggage with distinctive and desired curves. An added advantage of polypropylene was the different colours too.

HISTORY OF LUGGAGE

A Brief History of Wheeled Luggage

Around 1851: In "Moby-Dick," (novel) Queequeg tells the story of strapping his sea chest to a wheelbarrow but then, not knowing how to makeover the barrow, gathers the whole assembly and carries it.

Early 1900's: steamer trunks with two wheels are advertised.

1970's: wheels appear on traditional suitcases; travellers pulling them by leashes and poorly balanced suitcases toppling over ensue.

1989: Northwest Airlines pilot Bob Plath develops the roll-aboard suitcase for flight crews.

On March 8, 1994, Don Ku was granted a patent for wheeled suitcase with a collapsible towing handle.

RESEARCH

LUGGAGE Terminology

The usual word for “baggage belonging to passengers from lug “to drag”, “what has to be lugged about” or “anything of more bulk than value.”

Luggage is any number of bags, cases and containers which hold a traveller articles during transit.

The modern traveller can be expected to have packages containing clothing, toiletries, small possessions, trip necessities, and on the return-trip, souvenirs.

For some, luggage and the style thereof is representative of the owner’s wealth.

LUGGAGE Classification



HARD LUGGAGE



SOFT LUGGAGE



HYBRID LUGGAGE

Hard luggage is luggage manufactured by industrial process of injection moulding or vacuum forming.

Soft luggage is the luggage which is stitched together using various soft materials.

Hybrid luggage is blend of hard & soft luggage, where soft material is stitched over hard skeleton or base. Some times bottom shell is hard and front shell is soft in hybrid type of luggage.

RESEARCH

LUGGAGE Types of Luggage



Trunk



Wheeled Upright



Garment Bag



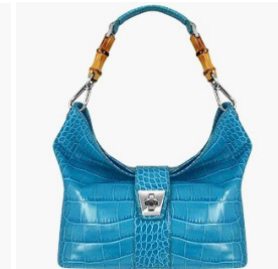
Tote



Duffel Bag



Back pack



Hand Bag

Trunk - A wooden box, generally much larger than other kinds of luggage. Trunks come in smaller sizes as in the case of footlockers and larger ones called steamers. These days trunks are more commonly used for storage than transportation.

Suitcase - A general term that may refer to wheeled or non-wheeled luggage, as well as soft or hard side luggage.

Wheeled Upright - A relatively new type of luggage that incorporates an extending handle that allows the traveller to roll it in an upright position.

Garment Bag - A style of luggage that folds over on itself to allow long garments such as suits or dresses to be packed flat to avoid creasing. Garment bags come in both wheeled and non-wheeled models, and are usually one of the largest pieces in any set of luggage.

Tote - A small bag, usually worn on the shoulder, though wheeled models with extending handles have become popular in recent years.

Duffel bag - A barrel-shaped bag, almost exclusively soft side, is well suited to casual travel, with very little organization inside. A small bag, usually worn on the shoulder, though wheeled models with extending handles have become popular in recent years. The spelling of this luggage type "duffle" is also valid.

Carpet bag - Travel luggage traditionally made from carpets.

Rolling Luggage - Referring to various types of wheeled luggage either with or without telescoping handles. Typically two fixed wheels on one end with the handle located on the opposite for vertical movement.

RESEARCH

LUGGAGE Material/ Components



Embassy™ Italian Stone™ Design 18"
Genuine Leather Tote Bag



Smooth Italian split cow leather



Solo Business Briefcases Bonded Leather

LEATHER

Leather is used in luggage construction both as coverings and trim. It comes in different types, with different names and expectations.

Genuine Leather- Top grain or full grain leather is the outermost layer of the skin. It is the most desirable material because of its durability, strength and ability to take finish. Plus, the original animal grain markings craft a distinctive personal piece.

Splits- The under layers of a hide are known as “splits” because these layers are split off from under the top grain. They usually have a surface treatment simulating the color and grain of top grain.

Processed- Processed leather is one type of skin or hide made to look like another type, such as calfskin with alligator markings. Leather scraps that are pulverized and bonded with glue are sometimes called “bonded leather” or “laminated leather.”

LUGGAGE Material/ Components



Domke canvas
bags ballistic
nylon series



vinyl luggage

FABRICS

Fabrics range from natural fibers such as cotton, duck, linen, canvas, and jute, to manufactured materials, including nylon and vinyl.

Nylon- Nylon is a strong, light-to-medium weight abrasion-resistant material used for both coverings and linings. The fabric is marked according to thickness of fiber, or denier. The higher the denier, the stronger the fiber.

For durability, nylon luggage should be a minimum 400 denier, woven in a tight construction. If the denier is less than 400, other material such as nylon taffeta or heavy-duty vinyl (to add to its strength) should support it. Nylon has great fashion versatility as it can be woven in many patterns, including tweeds and jacquards. Urethane coatings— water and stain repellents are applied to the nylon fabric surface to sustain the bag's appearance. Scotch guard®, Zepel®, and Teflon® are among the protective coatings used. Ballistic nylon is a durable and tear-resistant fabric commonly used in better luggage. The term ballistic connotes a sturdy nylon weave that is similar to the fabric used in bulletproof vests.

Vinyl- Vinyl, a moderately priced plastic material, is used for both coverings and trims. Available in a wide range of colors, the material has strong stain-resistance, and can be wiped clean. Vinyl is sometimes treated to resemble leather, check the labeling on the product.

LUGGAGE

Material/ Components

Hard luggage manufacturing and materials

Polycarbonate and ABS shells are vacuum formed, PP shells are injection molded.

A. Injection molding

Material PP-Polypropylene
lip to lip closing

Injection molded shells has lip to lip closing detail due to its dimensional accuracy stability.



B. Vacuum forming

vacuum formed shell has closing detail of either framed closing or zippered closing.

Material ABS
framed luggage



Material PC
zippered luggage



As Polycarbonate is strong impact resistant material low shell thickness is used hence the PC shells are stitch able hence zipper closing is used for PC luggage.

RESEARCH

LUGGAGE Material and Components



Turned edges Wallet



Bound edges



Overnight luggage
With welt edges

EDGES

Turned edges- One surface where materials meet is turned completely over all the other edges.

Bound edges- A separate material is sewed completely over all the edges.

Welt edges- A material is sewed between the seams and covers all edges.

Burnished edges- All edges are cut off uniformly, then coloured, and polished.

WHEELS

Materials: PP and PVC used for mobility & to reduce the damage to the bottom of the case.

Wheels are sometimes retractable or removable.



Burnished edges



Two wheels inline luggage



Four caster wheels luggage

LUGGAGE Material and Components



Handles



Shoulder Straps

HANDLES

Metal or metal-reinforced bases with a number of rivets, screws, or prongs attached to the frame of the case itself --increases the load-bearing area. Handle systems housed inside a bag are least likely to sustain damage. Recessed handle systems that include single-handed push button release and a recessed handle cup that reduces the possibility of damage.

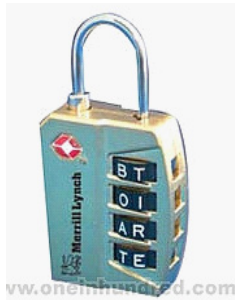
SHOULDER STRAPS

Shoulder straps, many of which are detachable, are mounted at a bag's stress points. Strong hardware and reinforced mounting areas protect shoulder straps from tearing off or snapping out. Gripper pads keep straps from sliding off the shoulders.

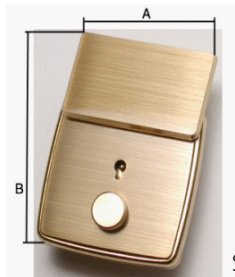
PULL-STRAPS

Pull-straps are frequently attached to suitcases with wheels. These, too, should be mounted with solid hardware and reinforced backing to prevent damage.

LUGGAGE Material and Components



Solid brass- number locks



Solid brass- pad locks



Die-cast locks

LOCKS

Built-in combination locks are most often found on hard-sided luggage. Padlocks and key locks that attach to zipper pulls are used on soft and semi-soft constructions. To determine the lock constructions, open it and look at the underside; if it is stamped, you will see the places where the parts are joined. Metal lock constructions include:

Solid brass--Solid mass of metal often plated for appearance or durability.

Die-cast locks--Metal such as zinc or steel, often plated for appearance and durability.

Stamped hardware--A flat piece of metal that is bent into a desired shape.

Plastic locks--Made of polypropylene or nylon, plastic locks have become popular for their durability and rust-resistance.

The way a lock is mounted on a case is an important element of its durability. Locks are mounted in three ways: with prongs, screws, or rivets. The more screws or rivets used, the more stable the application. Locks should also be mounted straight so that the two parts meet properly.

LUGGAGE

Material and Components



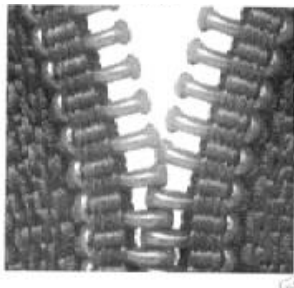
left one is molded zipper
other is polyester coil

ZIPPERS

Polyester coils--Made by weaving or sewing the nylon coil to the tape. These zippers do not have individual teeth and can take a great deal of pressure. If they do pop open, they can be rezoned and "healed."

Continuous molded zippers--Which do have injection molded teeth, are also woven or sewn onto tapes and are extremely durable. Nylon zippers can be dyed to match luggage and leather.

Brass and other metal zippers--Made by feeding a woven tape through a chain machine that crimps individual teeth onto the tape.



LUGGAGE

Currently given features in Luggage

Luggage is carefully designed to anticipate a variety of needs. One of the keys to satisfaction is the extent to which each item helps travellers organize, and get ready access to their possessions.

Wide gussets--An accordion pleat on the sides of a case or pocket creates more flexible and accessible storage space.

Outside pockets--Outside pockets allow travellers to reach items they need without opening the case and increase packing options.

Wet-packs--Wetpacks allow easy storage for wet and soiled garments.

Mesh pocket dividers--Accessibility and visibility are two advantages of using mesh pocket dividers.

Packing systems--Nylon and mesh envelopes in various sizes include rigid folding boards for neat and wrinkle-free packing.

RESEARCH

LUGGAGE Luggage & Interaction

Luggage & accessories has become part of our daily life. Right from childhood to youth to professional or elderly stage of human life, there exist a human- luggage interaction.



Following photo collages give us hint about various types of interactions those take places.

Luggage as a part of everyday life and various scenarios.

Carrying Luggage and various activities.



RESEARCH

LUGGAGE Luggage & Interaction

Business executives, managers, young female professionals working in various fields carry luggage suitable to their lifestyle. At this part of professional life luggage and the style thereof is representative of the owner's wealth.



RESEARCH

LUGGAGE Packing the Luggage

Observing the way of packaging by users

USER 1



Adding a cloth to the base which is used to envelope the entire luggage items



There is no proper place to keep vanity box



The side space is used to fit in the toileteries



No proper divisions to keep things systematically



RESEARCH

LUGGAGE Packing the Luggage

Observing the way of packaging by users

USER 2



No proper allotment of space for particular items

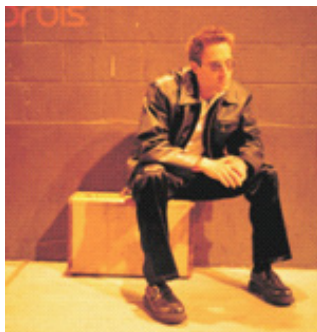
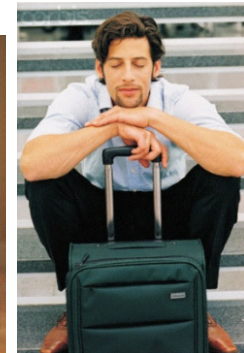


The towel is used as a cover separator

RESEARCH

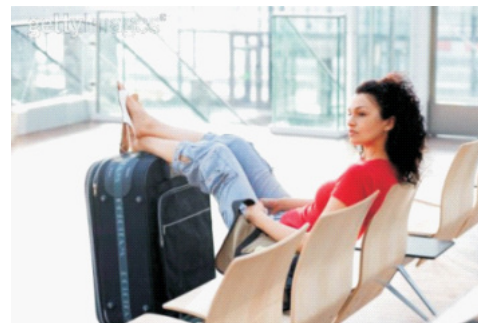
LUGGAGE Emotions & Luggage

Luggage we carry indirectly becomes companion during our journey. It helps us to get the feeling of having someone around or as a company.



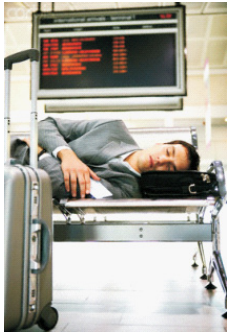
Luggage to rest over, sit & relax

Luggage as footrest



RESEARCH

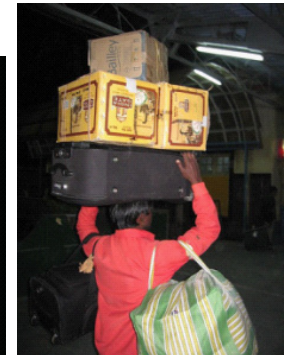
LUGGAGE Emotions & Luggage



Have you ever slept with Luggage?



Coolie-ing the luggage



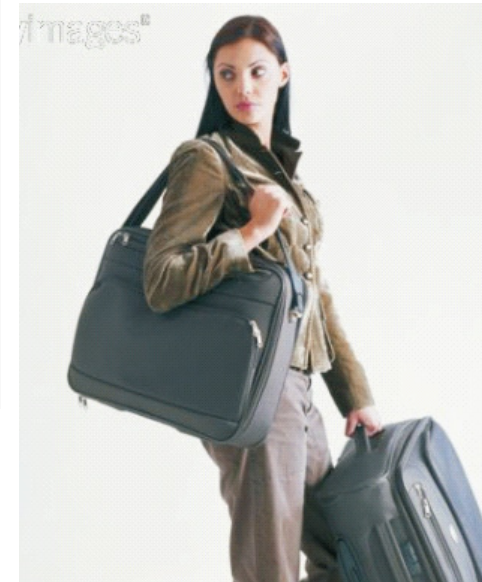
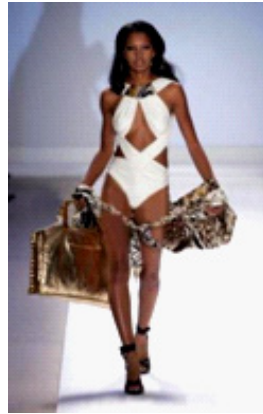
On a car trip



At the airport belt

RESEARCH

LUGGAGE Fashion & Luggage



WORKING WOMEN

Statistics about Working Women

"The ratio of women in IT services in India is rising steadily, whereas the percentage of women IT workers in the US has been declining over the years.

In IT companies, software professionals ratio is likely to be 65:35 (men / women) by the year 2007. This ratio is reversed in the ITES-BPO sector where the ratio of men to women is 31:69."

(According to the latest Nasscom survey 2007)

Working women in private sector & public sector

80% (private sector) 20%

Normally in India, the first job of a person begins at the age of 22.

59 women working in Indian companies and 41 women were working in multinationals.

Preeti singh's report on "Women in the Corporate World in India" (prof. @ DU)

The increasing number of women working in Corporate Organizations

22-35 yrs	Executive & Asst. Manager	
35-45 yrs	Managers	
45-60 yrs	GM, Branch Manager, Vice president	

RESEARCH

WORKING WOMEN

What the Working Women is today?

Changes in the role & status of working women in Indian society

"More and more women are entering professional engineering streams such as computer sciences and electronics. The Indian women in the IT fields are very committed and they acquire software skills quite fast just like the men."

"That is no longer the case with women in the IT industry these days. Fewer women are dropping out because of marriages."

(points out Madhumita Raghavan, an IT consultant based in Bangalore)

India is in a transition phase of transforming itself from a traditional to a modern economy through a planned development phase.

The reason of decreasing no. of women employed in the public sector is the dilution and contraction of public sector employment in recent years in India.

However, some changes have come about in the society and women are beginning to travel but women themselves have an inner conflict and prefer to take up jobs with less mobility in terms of travel or transfers.

Preeti Singh's report on "Women in the Corporate World in India" (prof. @ DU)

"... if your work speaks for itself, people look beyond gender."

Latika Thukral, Business Head, Citibank



"... being a woman is no gender issue."

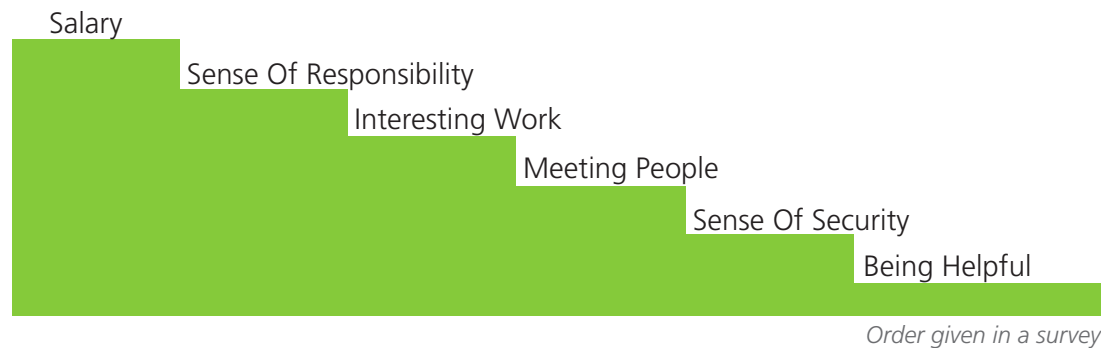
Shruti Bajpai, The Director, Marketing, HBO South Asia



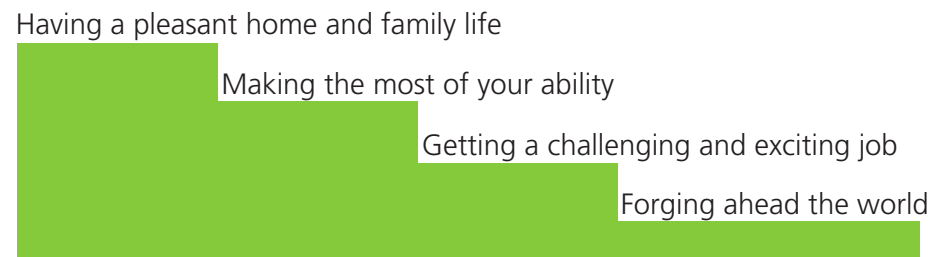
RESEARCH

WORKING WOMEN Work & Women

What do women like most about their job?



Most important in order of preference



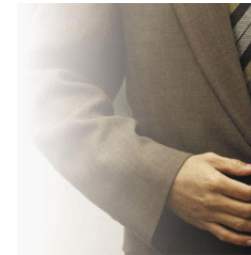
WORKING WOMEN Associated Culture

Role Model & Style icons

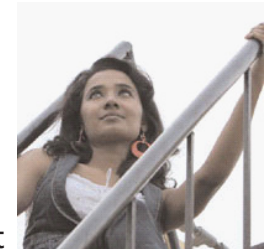


Passion for work

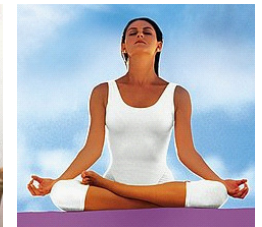
"Their professional life & their work are all just an extension of their personality"
WOMEN (India Today)



Professionalism



Independent



WORKING WOMEN

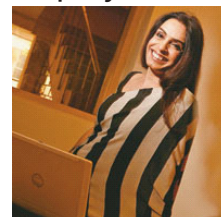


Struggle / Achievement



Want to make identity
create a life space in social as
well as in work organization

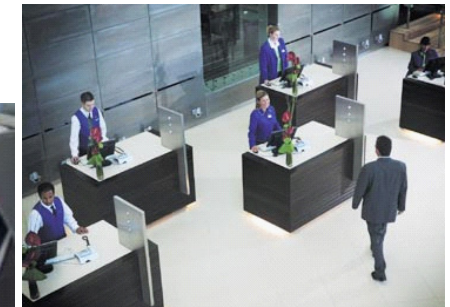
Employee + Housewife



Bicultural

"Today's super moms play
varied roles, reconciling
between Traditional &
Modernity"

Business Class



RESEARCH

WORKING WOMEN

Characteristics & Associated Cultures



RESEARCH

WORKING WOMEN

Findings from Women Accessories



More organic shapes
Curved lines
Contrast
Textured surfaces
Glitter, shiny
Puffy

Elegance
Sleek
Bright colour
Ornamental
Kidness

USER STUDY

First user study is done to identify some typical elements in currently existing luggage. This is the study of semantics to find what is luggageness in luggage and how Atypicality factors affects the luggageness of a luggage.

