

# Mobility and Vehicle Design Project - III

Design Internship (Jan - May 2014)  
Maruti Suzuki India Limited, Gurgaon

Customization of SUV (Grand Vitara)  
with New Accessories Design for MGA

[1]

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# Acknowledgement

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# Approval Sheet

The project titled 'Customization of SUV (Grand Vitara) with New Accessories Design for MGA', is approved for partial fulfilment of the requirement for the degree of 'Master of Design' in Mobility and Vehicle Design.

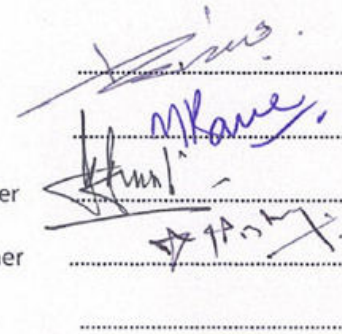
Guide

Chairperson

Internal Examiner

External Examiner

Date



# Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or data has been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Student's signature

Tanmay Ohri



# Contents

Introduction	6
Design Brief	7
Benchmarking	8
Internet Research	9
OEM Customizations	10
Market Survey	11
Karol Bagh	12
Palika Bhawan	15
Gurgaon	16
Auto Expo 2014	17
About Survey	18
Conclusion - Market Research	19
List Of Accessories	20
User Research	21
User Survey	22
Conclusion - User Research	24
Design Focus - Shortlisted Accessories	34
User Sketch	35
Mood Board	37
Ideation	38
Alloy Wheel Ideation	41
Concepts - Alloy Wheel	47
Bull Bar Ideation	59
Roof Rail Ideation	66
Ideation-Body Wraps, Accents, Mouldings	73
Final Package	80
References	83

# Introduction

As a recent trend, there is a growing need of customization of the vehicle. Since MSIL is the latest to enter this segment, it is needed to design and develop accessories that would change the physical appearance of the vehicle exterior. The accessories should be add-on parts on the OE vehicle and should not require chopping or elaborate modification of the vehicle.

# Design Brief

## Initial Design Brief:

The project deals with customization of a vehicle in the crossover segment. The customizations need to be realistic & 'add-on' parts to be put on the vehicle exterior, without chopping of the original vehicle exterior. Primary focus on the form-design of the accessories and body-styling kits. From the existing Maruti Suzuki vehicle line-up in India, the project may focus on Grand Vitara/Ertiga.

## Final Brief:

To customize Grand Vitara using MGA accessories. The custom accessories to be designed need to be 'add-on' parts on the existing vehicle exterior and should not require any modifications or chopping of the vehicle body. The designs need to be realistic and manufacturable.

## Scope:

The scope of the project includes extensive market research, ideation and product development within a challenging time span.

# Benchmarking

Benchmarking was necessary to know the TRENDS in Customization. The ever changing user choices are driven by trends leaving it mandatory to study the market customization options available, as well as knowing what premium brands are doing abroad.

Internet Study: To understand customization options available in foreign markets for some premium brands.

Competition study (Other OEMs): To find out what other contemporary OEMs are doing.

# Internet Research

A fairly long internet study was carried out to find out nicely customized images and references of great cars like: Range Rover Evoque, Jagua cx-17, Ford Explorer, Renault Duster, Audi Q5, Audi Q7. The study would help in understanding the current trend in customization of such vehicle. As these cars are premium, and the customer is much different from the customers of other segment vehicles, its important to have a sensitivity towards premium custom cars in such segment.

These are some of the images which were a part of internet study in vehicle customization:



# OEM Customizations



Some competitors are producing customization options or Special Edition models of their best-selling models. These are produced to cater to the needs of certain users with very specific demands like off-roading, expedition trips etc.

Recent custom vehicles from OEM's side were Mahindra Scorpio Body-kits, Mahindra Scorpio Xtreme, Mahindra Scorpio Lifestyle, Mahindra Bolero Attitude, Tata Xenon (Tuff Truck) Australia.



[9]

[8]

# Market Survey

3) What type of styling do people want in their SUV/Crossover cars?

- Sporty
- Masculine
- Rugged/Raw
- Smart/Sophisticated
- Premium/Luxurious
- Jazzy/Showy

4) In exterior customization, which is done the most?

- Graphics/Decals/Stickers
- Body-kits/Accessories
- Paint work

5) Which SUV car out of these is most commonly customized by people?

- Toyota Fortuner
- Tata Safari
- Suzuki Grand Vitara
- Honda CR-V
- Mahindra Scorpio
- Renault Duster
- Ford Endeavour
- Mitsubishi Pajero
- Ford EcoSport

6) About the CUSTOMER: Who is your most common customer type?