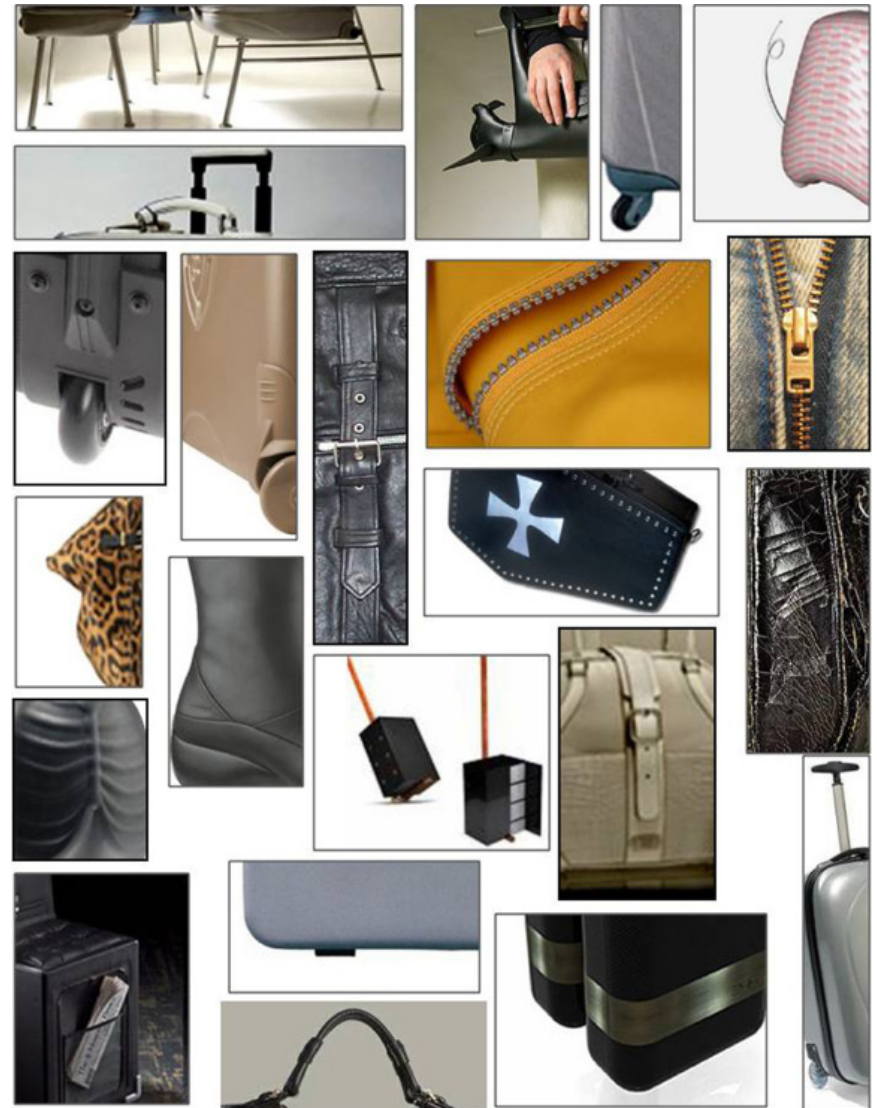
For the set objectives, second user study is to know the thoughts, experiences, liking of women of today regarding the luggage , besides research study from available literature sources & internet . Even I tried to get information about their feelings for their feminist identity. Which is very helpful to create “mood board” for the product. It drives subconsciously in mind to wards developing the product.

USER STUDY

SEMANTIC STUDY

For this study some pictures of contemporary luggage, with some similar product in terms of material, texture, components, shape etc. are taken. According to the method "Looking Through A Hole" these pictures were cropped and asked to the users, "what is this about" by showing for 3 seconds.

This test was done with 6 users and then data was compiled for analysis.



USER STUDY



Results

From the test typical elements are found which are as following.

- Polyester coil type zipper
- Shoulder strap
- Boxy shape with large round edges
- Parting line
- Inline wheel
- Conventional shaped lug supports

Pockets / zipper

Zipper puller

Trolley in tilted posture

Handle with cushion

so, these are typical elements which contribute for luggageness in luggage. Moreover Atypicality is identified as addition or changes in these typical elements with some other metaphors.

USER STUDY

SAMSONITE SHOWROOM VISIT

I visited two showroom to get the knowledge of current trend in luggage selling & purchasing , how people judge the right baggage for them, what are the available / standard sizes & colors , what attractive features are being given now a days. I observed my users (women) what features they like to have in their luggage.



Findings:

1. Physically seeing and observing things in real size and materials.
2. Polyester bags come in lower cost range and teflon coated nylon come in higher range.
3. Women ask for unique style of luggages.
4. Generally luggage come in three sizes, one is cabin luggage, and others are check in luggage. Various companies make check in luggage in different sizes but cabin luggage comes maximum in the size of 22 inch which is maximum allowable size according to TSA.
5. Company introduces a set of luggage with these bags to create family appearance in the style of the product with the personality of the owner.
6. General luggages are also introduced in colors like red, pink, purple, olive green that are liked by women, to create a market for them.

USER STUDY

USER SURVEY Questionnaire

Demographic information

1. Name
2. Place
3. Company name
4. Designation
5. Work experience
6. Salary (CTC. approx.)
 1. 2<- 5 lac
 2. 5 <- 10 lac
 3. 10 <- 20 lac
 4. More than 20 lac
7. Husband's designation (if married)
8. Work profile

Information about their feminist identity

9. What are your hobbies?
10. Role model?
11. What are your future goals?
12. What's your life philosophy?
13. Do you think India is still male dominating society?
14. If yes, why do male society dominant over female?
15. Would you like to give any message to the female community of India?

Information about their thoughts, experiences & liking regarding luggage

16. Frequency of travelling for your job/ personnel purpose
17. How much days you travel for?
18. If you are going on a business trip for 2-5 days which features you will like to have in your luggage.
 1. Hard / soft / hybrid
 2. Small size / big enough which has multiple compartments & pockets to put things separately
 3. 2 wheels (aligned) / 4 wheels (roller coasters)
 4. Leather / non leather
 5. Black colour / other colours
 6. Number lock / pad lock
 7. Multiple pockets / luggage with lesser no. of pocket & zips on front
19. Do you remember any happening related to luggage?
20. Any Suggestion for this coming luggage ?

Interviews

Almost 15 working women were interviewed who are from different fields of jobs and different places . Interviews were conducted with the set of Questions. Interviews were very randomly done , depended on the situation. Some cross questions were asked at required situation. All users didn't give answers for all questions.

USER STUDY

USER SURVEY Interviews

Let's have some findings from this survey in form of bunch of answers of users who are from 27 – 40 yrs age group , who are having annual salary between 5-20 lac INR . And who have work experiences of minimum 2 years .

male dominance
in urban, it is not ... for India, I don't know
No
yes in some ways, but in urban it is not so
yes
no
short of

like / don't like
love to have walk, travelling, to be very organised, branded stuff, simple design, eco friendly (fab india)
I always like to carry a hand bag, (fashion)
nature, good mixture of western & Indian, don't like to be alone
I want single piece of bag not like one tote, one hand bag, and one check in bag.
I like to carry no of shoes of diff. colours for diff. dresses
I would never like to keep my hand bag away, because - money, i-card, passport etc.
like to have eye liner, mascara, perfume, sun'scream lotion, earrings of diff. colours, lip glows etc, don't like, every time I need to call a guy to help in picking the luggage
back pain while I picked up my heavy luggage from ground to put it into luggage cabin

happening related to luggage
we carried very heavy luggage with its handle without seeing wheels and trolley
wheels got stuck with the stairs of escalator
she didn't know about TSA lock, she got her bag without zipper puller

Suggestions
hybrid, problem in walking, Ground clearance should be adjustable
should be indianess in the product
should be single, big, attractive, easy to carry
it should be like, you can put your hand bag on the top of the luggage
it should be like, you can put your hand bag on the top of the luggage
there should be separate pack for under garments, it should not be embarrassing to open the bag among the people
weight, luggage should look very smart

Most liking features.....								
Hard / soft / hybrid	H	Hyb	soft	Hyb	Hyb	soft	Hyb	H
Small size / big enough which has multiple compartments & pockets to put things separately	big	big	big	big	big	big	big	big
2 wheels (aligned) / 4 wheels (roller coasters)	4wh	2wh	2wh	2wh	4wh	4wh	4wh	4wh
Leather / Non Leather	N L	N L	N L	N L	N L	N L	N L	N L
Black colour / other colours	bright	earthy, red	bright, tan	peach	bright	bright	bright	bright
Number lock / pad lock	N lock	N lock	key	what ever	N lock		key	N lock
Multiple pockets / luggage with lesser no. of pocket & zips on front	multi	less	multi					multi

USER STUDY

USER SURVEY Examine

Features selected by Users

1. Hybrid
2. Big enough which has multiple compartments to put things separately
3. 2 wheels (aligned) / 4 wheels (roller coasters)
4. Non leather (Nylon fabric)
5. Other colours (Red, Tan, purple, bright)
6. Number lock / pad lock (both can be used)
7. Luggage with lesser no. of pocket & zips on front (front should not be cluttered)
13. Separate compartment for under garments
14. Luggage should look very smart
15. Women like
 1. to be very organised
 2. branded stuff
 3. simple design
16. Every time I need to call a guy to help in picking the heavy luggage from ground to put it into luggage compartment.
17. I like to carry no of shoes of diff. colours for diff. dresses

Need /problems to be solved

9. Problem in walking
10. Ground clearance should be adjustable
11. Should be INDIANness in the product.
12. Should be
 1. Single
 2. Big
 3. Attractive
 4. Easy to carry

USER STUDY

USER SURVEY

Decided Features/ Components to keep In Product



TSA LOCK

<http://www.travelxtras.com/travel-sentry-tsa-usa-locks.htm>



Wet pack

<http://www.rei.com/product/641977>



Nylon mesh envelopes

<http://www.rei.com/product/641976>



Shoes pack

<http://www.rohan.co.uk/ProductDetails.aspx?pid=00671&cid=AccessoriesTravelEssentials&language=en-GB>



Toiletry-pouch

sachetproducts.com/?page_id=19

Wet-packs

Toiletry-pouch (according to TSA norms)

Shoes-pack (for two or more no. of footwear)

Nylon mesh envelopes (various sizes include rigid folding boards)

Undergarments pack Separate envelope)

Vanity-box

Laptop (with all accessories)

Wheels (2 wheels inline/ 4 caster wheels)

Trolley

Telescopic handle

Lug (in case of 2 wheels inline)

Zipper

Lock (TSA lock)

IDEATION

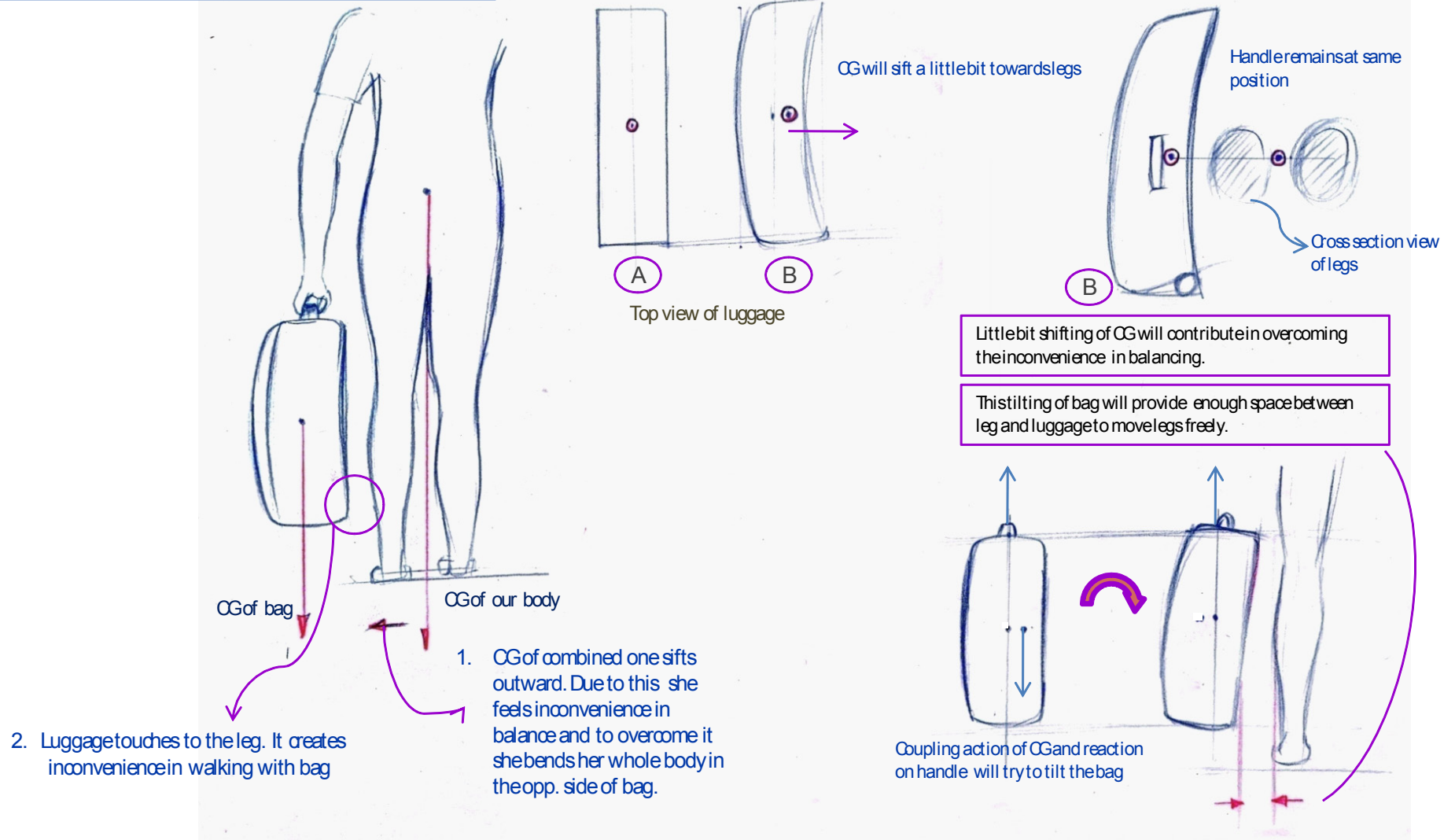
IDEA SKETCHING

After deciding features & components to incorporate in the solution, so called “final product”, direction is clear now in which ideation will be done to solve the found issues from whole research.

IDEATION

IDEA SKETCHING

IDEA: Shifting the CG of luggage towards us

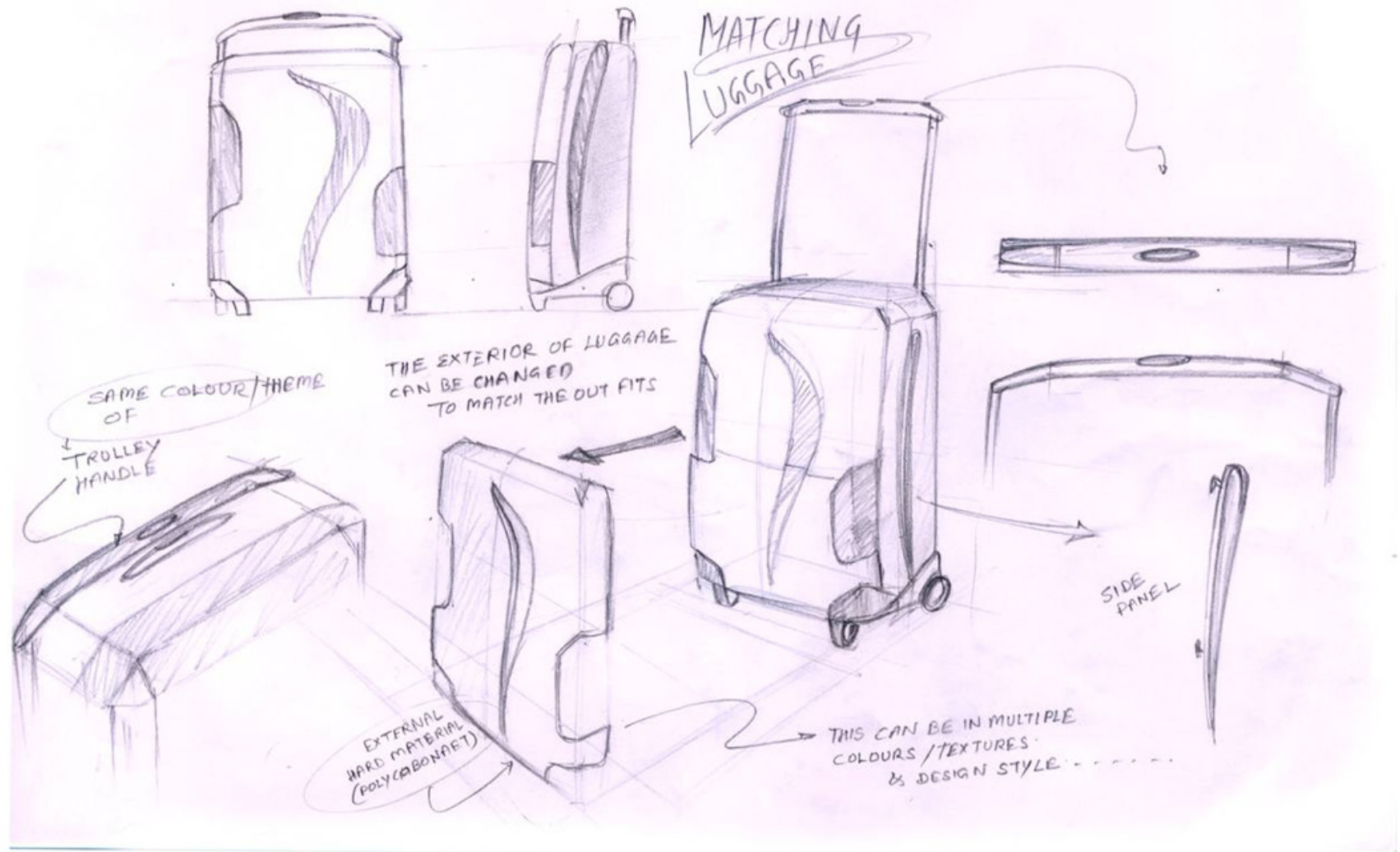


IDEATION

IDEA SKETCHING

IDEA: Changeable front & side panel and trolley handle

Stylish luggage needs to be dressed up...



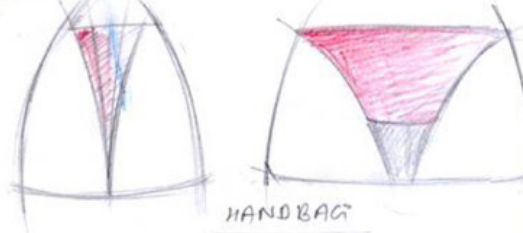
IDEATION

IDEA SKETCHING

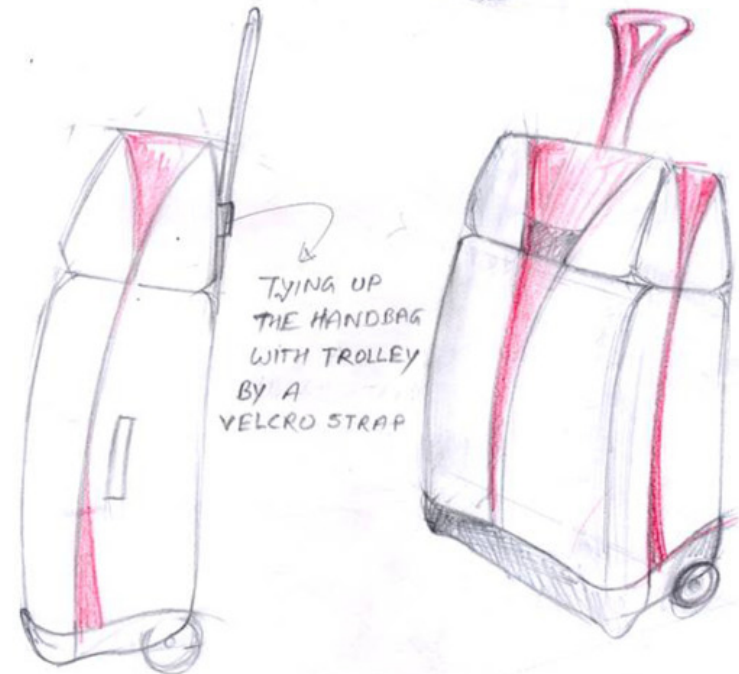
IDEA 1: Concepts based on the styling of hand bag



MOSTLY WOMEN KEEP THEIR HANDBAG
IN THEIR HAND, DURING SITTING IN AEROPLANE



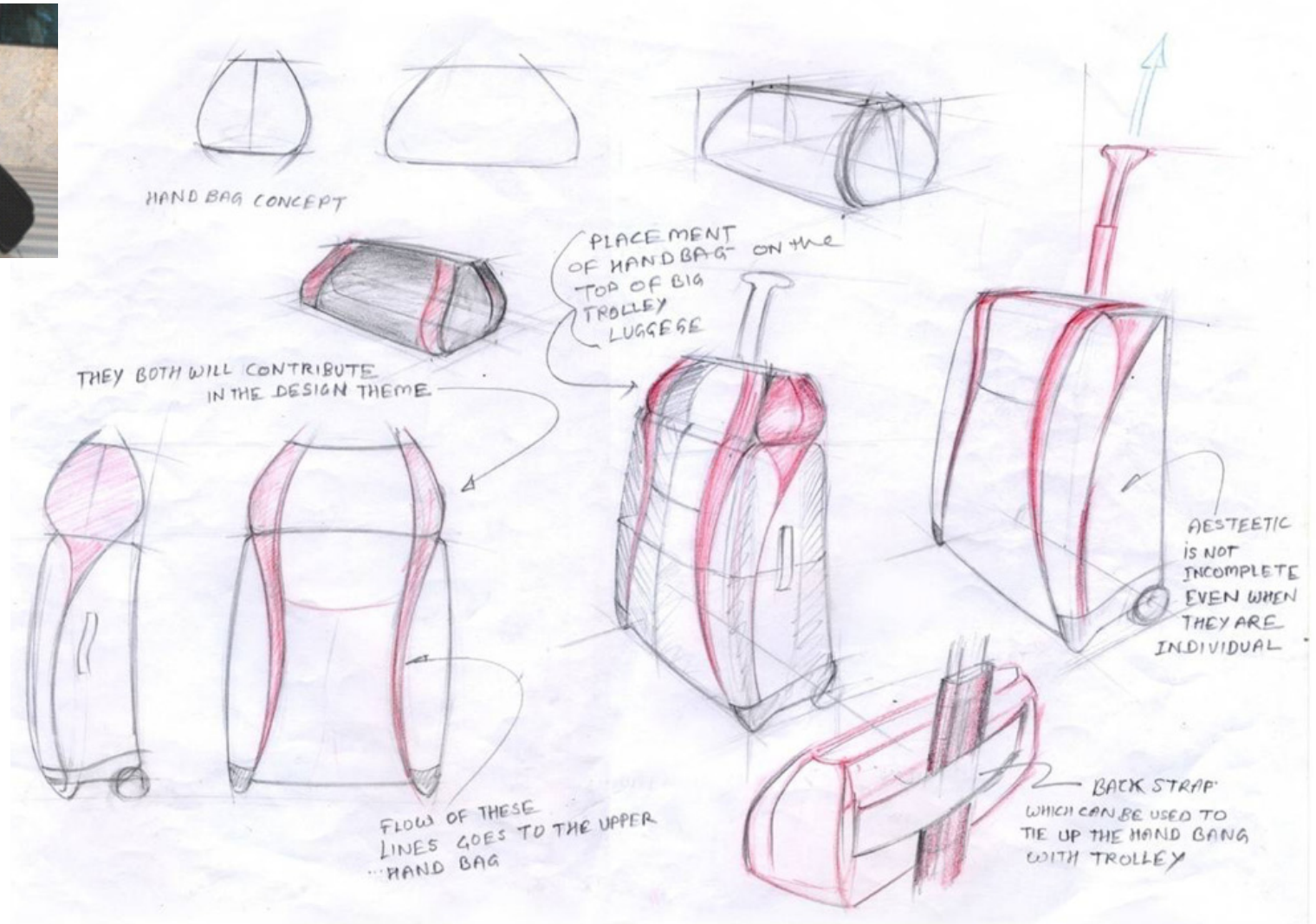
HANDBAG
AS A PART
OF WHOLE BODY
OF LUGGAGE



IDEATION

IDEA SKETCHING

IDEA 2: Concepts based on the styling of hand bag



IDEATION

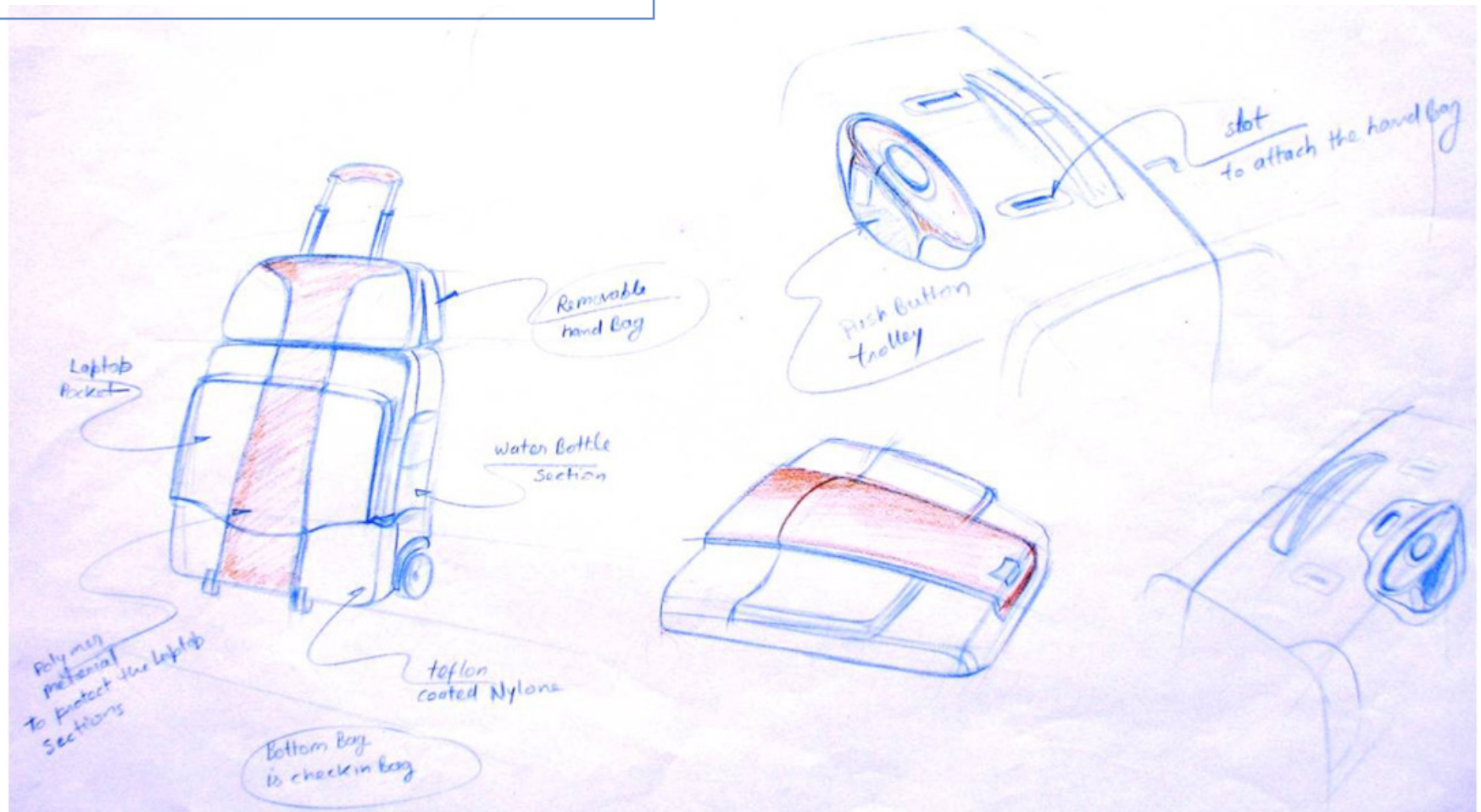
IDEA SKETCHING

IDEA:

Trolley luggage with hand bag

Locating & clamping hand bag on the top of lower one

- Concepts based on the implementation of hard material
- Attachment of hand bag over the top of trolley bag



IDEATION

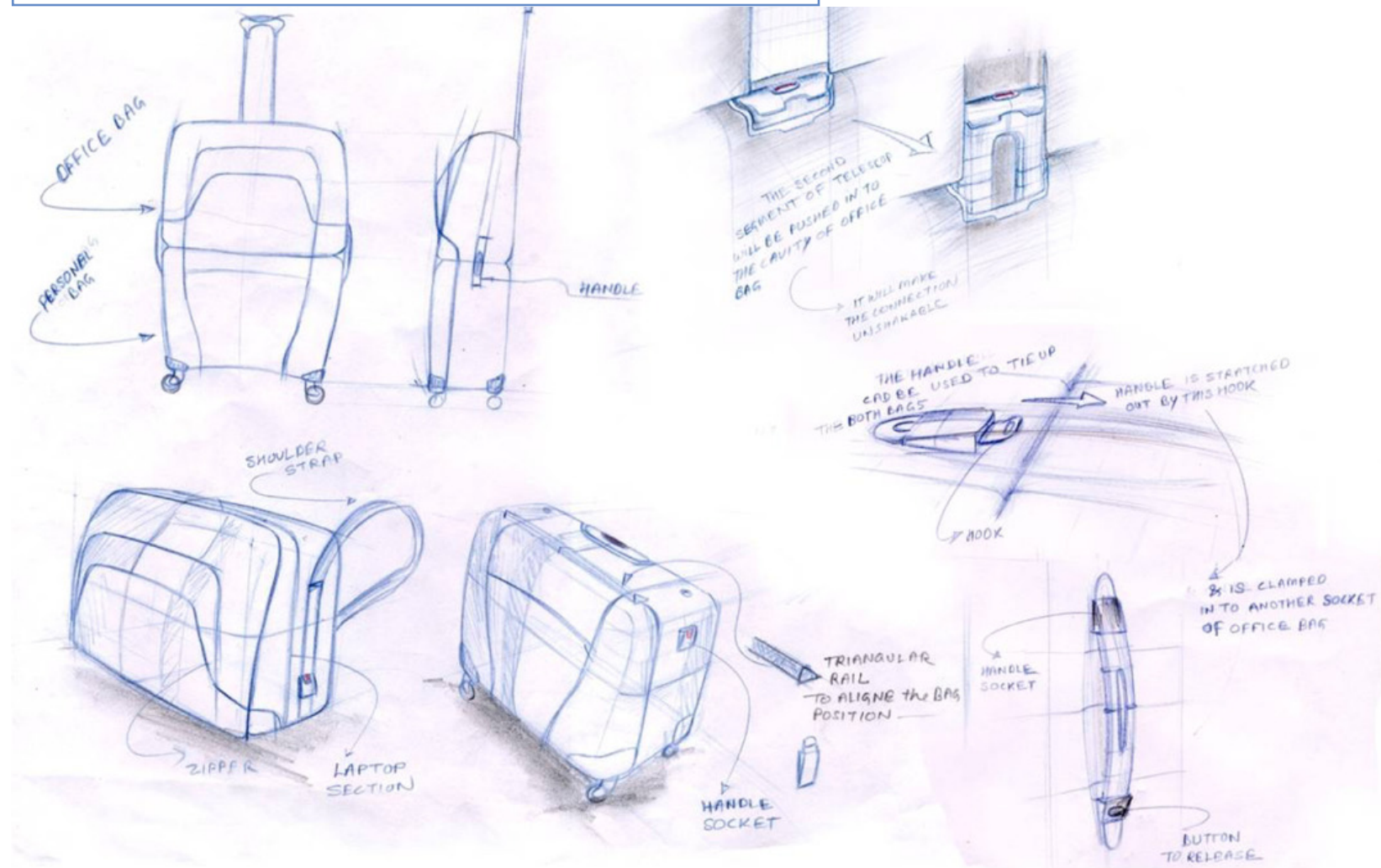
IDEA SKETCHING

IDEA 1:

Split luggage

Trolley telescope and handle can be used to attach both the part

- Many women feel very heavy about their luggage during the travelling.
- Even the luggage size can not be adjusted for the journey of couple of days and journey for a week.



IDEATION

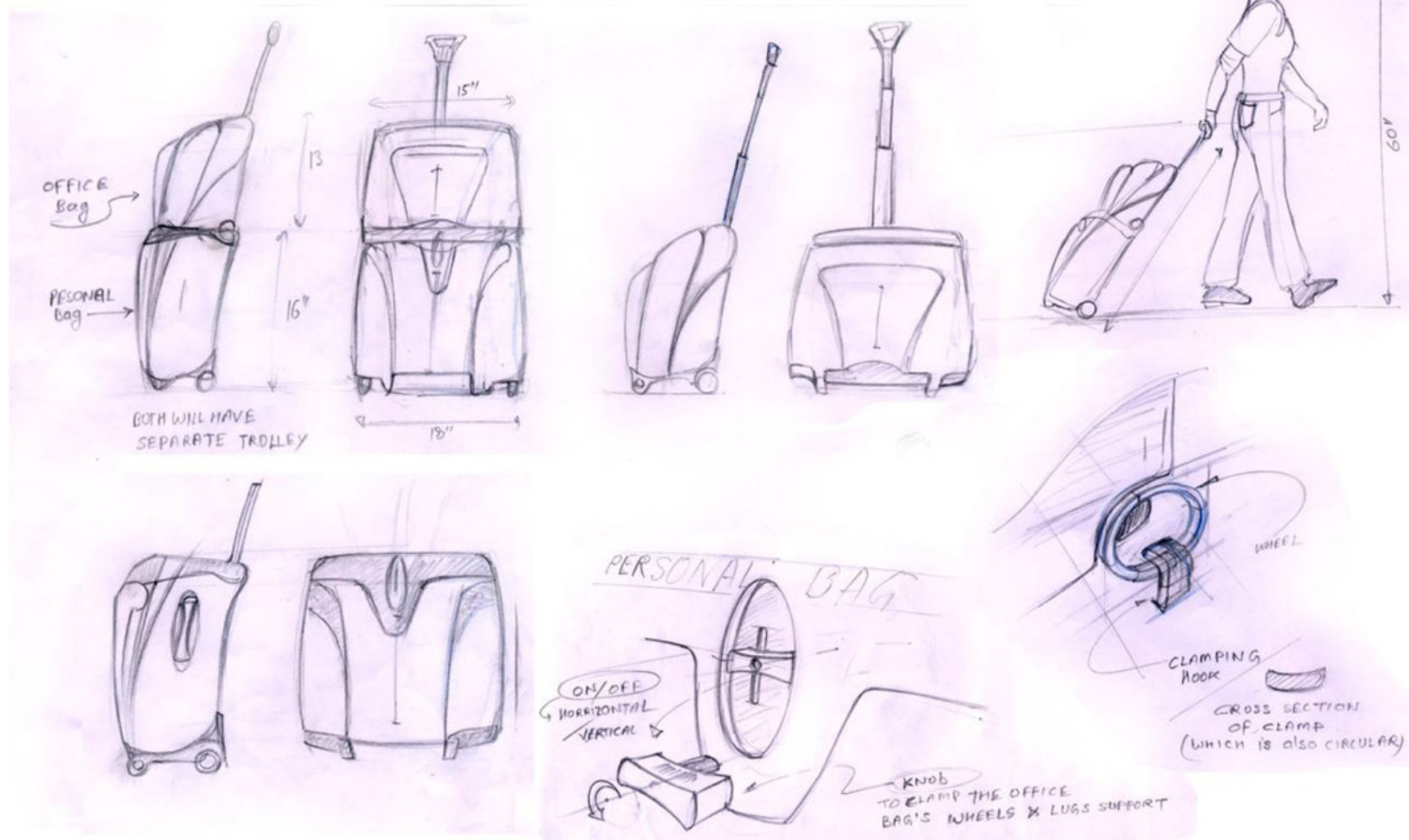
IDEA SKETCHING

IDEA 2:

Split luggage

Locating & clamping upper bag on the top of lower one

- Many women feel very heavy about their luggage during the travelling.
- Even the luggage size can not be adjusted for the journey of couple of days and journey for a week.