Age group

- < 35 years old
- 35 years and older

- Married
- Male
- Single
- Female

Occupation

- Service
- Business

Annual income bracket (in Rupees)

- < 10 lac p.a.
- 10 lac to 20 lac p.a.
- 20 lac to 30 lac p.a.
- 30 lac and above p.a.

A survey was conducted in the automotive markets of Karol Bagh, Palika Bhawan, Gurgaon and also at Delhi Auto Expo 2014. The idea was to get to know the user psyche face to face and get from the conversation some key points that would assist in understanding their mind-set when it comes to customizing their cars. Another aim was to get to know the accessory shops and what is their take on the market, market trends and customer choices in this business of customization.

A small questionnaire was also prepared for some set questions to be asked, accompanied with a casual conversation which may also generate many relevant answers.

Some of the questions from questionnaire (for the people into accessorizing business) were:

Questionnaire - Car customization  
(\* Tick all the appropriate answers)

1) What are the most demanded accessories/ customizations in exterior of SUV-Crossover cars?

- Front bumper
  - Rear bumper
  - Side skirts
  - Front Grille
  - Spoilers
  - Roof rails
  - Bull bar/protection bars
  - Alloy wheels and Tyres
  - Headlamp/Taillamp, LEDs
  - Body graphics/Decals/Stickers
  - Chrome accents
  - Sunroof
  - Exhausts
  - Body side mouldings
  - Wheel Arch Kits
- Specify others:  
.....

2) How much amount are such customers willing to spend on the body-kits for their cars?

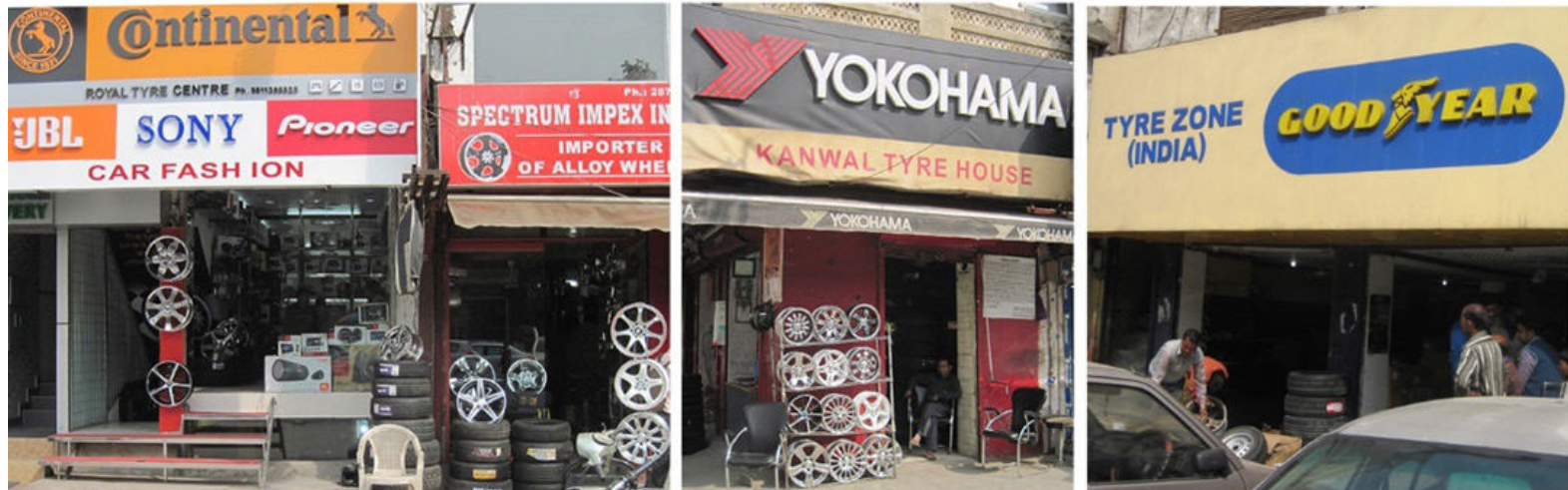
- < Rs.20,000
- Rs.20,000 to 50,000
- > Rs. 50,000
- Specify amount .....

# Karol Bagh

Following are a few pictures from my trip to the Karol Bagh car accessory market:

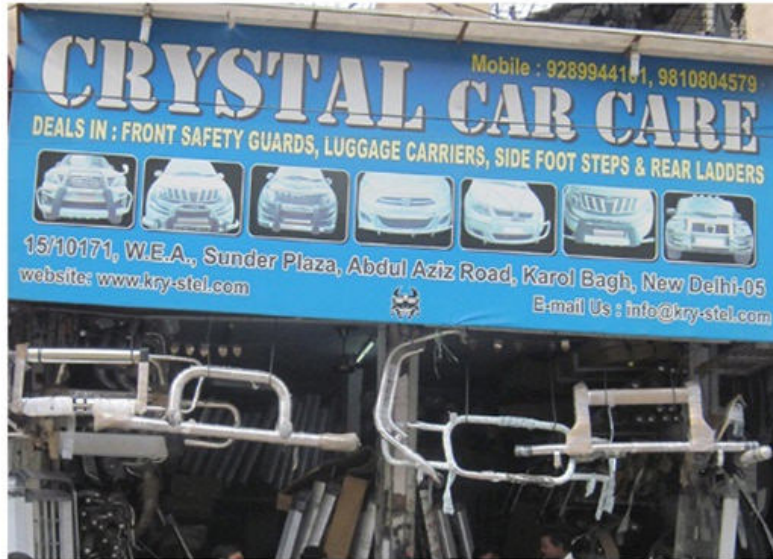


Ashoka's (top left) is the biggest player in this market with almost all the accessories possible. They deal with smaller as well as super-elite cars. Bharat car (top right) being the next major accessory player. Alloy wheels were found out to be the rank1 accessory for any type of car segment.



## Karol Bagh

Continued.



Apart from the custom headlamps and alloys, there is a new trend of partial body-paints, especially on white cars. Janx Car World deals with the same needs of the users in addition to many other accessories. There are many shops that just provide spare accessories without much customisation. The most widespread accessory after alloys is the bull-bars.

# Karol Bagh

Continued.



From small chrome linings, to resale of luxury cars and from custom FRP body-kits of bikes to total revamp of Honda Jazz, there are many shops in this market for anything you want to get done to your car.

# Palika Bhawan

Capturing the accessory market for vehicles at Palika Bhawan, New Delhi.



This market was more into repairs and small accessories, and nothing high profile. Some luxury cars are also refurbished here before they are sold. Small accessories are available e.g. Rally-lights for SUVs as depicted in this green gypsy.



## Gurgaon

Autopsyche is one the bigger players in car modification/accessorizing business at Gurgaon.

Following are a few images from the company.



This Toyota Fortuner was modified by this company for a customer who wants to go off-roading very soon, in Uttarakhand with a couple of his friends. The customer has already spent Rs.4.5 lac on this. This tells us the extent of craze some extreme users have for their cars.



# Auto Expo 2014

## Customized Cars:



[10] Tata Safari Ladakh Mahindra Bolero Stinger Tata Sumo Extreme

Delhi Auto Expo 2014, held at Greater Noida was also a great opportunity to meet certain users primarily interested in off-roading vehicles, utility cars, premium SUVs. It was a very important visit as it allows understanding of what OEMs are bringing into the market. Although Auto Expo had many recent launches and future concepts to offer, but I divided my take away from the Expo into categories of: Custom, Conceptual and Premium Vehicles sticking to the segment my project belongs to.

## Concept Cars:



[11] Renault KWID Fiat Avventura Honda Urban SUV

## Premium Cars:



Jaguar CX 17 Toyota Land Cruiser Prado Land Rover Freelander 2 [12]

# Survey

Survey of the market and Auto Expo had a total of 20 people interviewed. The classification is as follows:

9 people belonged to Accessory/Modification shops.  
11 people were buyers who were interested in the cars of off-roading/premium segment.  
Out of these 20, 7 were met at Karol Bagh market, 2 at Gurgaon Autopsyche shop, 2 at Palika Market and 9 at the Auto Expo.

The pie chart explains the same:



#### About the Customer:

The user is a Male, car enthusiast, tech savvy and stylish person. He has a decent pocket to spend on such luxuries.

The utmost need for customization that drives a customer is their need to feel unique and special.

The customer is usually young, less than 35 years of age and has sufficient knowledge of foreign trends in vehicles.

Every customer has different demand.

Customers come with their idea of what they want done with their car but need to be shown options and designs.

On an average a customer coming for modifying a car in the Segment of Grand Vitara (Price Rs.20-25 lac) has the capability to spend around 50-1 lac on customizations easily.

Around 70% of the customers are from business background. People from service background are usually high ranked people in army etc.

It has been seen that people with older cars come for serious mods and in larger numbers compared to people with new cars, who come for basic accessorizing in the car.

There are broadly two types of customers: Aesthetically oriented customers (who want only showy accessories to be put on the car) and Performance-tuning oriented customers (who want performance tweaks for offroading, racing, rallies etc.).

## Conclusion

From the market survey, many points came to light which are summarized as follows:

#### About the Market:

The automotive and accessorizing market has been slow for the last 2 years.

Number of customers in a week has reduced but those who come for customization still have ample budget.

Custom-design variants for cars being unavailable from the OEM's side is the fuel for this business.

Alloy wheels are in a way Rank 1 demand, as they provide immediate customization feeling.

The parts (Custom bumpers, mouldings, lights etc.) are imported mostly from the markets of Thailand, China, Taiwan and USA. While some are locally fabricated in the workshops at Delhi, Mumbai.