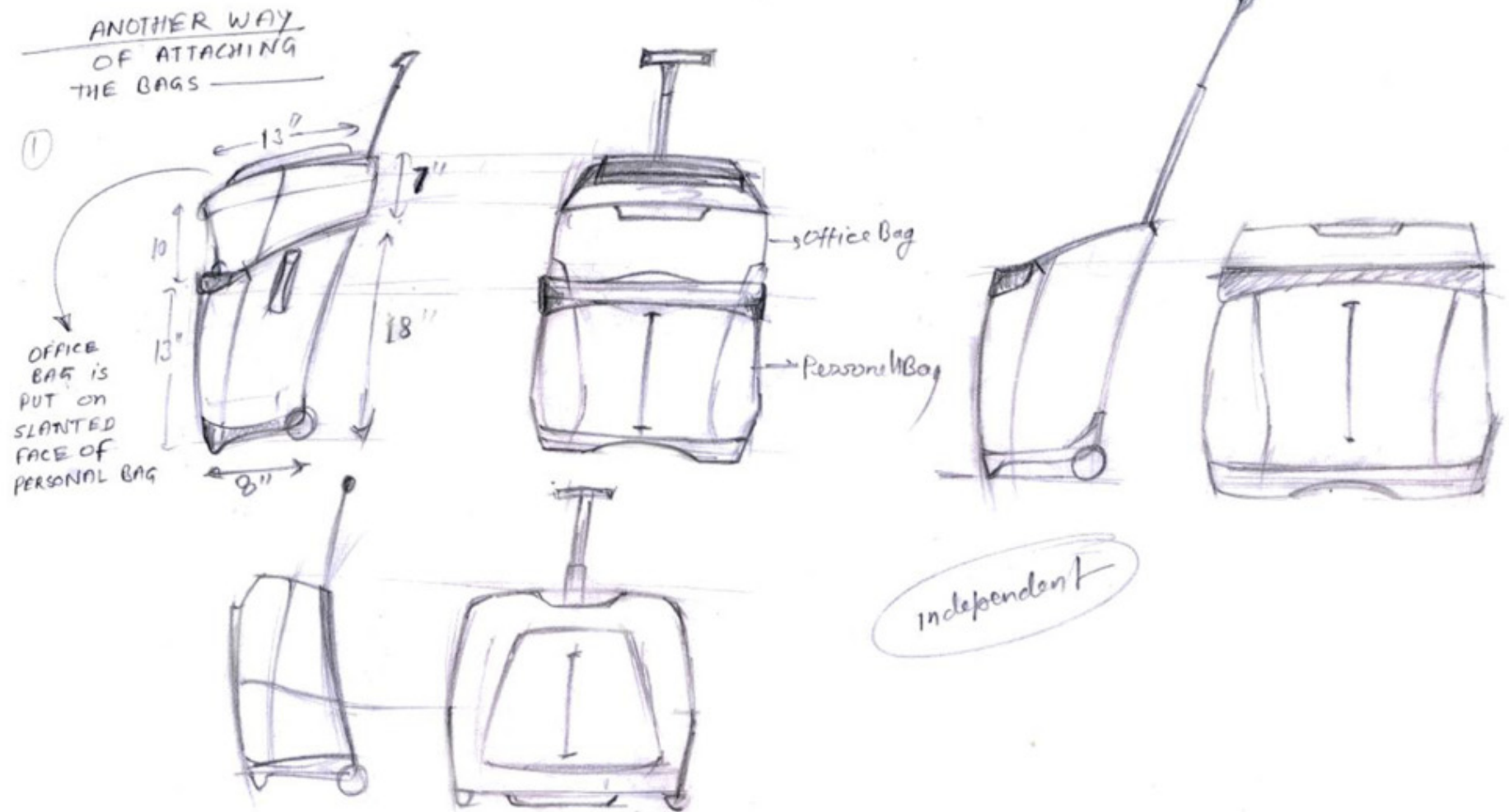


IDEATION

IDEA SKETCHING

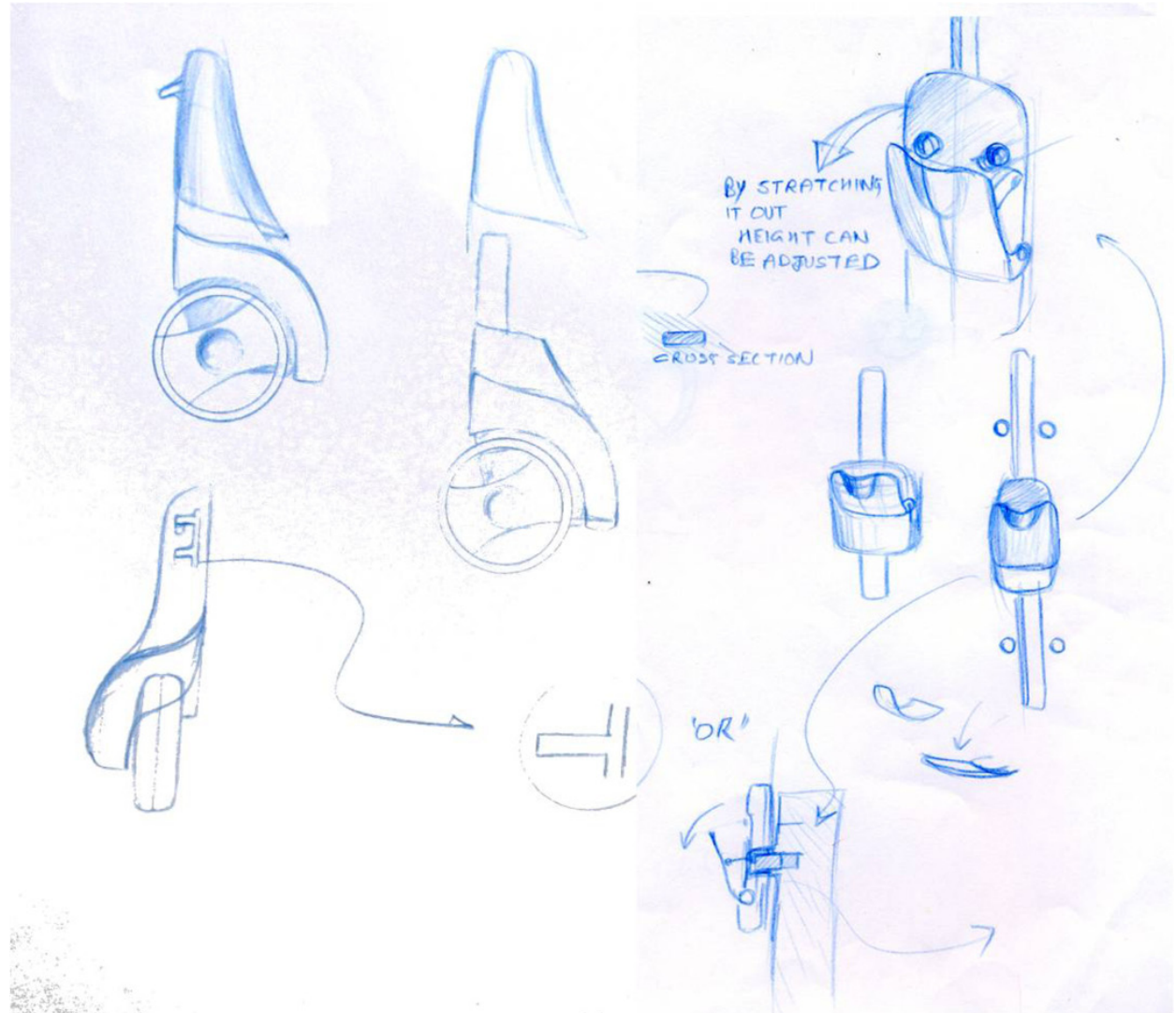
IDEA 3:
Split luggage
Office bag is put on slanted face of personal bag

- Many women feel very heavy about their luggage during the travelling.
- Even the luggage size can not be adjusted for the journey of couple of days and journey for a week.



IDEA SKETCHING

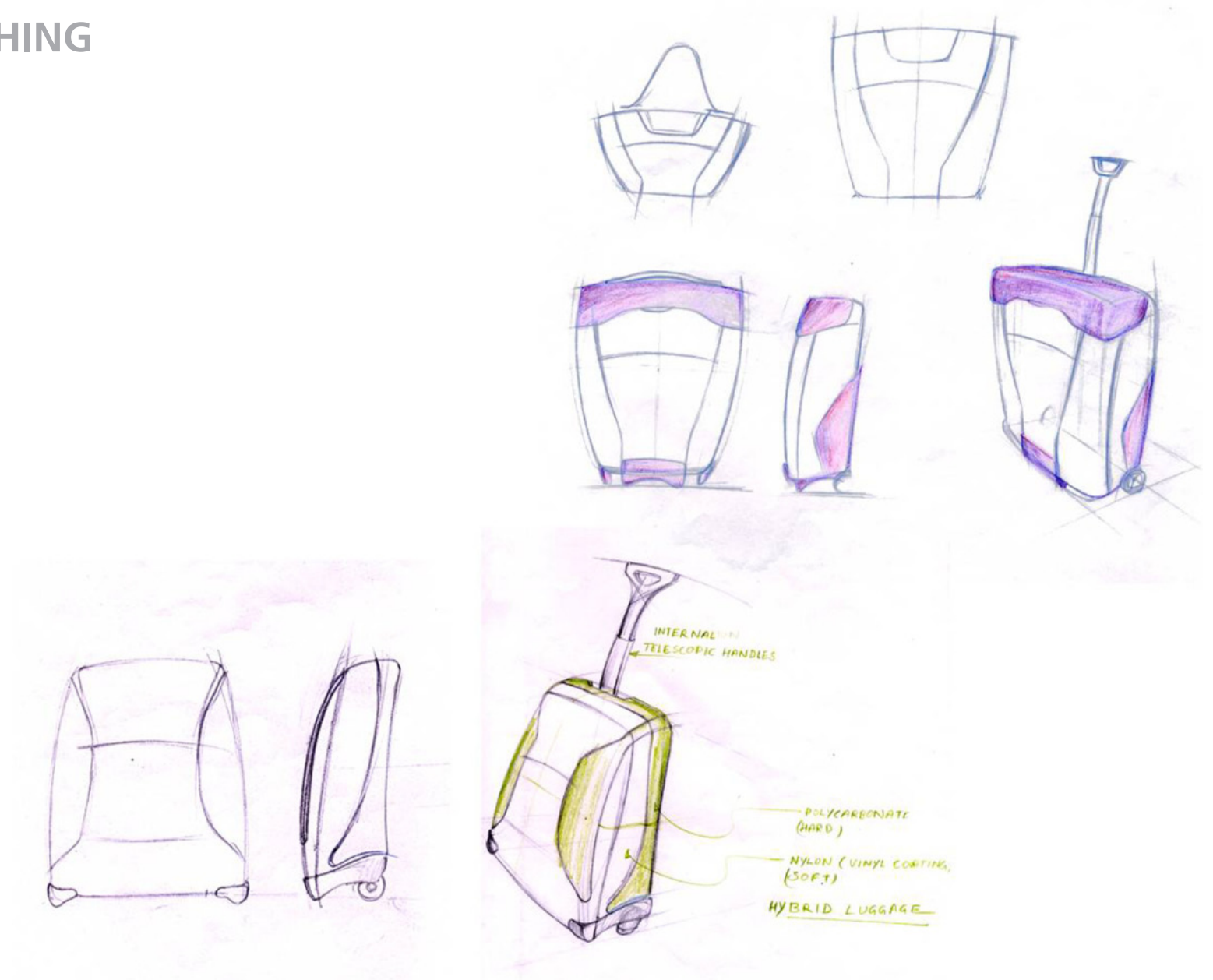
IDEA: Adjustable ground clearance



IDEATION

IDEA SKETCHING

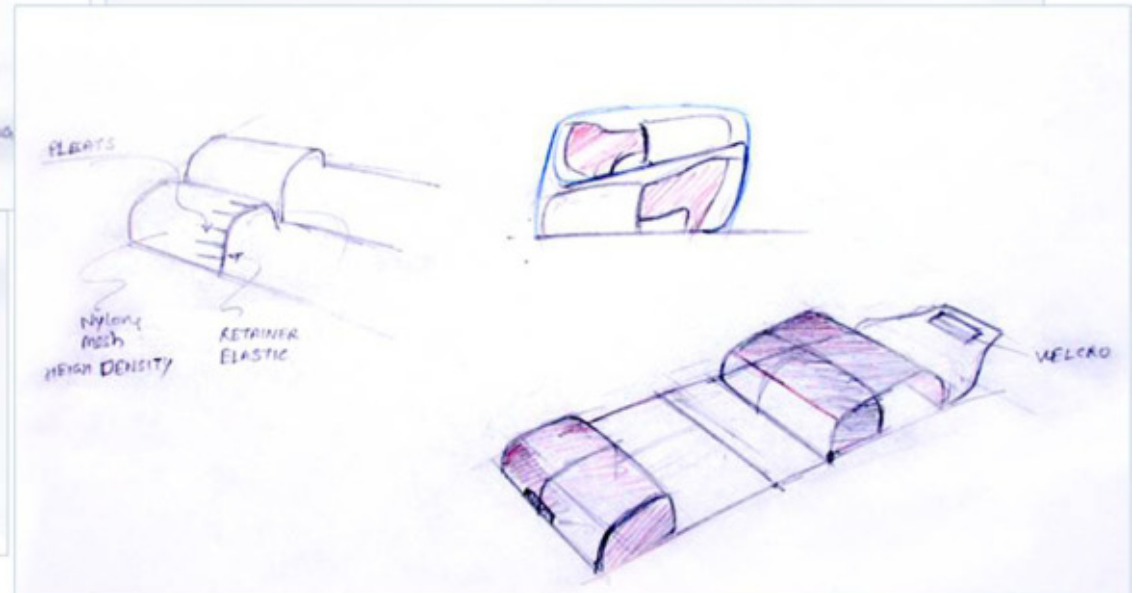
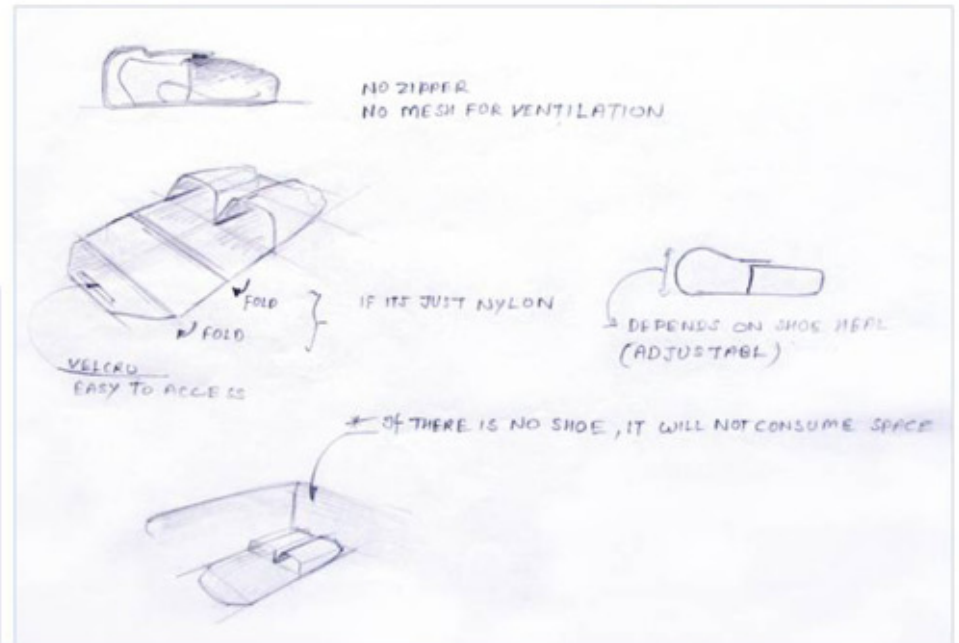
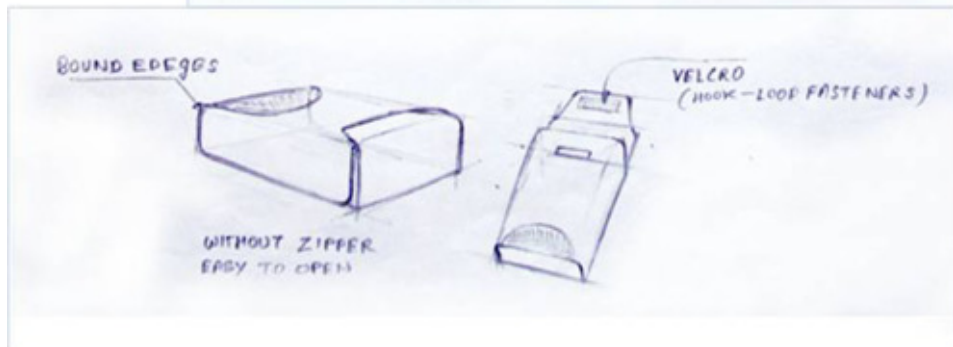
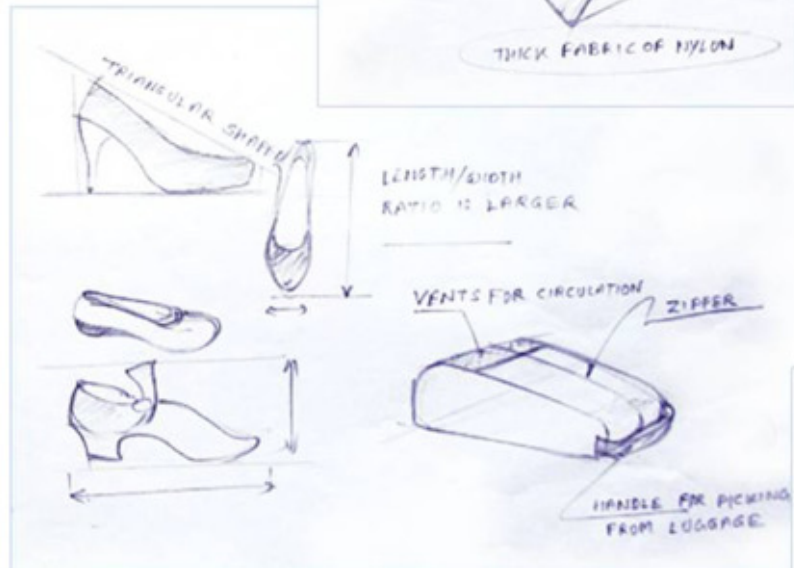
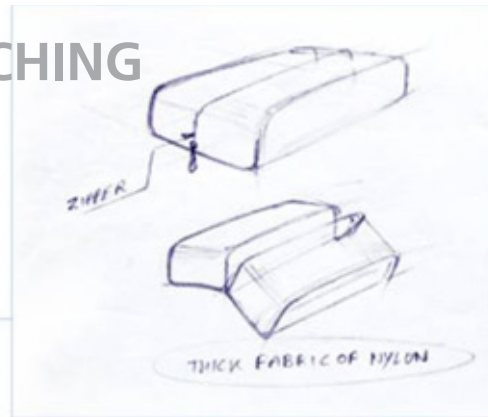
Some more Ideas



IDEATION

IDEA SKETCHING

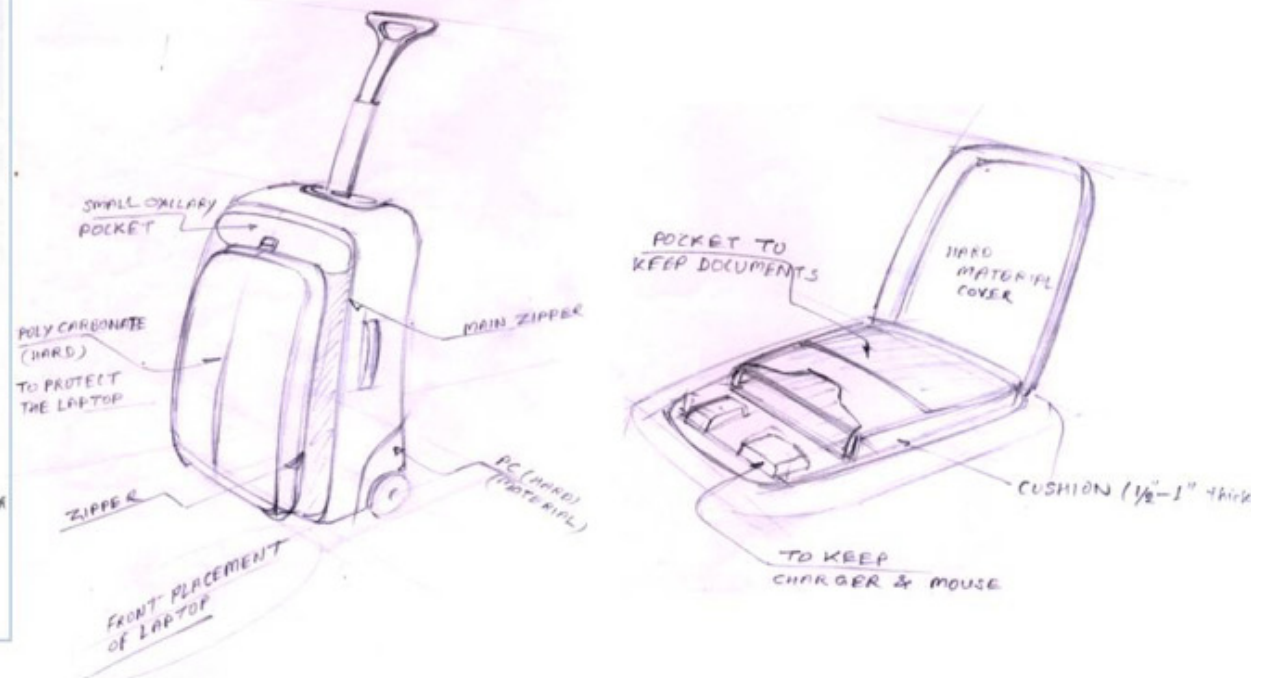
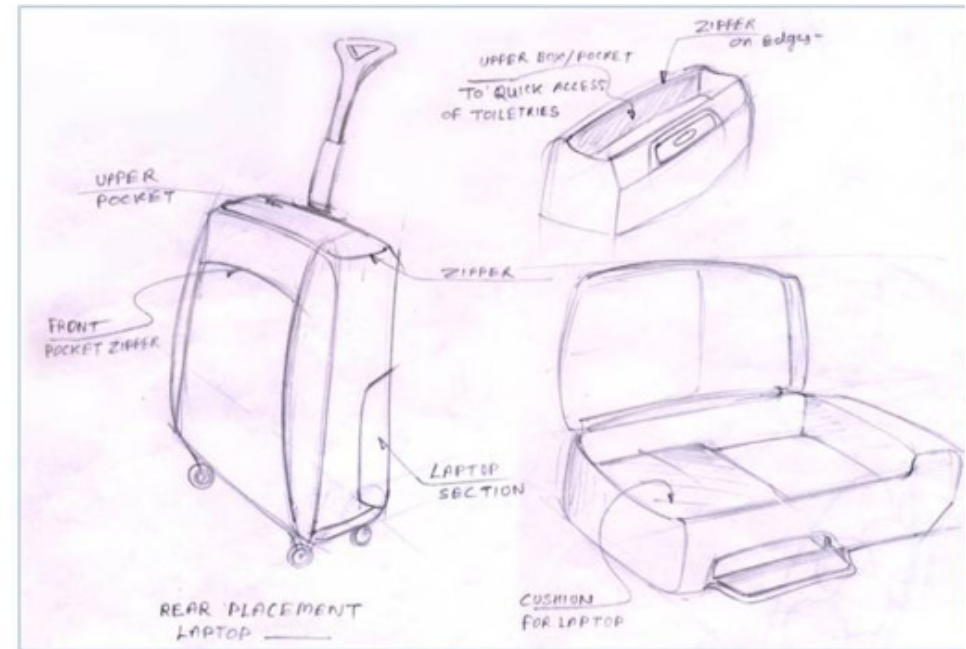
Shoe-pack



IDEATION

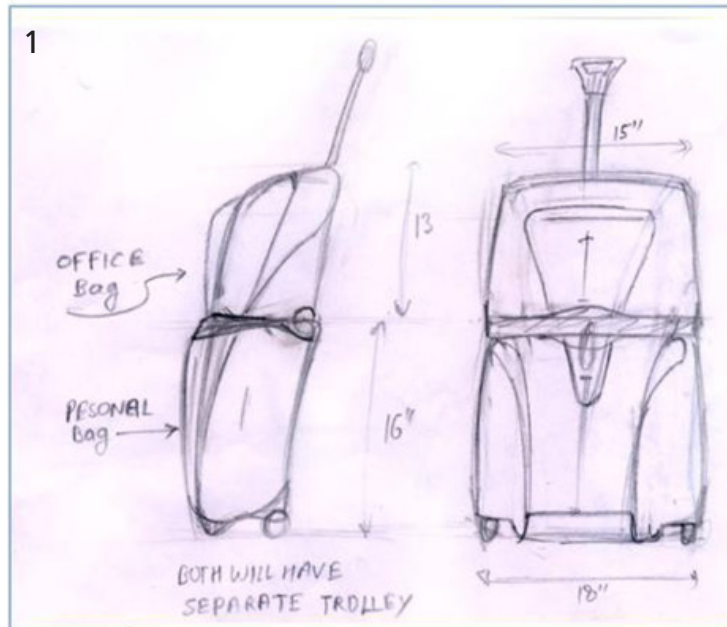
IDEA SKETCHING

Shoe-pack

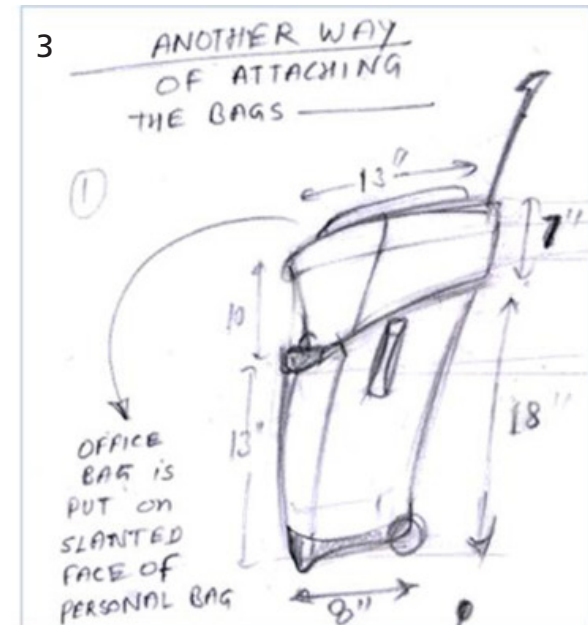


IDEATION

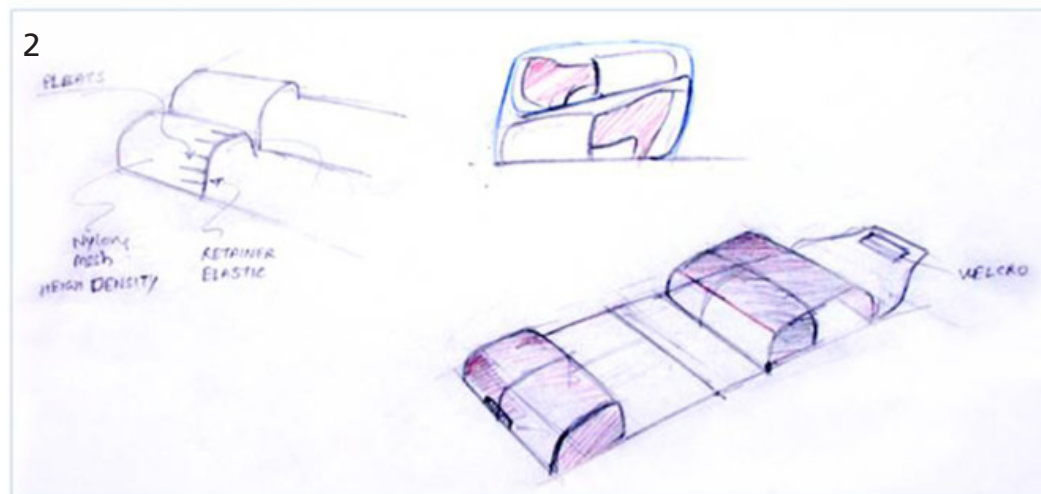
SELECTED IDEAS



Split luggage
Locating & clamping upper bag on the top of lower one



Split luggage
Office bag is put on slanted face of personal bag



Collapsible shoes pack
For 2 pair of shoes

FEATURES AND COMPONENTS

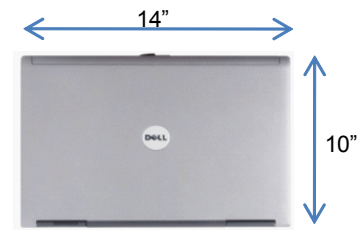
- Wet-packs
- Toiletry-pouch (according to TSA norms)
- Shoes-pack (for two or more no. of footwear)
- Nylon mesh envelopes (various sizes include rigid folding boards)
- Undergarments pack (separate envelope)
- Vanity-box
- Laptop (15.4 " wide screen with all accessories)
- Wheels (2 wheels inline / 4 caster wheels)
- Trolley
- Telescopic handle
- Lug (in case of 2 wheels inline)
- Zipper
- Lock (TSA lock)

FINAL PRODUCT BRIEF

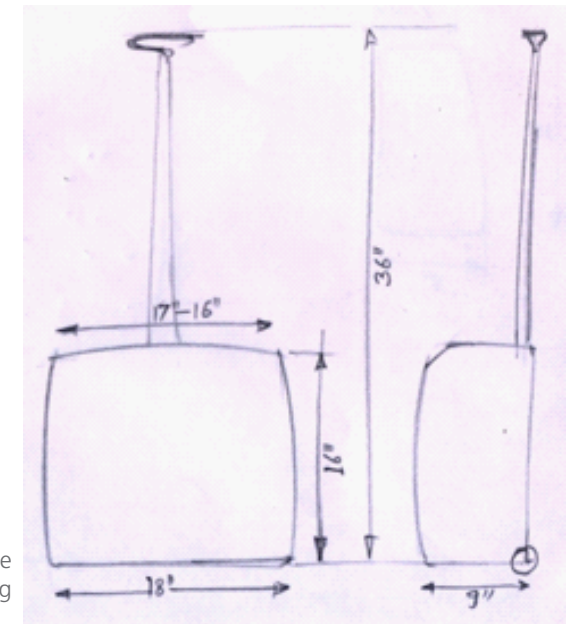
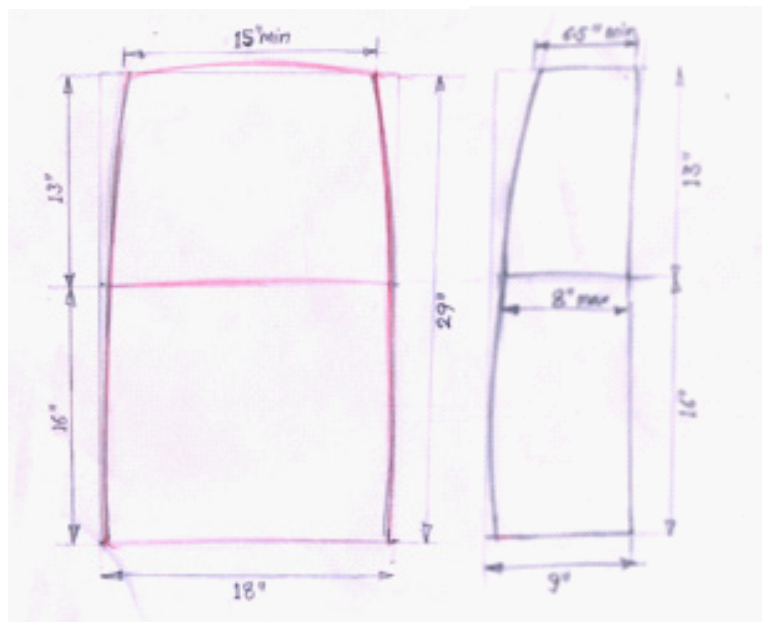
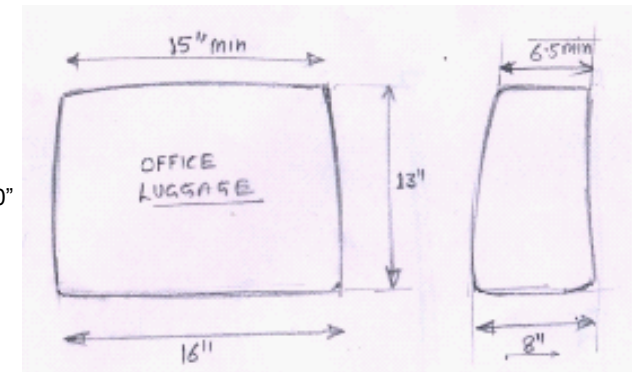
DIMENSIONS

Generally luggage come in three sizes, one is cabin luggage, and others are check in luggage. Women need bigger luggage because they carry more items compared to men. For example for any occasion they wear a particular color of dress with matching shoes and accessories.

Therefore the middle size can be considered a suitable size in terms of their need and ease to carry. Samsonite provides 29" upright as a middle size luggage.



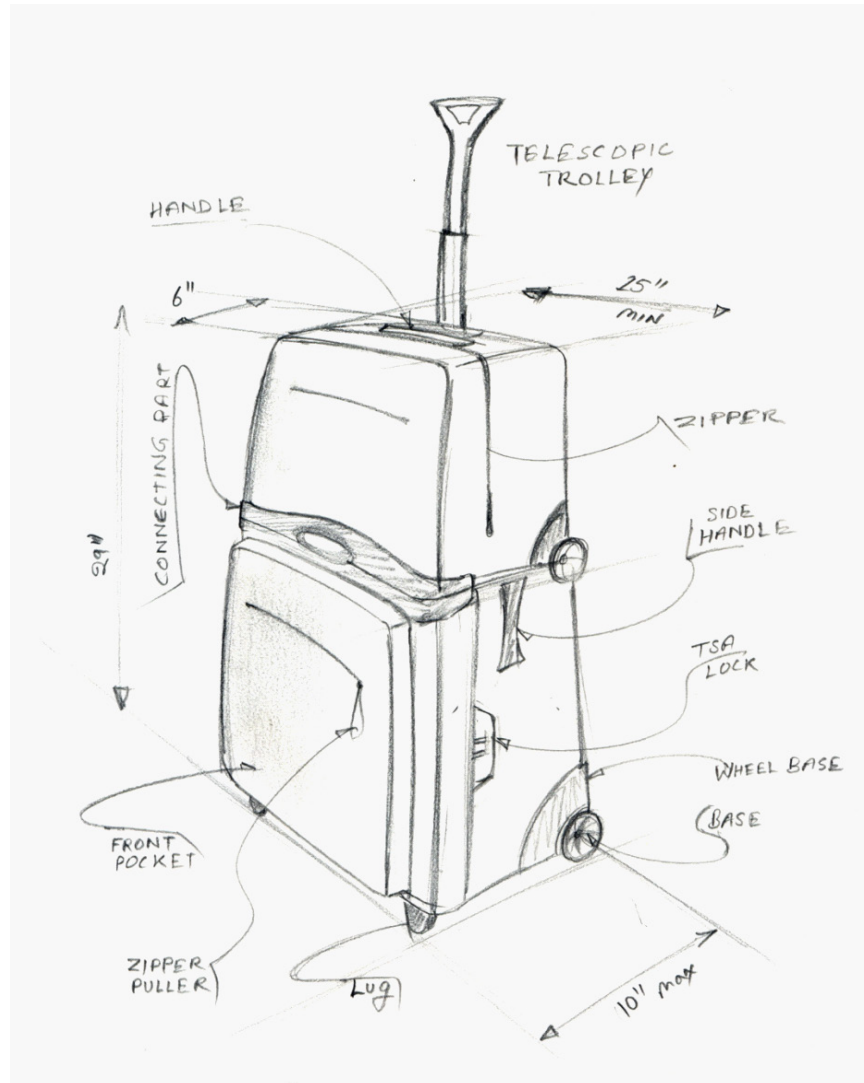
15.4" wide screen Laptop is popular among people



36 inch Height of trolley handle provide the ease to tilt it for carrying

FINAL PRODUCT BRIEF

BASIC STRUCTURE



Testing of size of luggage with references



Left one is 24" Upright of Samsonite
Right is 29" Upright combined



29" Upright combined one with average height of lady (5 feet)



16" General travel luggage with average height of lady (5 feet)



13" Office luggage with average height of lady (5 feet)

USABILITY CONSIDERATION

1) At Check-in counter

How both parts of luggage are detached at the time of check-in at check-in counter. When one gives the second bag for check-in, she keeps other along with him.

2) At Conveyer belt

As she reaches her destination, how she combines both parts of the luggage. The interaction of combining both should be easy.

3) On the staircase

The luggage will be moved with the help of side handle on the staircase.

4) As a product for working women

Luggage should not only have features that fulfill the requirement of a working women who travels frequently, but it should look feminine, sleek with modern look.

5) As a companion

When walking with luggage, it should look elegant and aesthetically beautiful with the female.

FORM

IMAGE BOARD Feminine

The design features of female products are indicated by soft and smooth curved lines. The products are communicated by curvy lines that look slender in terms of detail. The emphasis on the edges is defined thin to represent the subtleness in form. The design of their products is flowy with patterns and ornamentation. The overall appeal is tender and associated with colors like purple, pink, blue etc.



FORM

IMAGE BOARD Sleekness

The design involves clear lines that are extremely thin in terms of form and proportion. The feel of the product is made light through the details. No ornamentation is found. The elements are less and more precise in terms of details. The graphics are not bold or big. The colors used are very subtle and mild.



FORM

IMAGE BOARD Elegance

Elegance is the quality of neatness and ingenious simplicity in the solution of a problem.

A beautiful juxtaposition of hard and soft, hot and cold, which perfectly represents our search for buried sources of tremendous heat in heavenly bodies allowable.



FORM

CONCEPT GENERATION

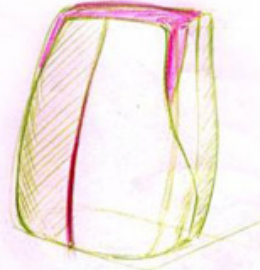
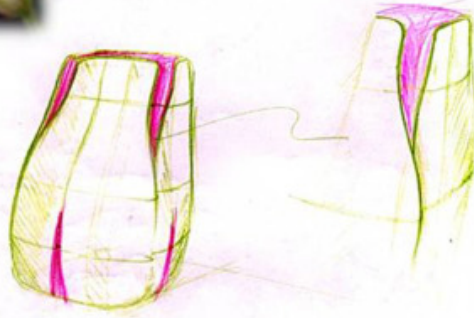
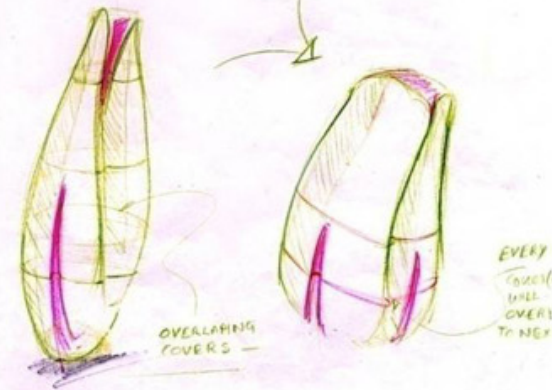
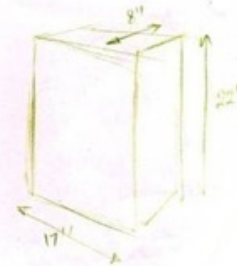
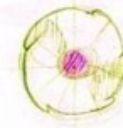
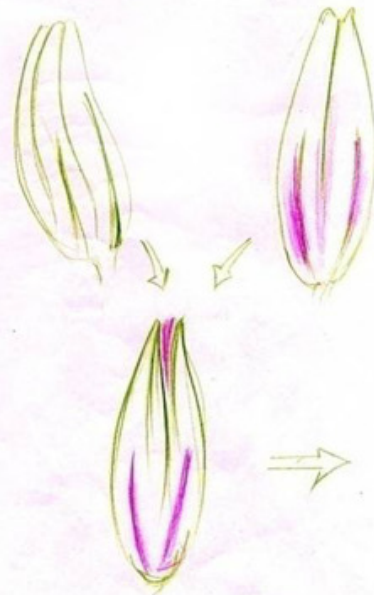
CONCEPT 1: CARING ENVELOPE



Lily Bud



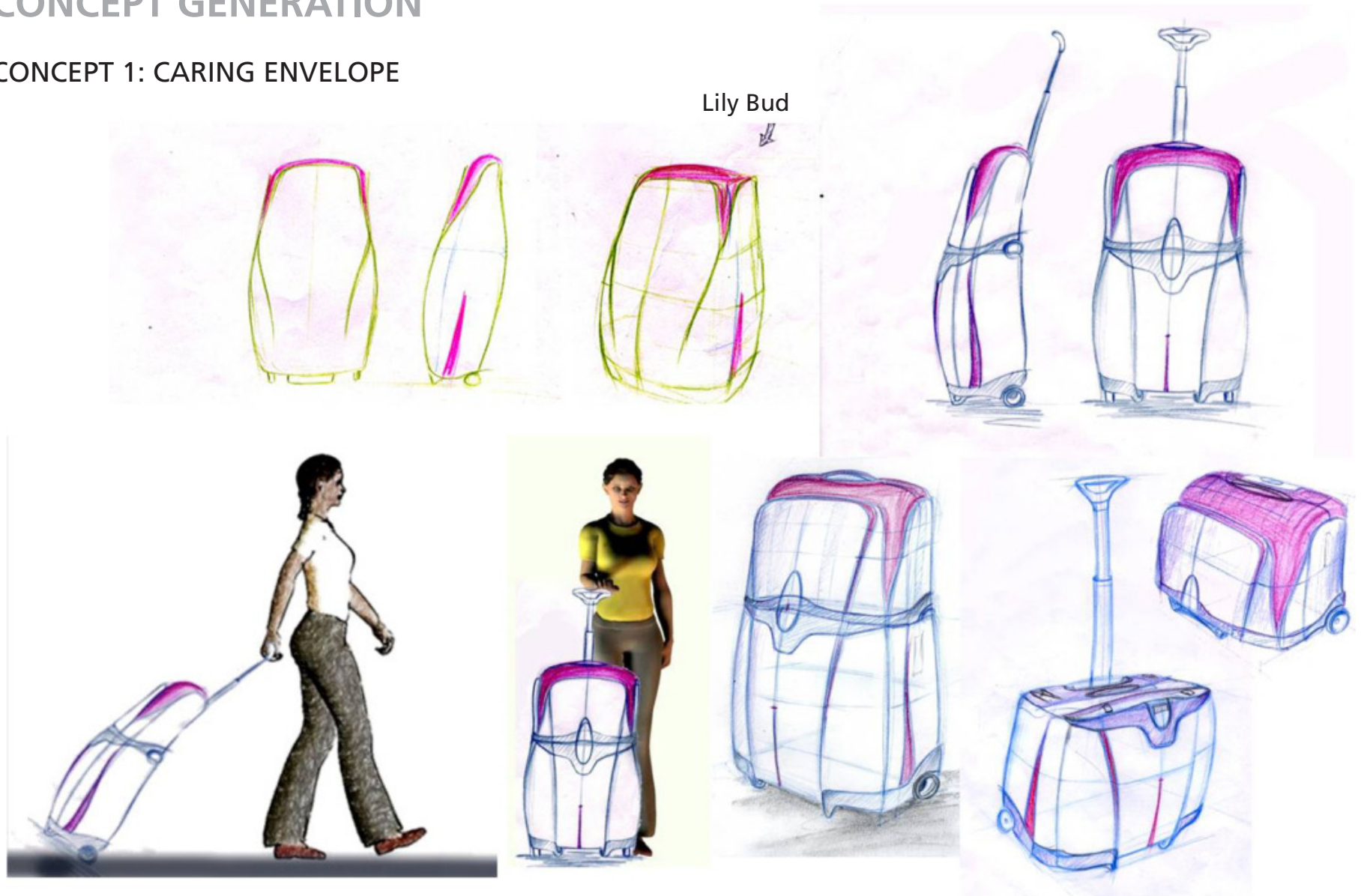
SCALES OF BUD (caring Envelop)



FORM

CONCEPT GENERATION

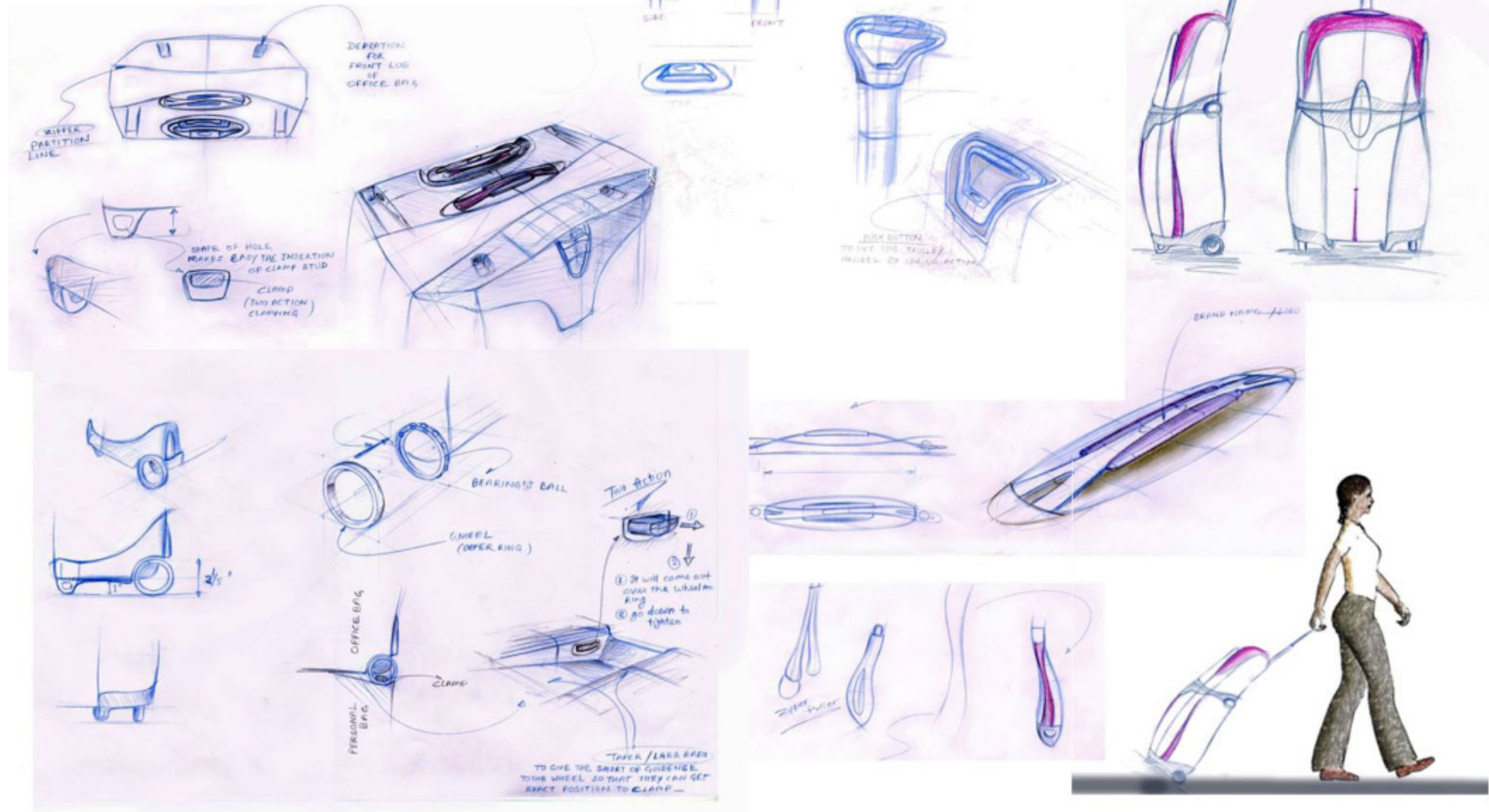
CONCEPT 1: CARING ENVELOPE



FORM

CONCEPT GENERATION

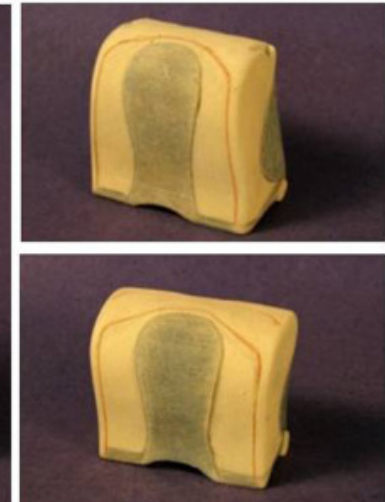
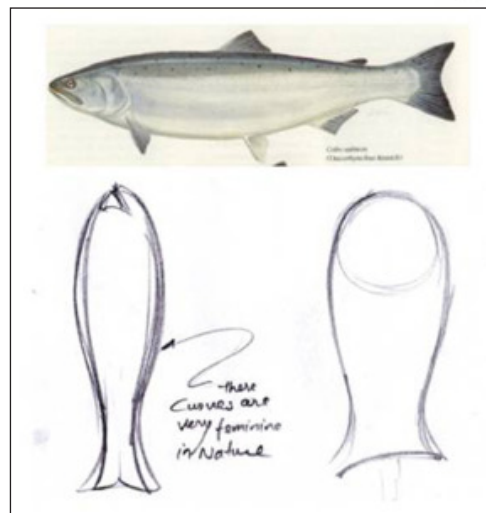
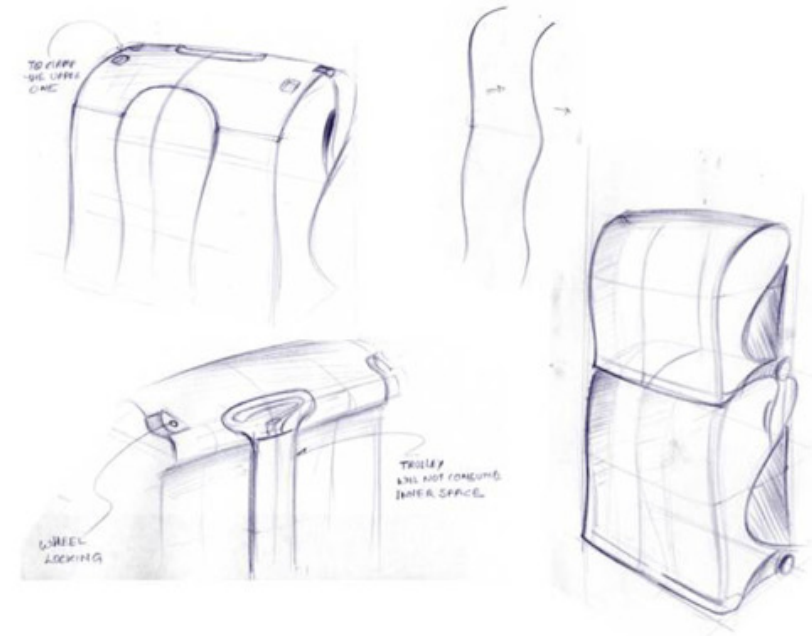
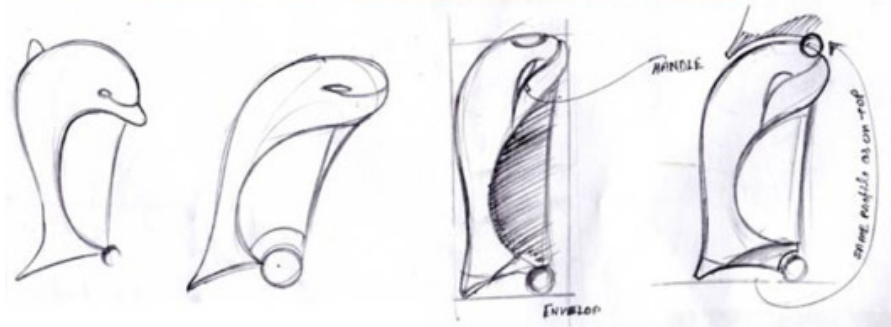
CONCEPT 1: CARING ENVELOPE



FORM

CONCEPT GENERATION

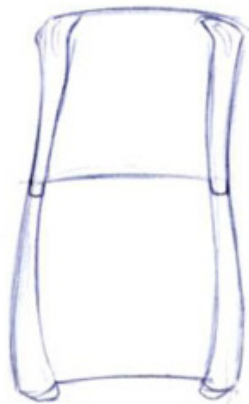
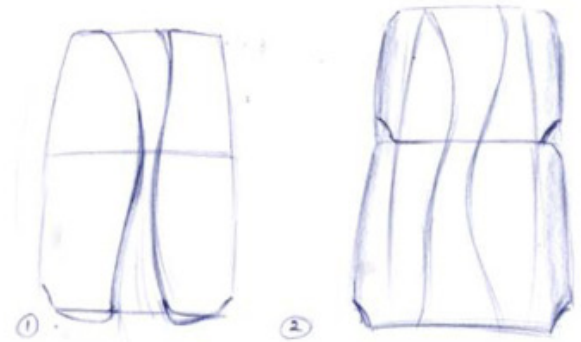
CONCEPT 2



FORM

CONCEPT GENERATION

CONCEPT 3



FORM

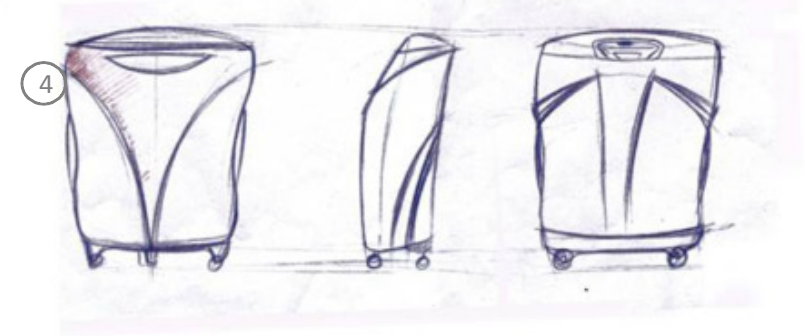
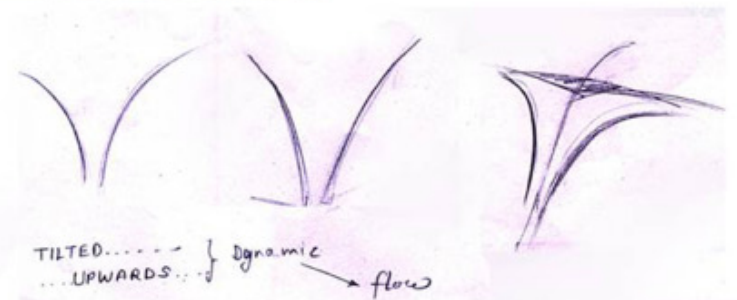
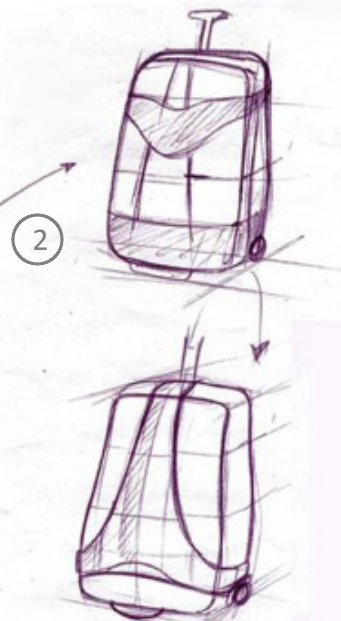
CONCEPT GENERATION

CONCEPT 4

INDEPENDENT WOMAN



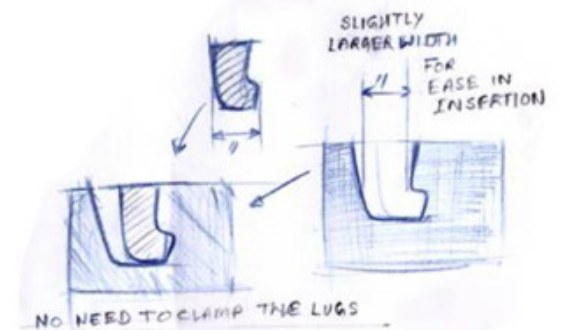
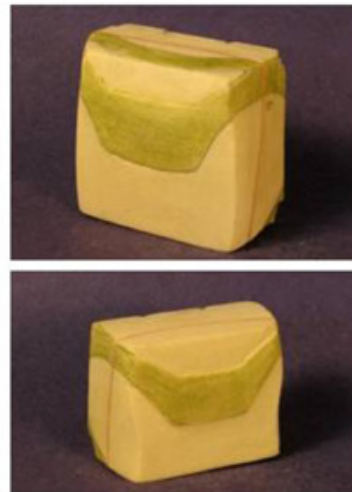
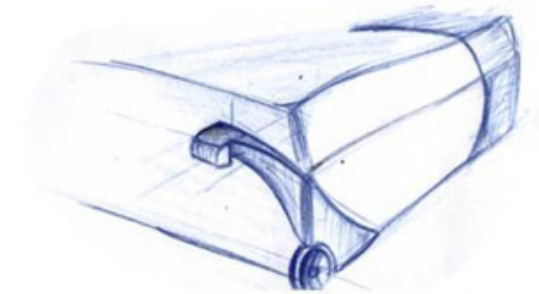
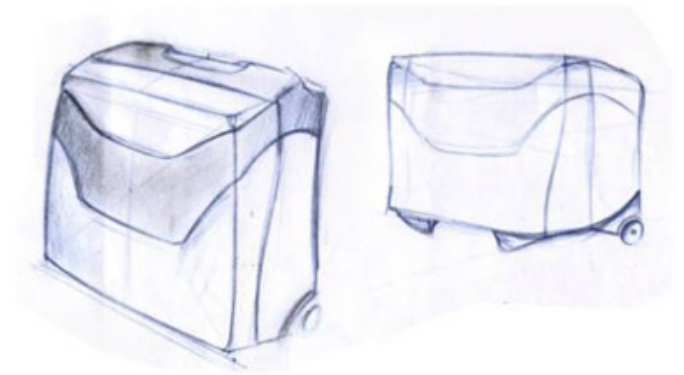
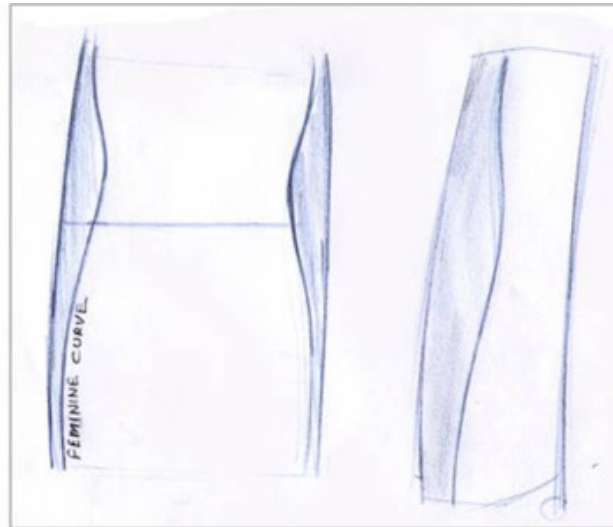
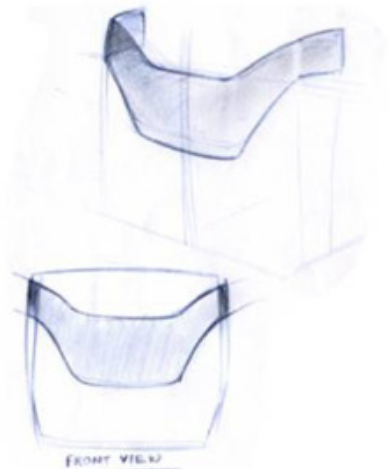
OPTIONS



FORM

CONCEPT GENERATION

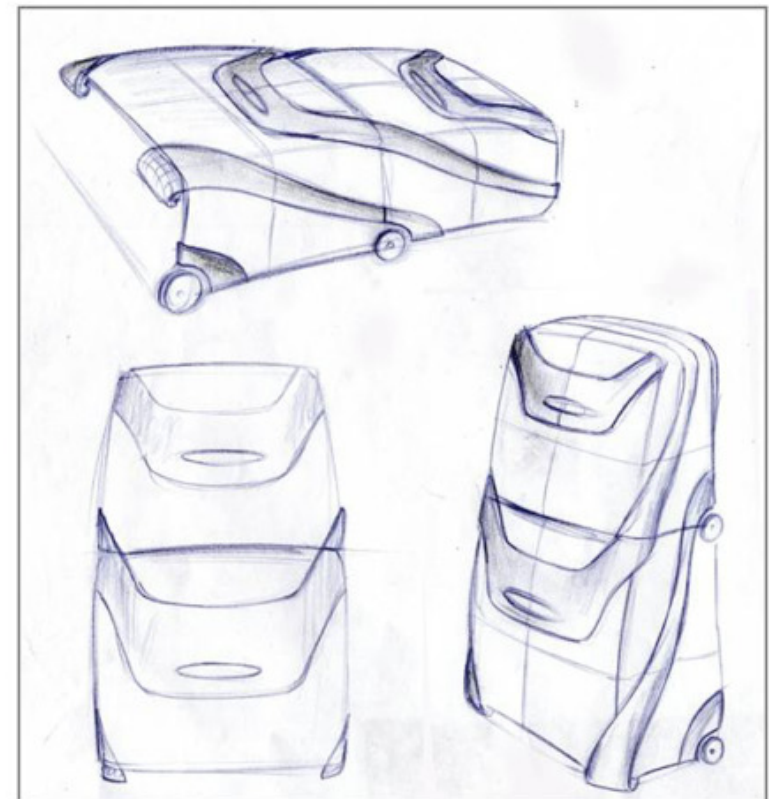
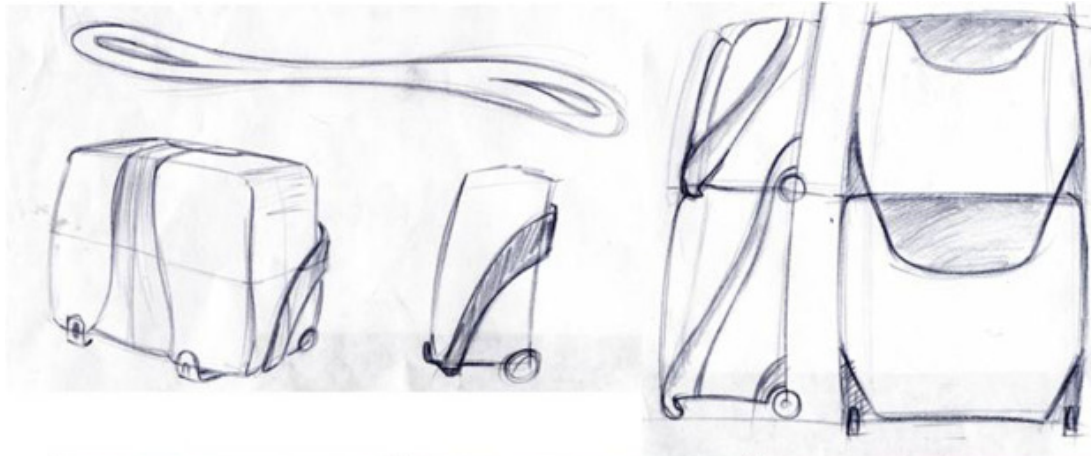
CONCEPT 4



FORM

CONCEPT GENERATION

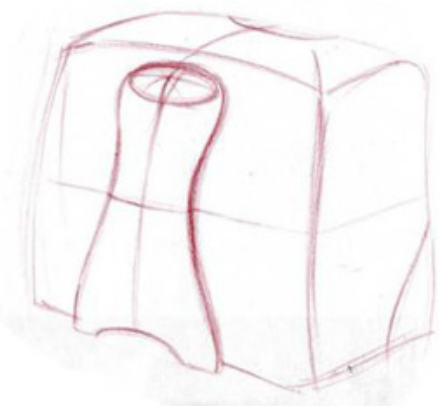
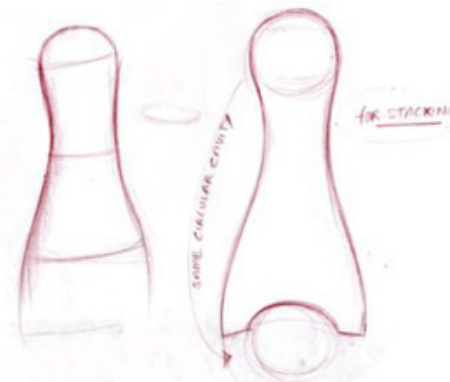
CONCEPT 5



FORM

CONCEPT GENERATION

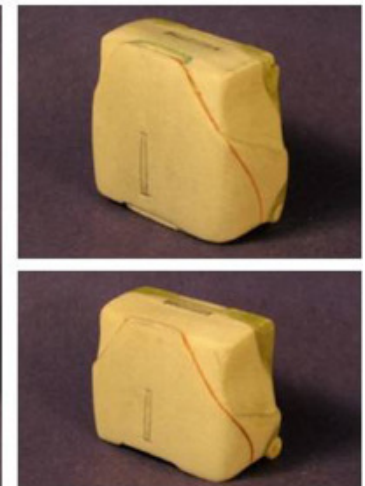
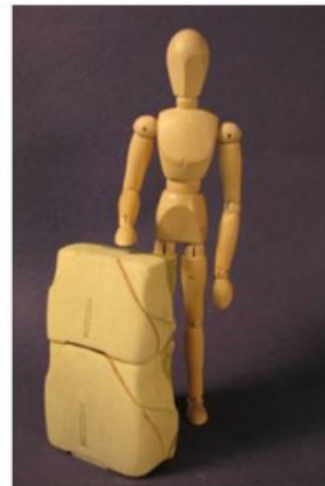
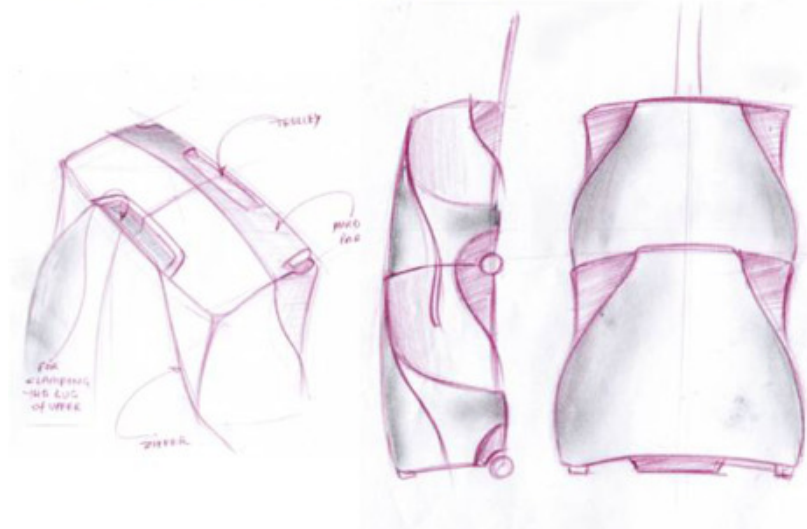
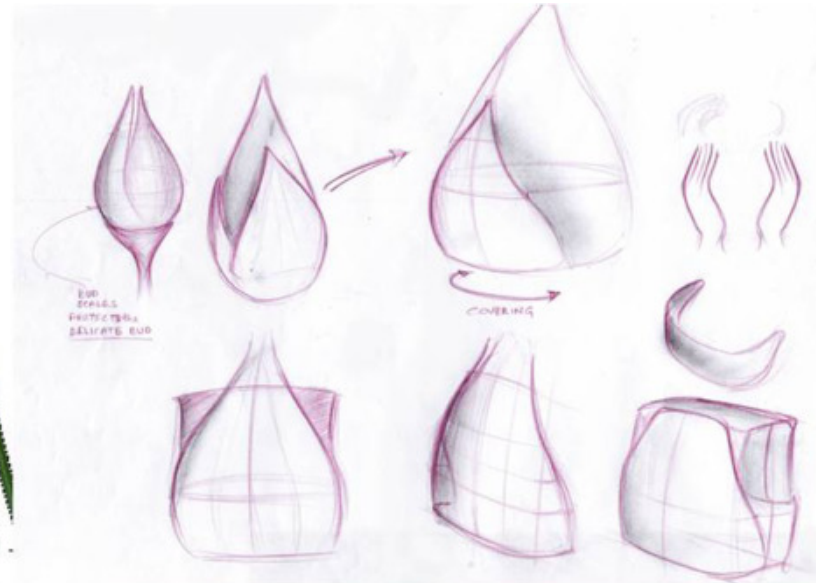
CONCEPT 6



FORM

CONCEPT GENERATION

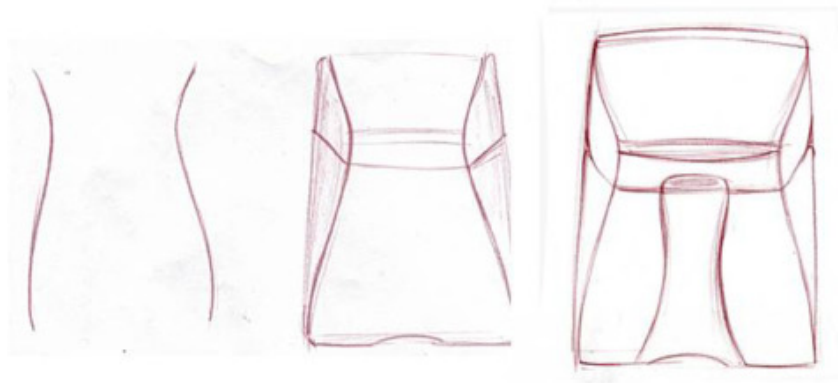
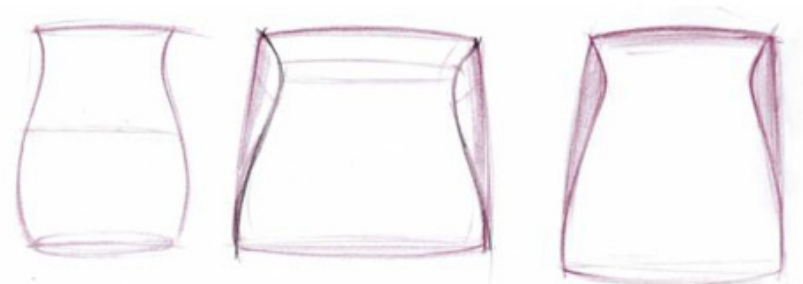
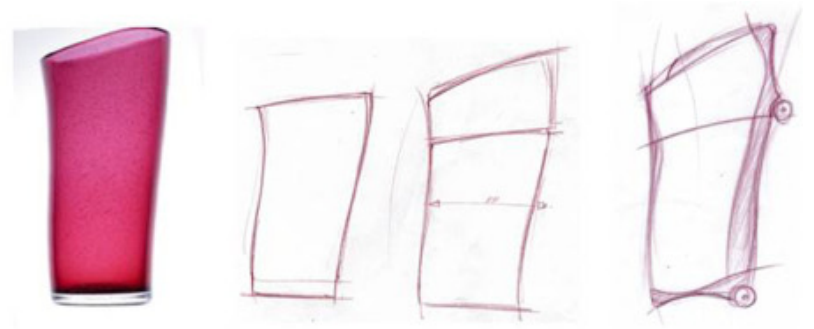
CONCEPT 7



FORM

CONCEPT GENERATION

CONCEPT 8



FORM

CONCEPT GENERATION

CONCEPT 9



FORM

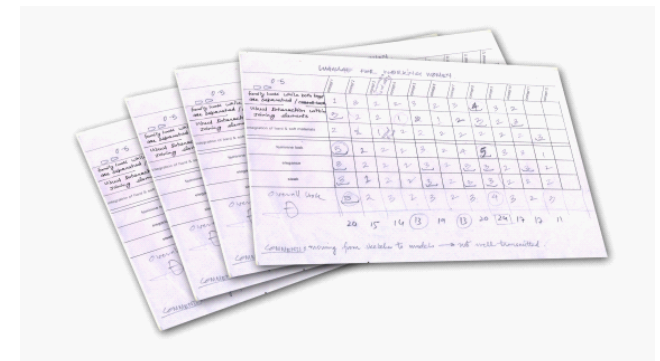
EVALUATION

For the above nine concepts, evaluation was done to

1. Bring out a language through which desired characteristics can be defined within the form of luggage.
2. To know the relative intensity of these characteristics in these concepts.

So, evaluation was done with ten users and they were asked to rate the concept on the basis of following points.

1. Family look while both bags are separated
2. Visual interaction within joining elements
3. Integration of soft and hard materials
4. Overall look
5. Feminine look
6. Elegance
7. Sleekness

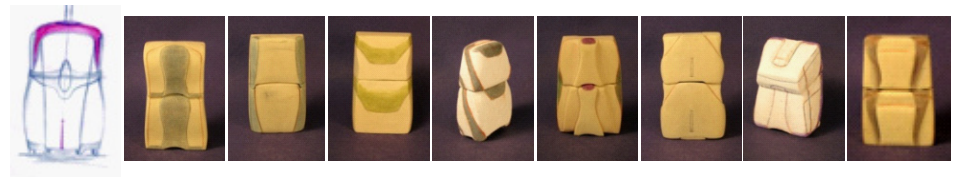


FORM

EVALUATION Result

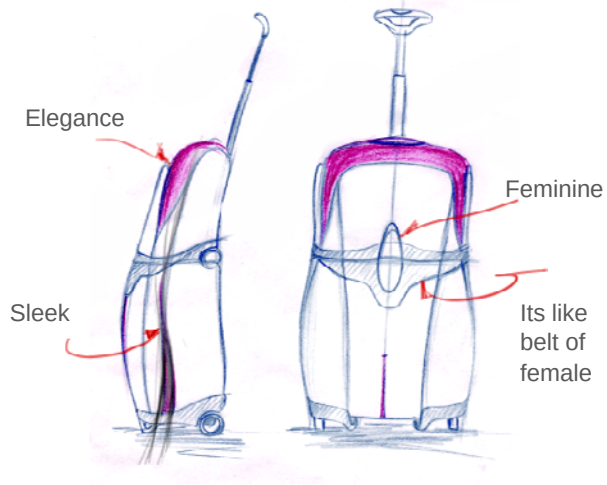
This is the average of data collected from users.

	concept 1	concept 2	concept 3	concept 4	concept 5	concept 6	concept 7	concept 8	concept 9
family lookwhile both bags are separated	3	4	3	3	4	3	4	3	3
visual element of stacking	3	3	3	2	3	3	3	3	3
integration of hard & soft materials	3	2	3	3	3	2	3	3	3
feminine look	4	3	3	2	2	2	2	3	3
elegance	3	3	3	2	2	2	3	3	3
sleek	3	3	3	2	3	3	2	2	3
overall look	4	2	3	3	3	3	3	3	3
<u>TOTAL</u>	24	19	22	17	20	18	20	20	20

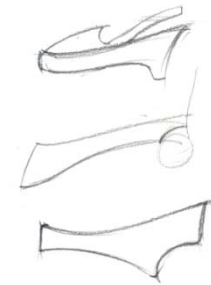


FORM

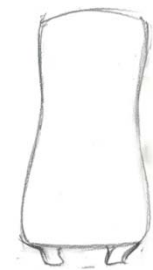
EVALUATION Result



These kind of curves are responsible for feminine and sleekness characteristic in the form of this one



Flow of curves is just like lady shoes .

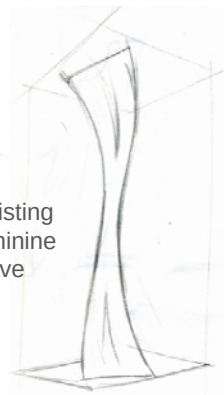


This shape directly belongs to female body ,

But it doesn't have family look in both separate bags
Low degree of visual interaction within joining elements

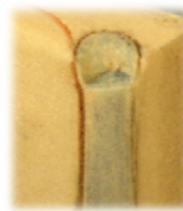


Twisting feminine curve



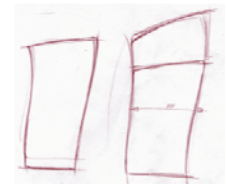
Good enough visual interaction within joining elements

Clean front look elegant



Elegant

Good enough visual interaction within joining elements



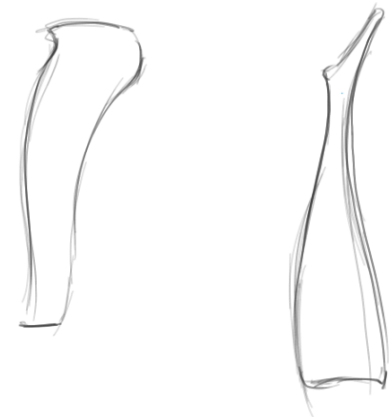
Feminine curve

Interaction in putting upper bag is not good .

FORM

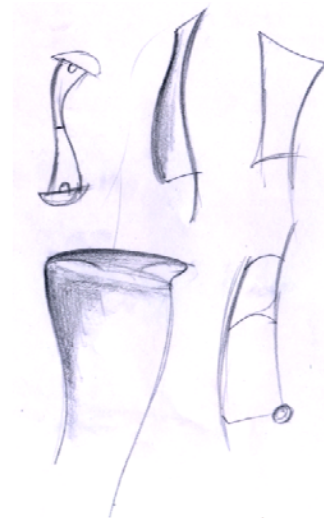
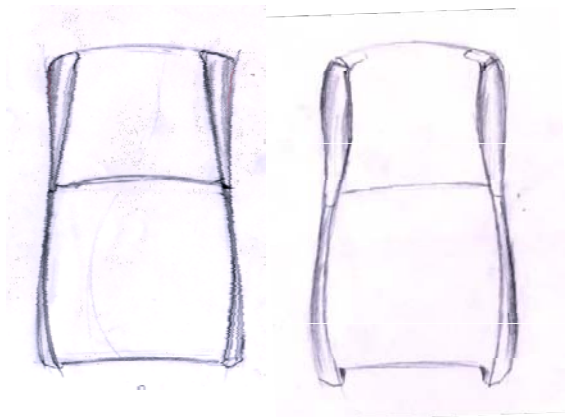
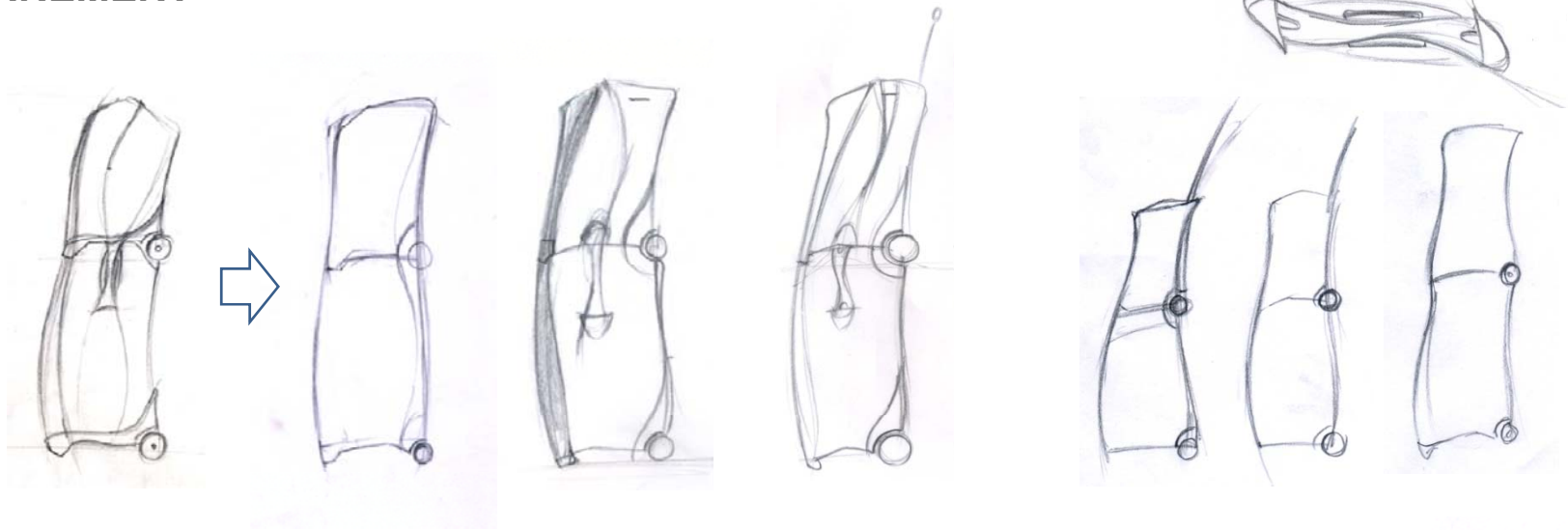
REFINEMENT

In the refinement phase firstly some models were tried to give the feminine body shape that has been appreciated in concept 1.

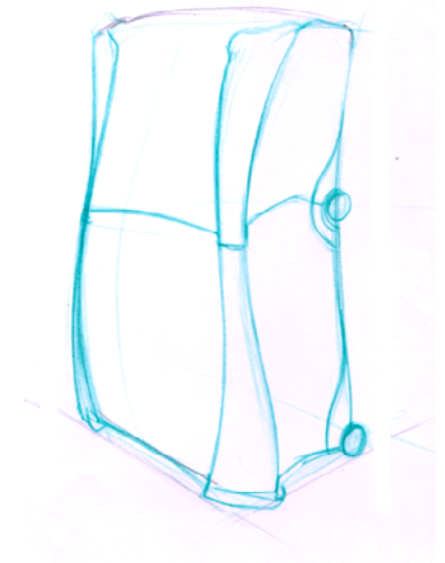
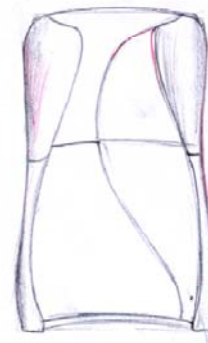


FORM

REFINEMENT



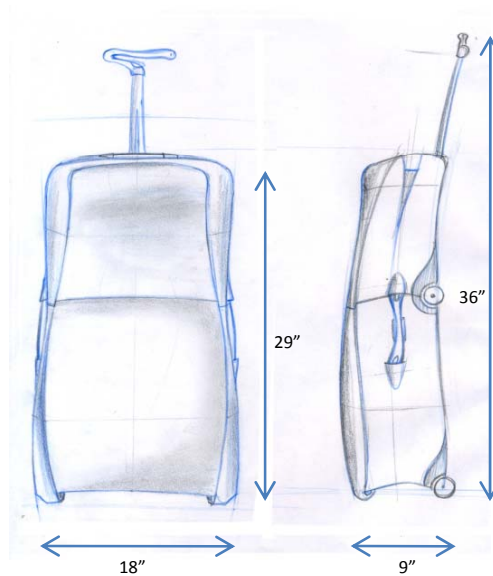
Asymmetry



FINAL CONCEPT

COMBY SPLIT LUGGAGE

- Elegant split luggage for working women
- 29" overall Upright hybrid trolley luggage.
- Dim. of upper (office travel bag) is 13"x16"x 7"
- Dim. of lower (general travel bag) is 16"x18"x9"
- Both bags can be used separately



FINAL CONCEPT



FINAL CONCEPT

FEATURES OF SPLIT LUGGAGE

No need of calling a guy to lift and place the heavy luggage in the Overhead Luggage Bin. The split luggage can be separated from each other by just pressing the button.



User can split the luggage and can carry only the Office Bag (Upper one) to her office rather than carrying the complete luggage.

Split travel luggage exclusively appeals to women because of its form, colour, texture and graphics.

An elegant and sleek product

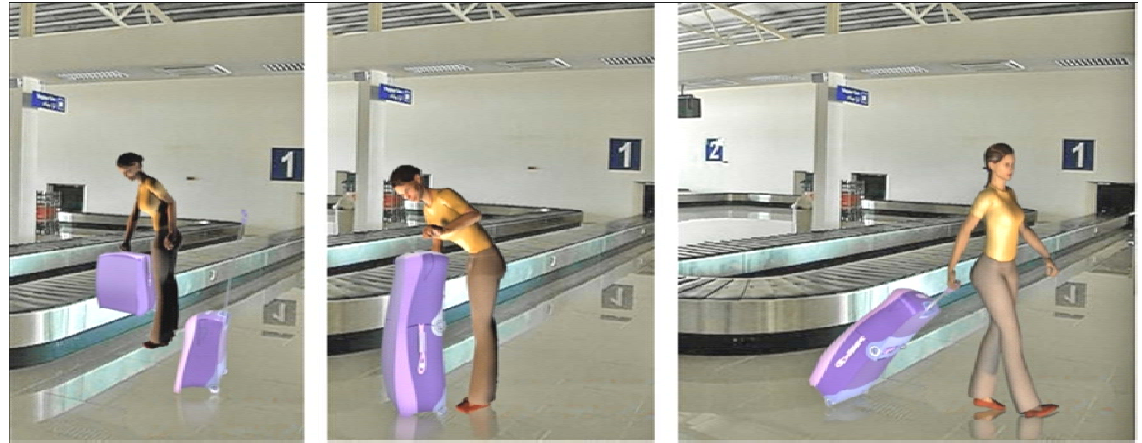


It can be drawn out on its wheels for putting underneath a berth.

FINAL CONCEPT

FEATURES OF SPLIT LUGGAGE

At conveyer belt



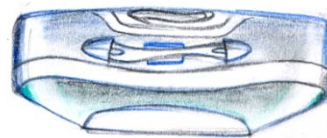
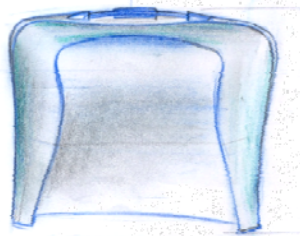
At Check-In counter



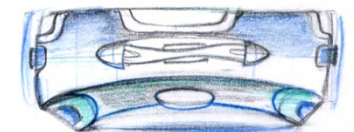
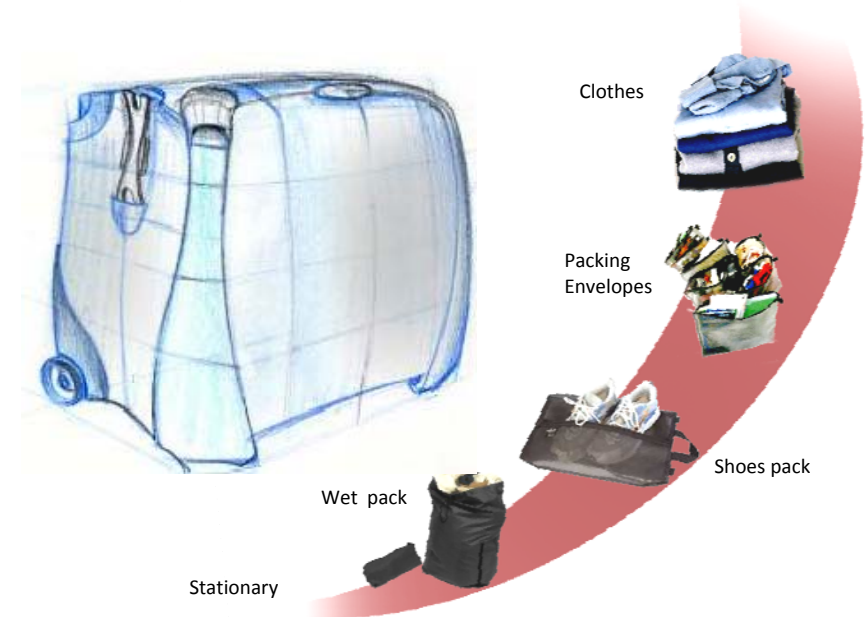
During travel, if only one carry-on luggage is permitted in the aeroplane, the user is free to let the lower bag go in the Check-in and retain the upper one. In case two bags are permitted she will have an advantage of splitting the luggage.

FINAL CONCEPT

OFFICE TRAVEL BAG



GENERAL TRAVEL BAG

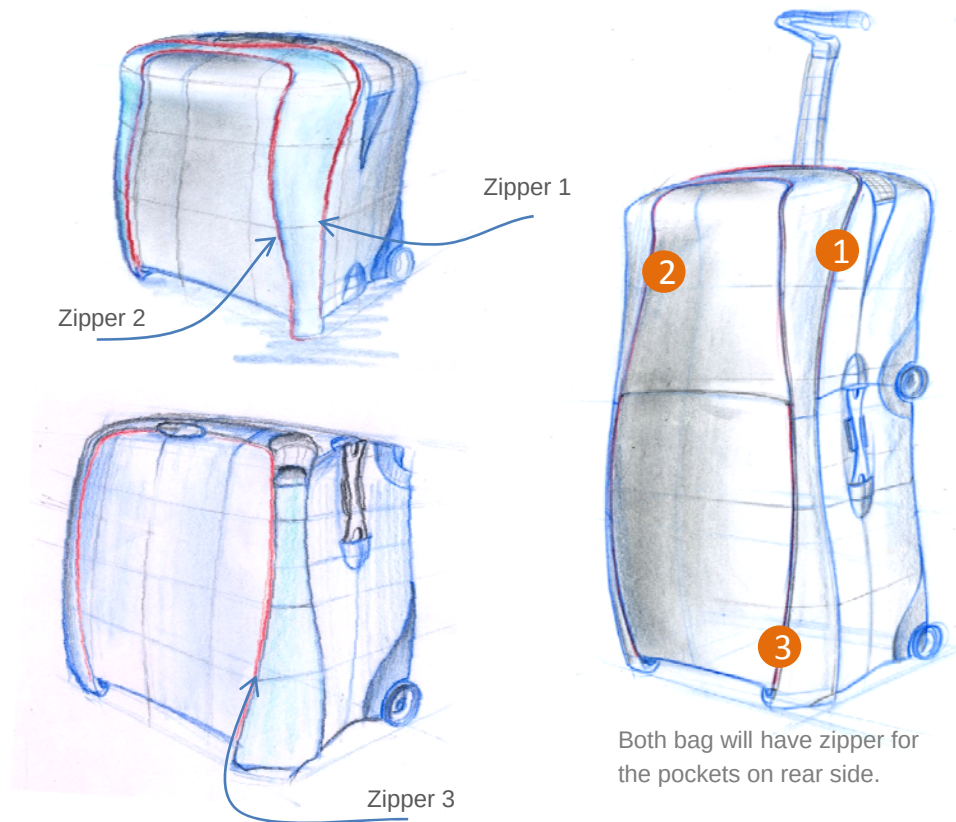


FINAL CONCEPT

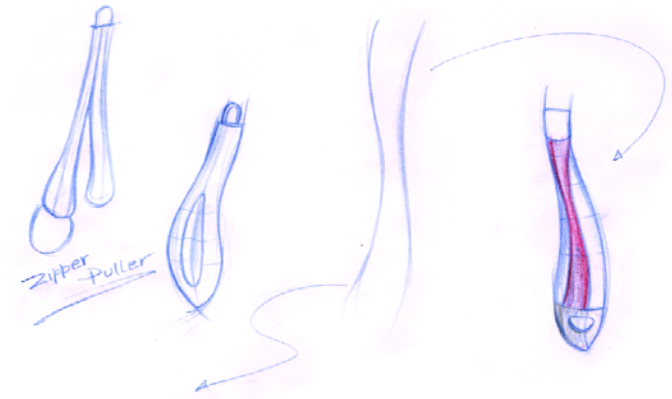
DETAILS OF COMPONENTS

Zipper placement

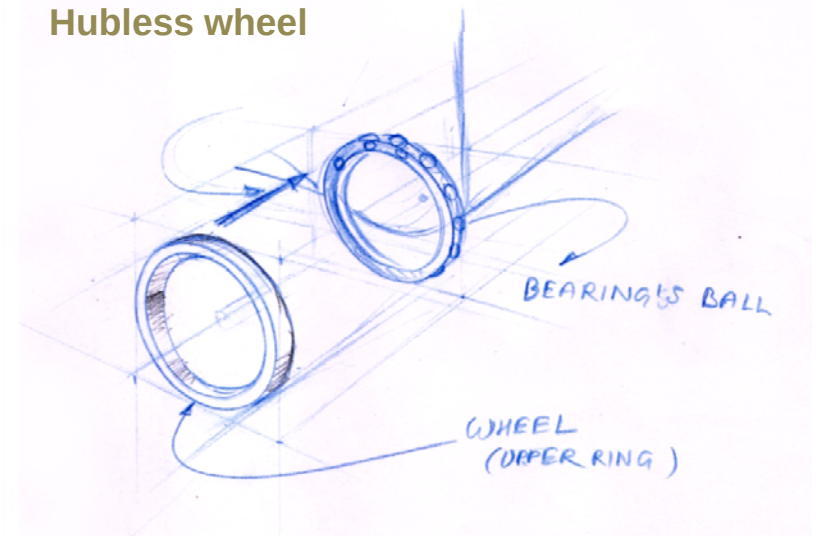
Office travel luggage has two zipper one is for opening it to insert the laptop and all stuff like this , other is for pocket, for keeping he item which come in use frequently.. General travel bag has only one zipper. All zipper will be stitched with polycarbonate from one side.



Zipper puller



Hubless wheel

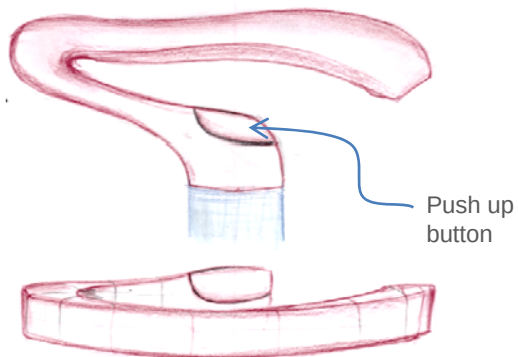


FINAL CONCEPT

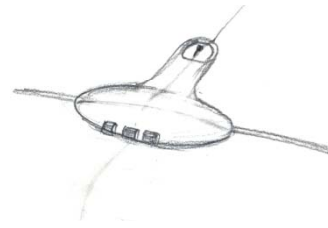
DETAILS OF COMPONENTS

Trolley handle

Light weighted aluminum, telescope trolley has a sleek & elegant handle which includes a push up button to push it up by the action of spring .



TSA lock



In built TSA lock , only in general travel bag , is given with number lock, and TSA master key feature.

Shoulder strap

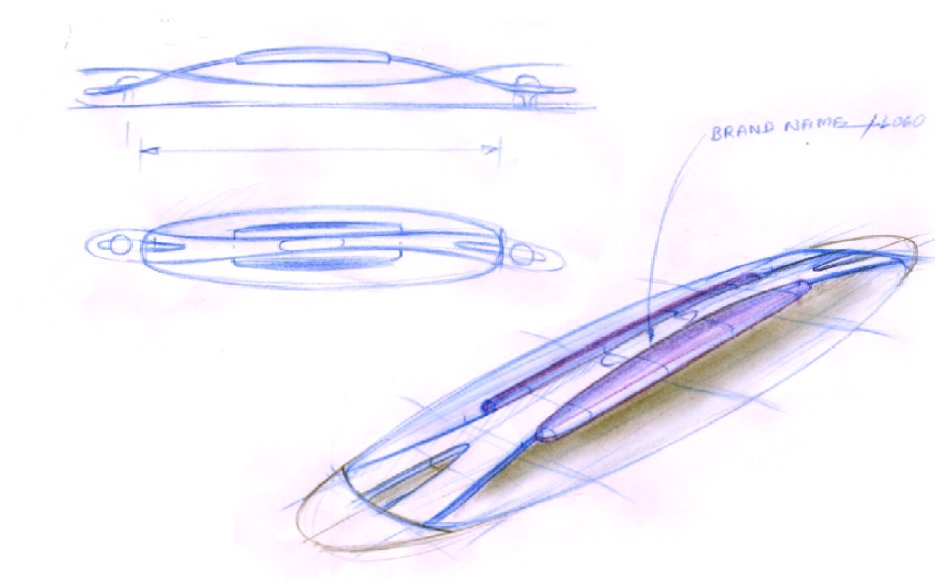
When ever it is not in use it get into side of luggage itself



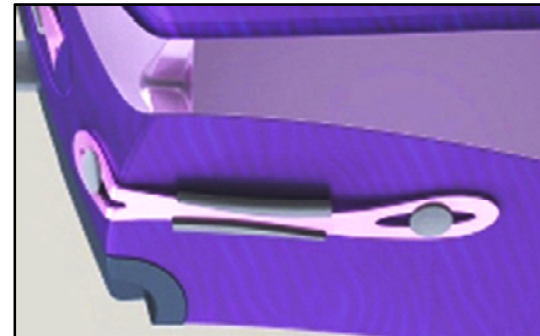
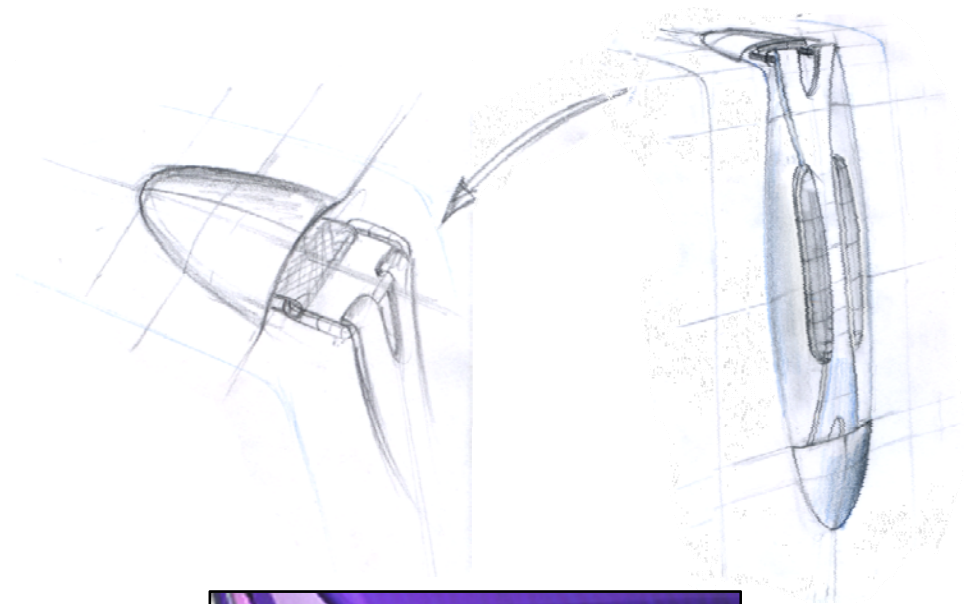
FINAL CONCEPT

DETAILS OF COMPONENTS

Top handle



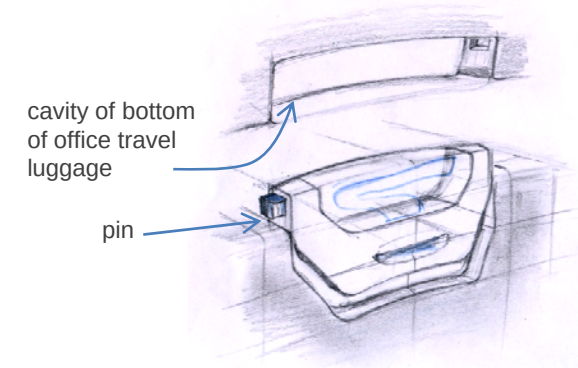
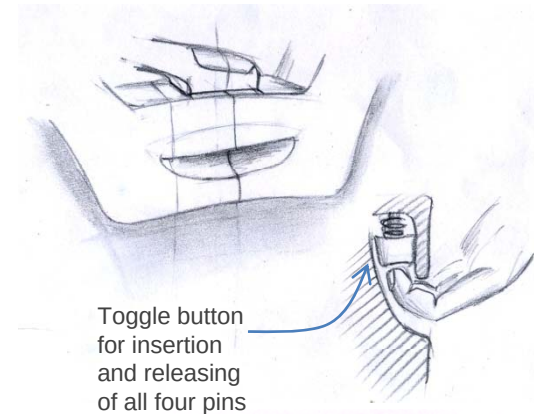
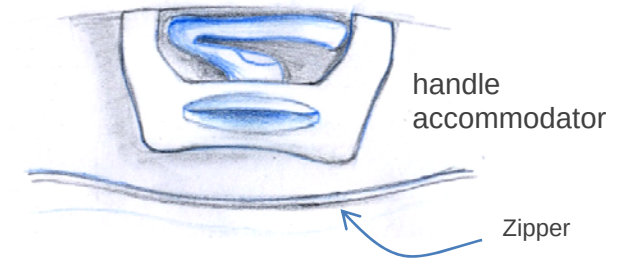
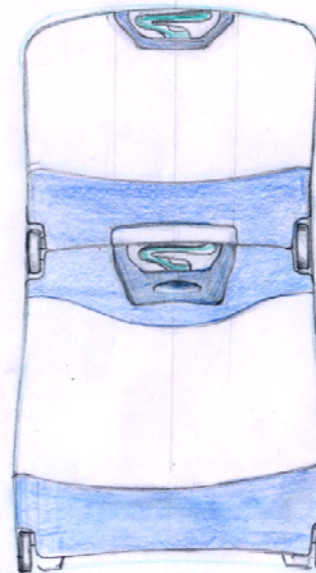
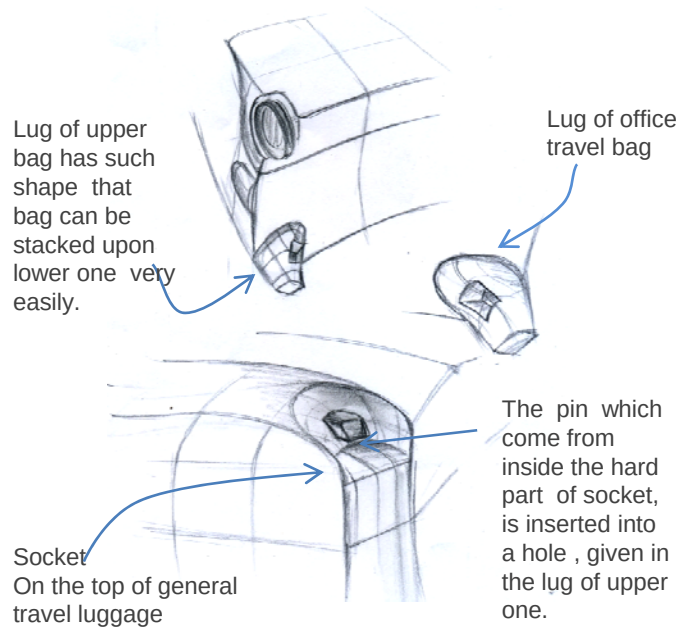
Side handle



FINAL CONCEPT

Details of attachment and detachment of the bags

Both bags can be attached and detached with very easy interaction. Upper bag is joined on the top of lower one by four pin. Two of these are inserted into the lug of upper bag. Other two are exist in handle accommodator, which can be shifted up into the cavity of bottom of office travel luggage. And this handle accommodator has a concealed toggle button to do the function of insertion and releasing pin.



FINAL CONCEPT

MANUFACTURING ASPECT

This hybrid luggage is made of PC plastic & Ballistic Nylon. Hard PC plastic part is included in such a way that it protects the things inside these soft bags, on other hand it is also the element responsible for its integrated look.



Frame made of PC and Steel Wire.

Prototype



TRAVELLING

Airline Baggage Rules

Domestic Flights

The general rule for domestic flights is you can check 3 bags and carry-on none, check 2 bags and carry-on one, or check one bag and carry-on two

Checked Bags:

Most of the airlines allow weight and dimensions as follows

Executive class	Two pieces each weighing 32 Kg (i.e. Total weight permitted - 64 Kg)	Sum of the Three outside Linear Dimensions for each piece must not exceed 62" (158 cm)
Economy class	Two pieces each weighing 23 Kg (i.e. Total weight permitted - 46 Kg)	a) Sum of the Three outside Linear Dimensions for each piece must not exceed 62" (158 cm) b) The overall Dimensions of the two pieces measured together must not exceed 106" (270 cm)

Carry on Bags:

Carry on baggage must fit under the seat or in an overhead compartment. Your bag must:

- Weigh less than 40 pounds (18 kg).
- Not exceed 45 inches (length + width + height).
- Fit easily in airline's Size Check® unit (approximately 22"x14"x9").
- Fit in an overhead bin or underneath the seat in front of passenger .

TRAVELLING

Airline Baggage Rules

International Flights

International flights generally have the same size and weight allowances but may cut down on the number of pieces that can be checked.

Checked Bags:

Most of the airlines allow 2 pieces, maximum weight of 50 or 70 pounds (32 Kg) per bag .The largest piece of luggage cannot exceed 62" in any dimension, and the second piece of luggage cannot exceed 55" in any dimension.

Carry on Bags:

Some U.S. carriers allow 2 bags weighing up to 50 pounds (22.5 Kg) per bag (some less), and not to exceed 22" x 9" x 14". Airlines based outside of North America may only allow one carry-on bag not to exceed 11 pounds (5 Kg) and 22" x 9" x 14".

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