Other than the Body-kits, paint jobs, performance kits are also some of the choices made by many.

#### Key Points:

The customer is ready to pay for exclusivity of the vehicle and his image.

OEM-customized model is the gap in the market.

Most of the aftermarket parts are poorly designed and have a lot of business scope.

It's been observed that there is no limit to the extent of customization and opportunities to design.

Such customers would always require quick service and reliable designs available for him to choose from.

## List Of Accessories

After the market survey, internet study and observing the customer needs from the vehicle of this segment (Grand Vitara's segment), a list of possible to redesign, exterior accessories was made:

Front Bumper	Films/Body Coatings
Rear Bumper	Chrome Accents
Side Skirts	Graphics-Vinyls/Stickers
Roof Rails/Racks	Badge/Logo
Wheel Arches	Skid Plate
Body Side Mouldings	Exhausts
Window Visors	Spare Wheel Housing
Sunroof	Spoiler
Fog Lamps	Air Breathers/Vents
Head Lamps	DRLs/Body Lighting
Tail Lamps	Fins/Diffusers/Splitters
Grilles	Corner Protectors
Protection Bars	Wheel Covers/Caps
Alloy Wheels	Handles
Rear View Mirrors	Mud Flaps

Out of these listed accessories, the most demanded and aesthetically high impacting were:

Front Bumper	Films/Body Coatings
Side Skirts	Chrome Accents
Body Side Mouldings	Skid Plate
Fog Lamps	Exhausts
Head Lamps	Spoiler
Tail Lamps	Air Breathers/Vents
Grilles	DRLs/Body Lighting
Protection Bars	Corner Protectors
Alloy Wheels	Wheel Covers/Caps

# User Research

After the completion of market research (primarily for gaining maximum knowledge of the accessories available and the market for the same in this region), there was a need for a detailed 'User Research'. There was a need to understand the user's mind-set, to know his tastes and preferences related to accessorizing his/her car, to dig deep into user psyche and know more about the need to customize. The main idea was to 'know' the target audience and get some concrete numbers for some questions.

A survey of at least 20 SUV users was required to be conducted to get some idea about the overall tilt of the users towards one direction. These candidates to be surveyed need to be active SUV users. They should be using their SUVs for most of their requirements. They need to be the ones who have a say in the purchase decisions as well. A candidate with love towards his/her SUV would be an ideal user for this survey, who is as active in his/her lifestyle as the car itself.

I surveyed 20 suitable candidates with a questionnaire which is available on the next page. The survey was conducted in person most of the times, with a few telephonic conversations whenever the former was impossible. A good databank got created with this extensive user survey in the form of audio files, hand-written forms and digital forms.

The survey required me to find the users suiting my criteria and spending time with them to understand the person himself. The survey went about for three weeks, as market and user research was a major part of this project.

# User Survey

## Questionnaire:

### About yourself -

Q1.1 Gender:

Q1.2 Age:

Q1.3 Total number of family members:  
Number of adults:  
Number of children (age under 16):

Q1.4 Tell us about your hobbies and interests:  
Indoors:  
Outdoors:

Q1.5 Your annual income range:

5-10 lac	10-20 lac	20-30 lac	30 lac +
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Q2.1 Which car(s) do you drive? :

Q2.2 Number of total cars you own:  
a: One  
b: Two, SUV as the primary car  
c: Two, SUV as the secondary car  
d: Three or more.

Q3.1 Frequency of the car used. (Please tick one box for each type of activity) :

- a: Commuting to and from work
- b: Dropping family members to work
- c: Shopping
- d: Road trips/destinations
- e: Business trips
- f: Functions/parties
- g: Off-roading trips
- h: Chauffeur/Driver used

Q3.2 Average distance travelled in the car in a day: (km)

Q4.1 What are your favorite travel destinations (by road)?

Q4.2 What type of activities do you do on such trips?

Trekking	Off-Road driving
River Rafting	Fast Driving
Bungee jumping	Boating
Sight-seeing	Sports
Partying	Trying local cuisine
Campaigning	Others (please mention):
Barbeque/Cooking	

Q4.3 Where do you prefer staying on such a trip?

a. Luxury hotels	d. Adventure camps/tents
b. Budget hotels	e. Resorts
c. Lodges	f. Others (please mention):

Q4.4 With whom do you go on such trips?

a. Family/Relatives (only gents)	c. Friends
b. Family/Relatives (gents, ladies and kids)	d. Colleagues

Q5.1 What are the things you like about your car?

Q5.2 What are the things you dislike in your car?

Q6.1 Which are your favorite cars?

Q6.2 What have been your most recent purchases?

Q7.1 What customizations/accessories do you have or want to add in your car?  
(Please mark your favorite choices)

- |                        |                               |
|------------------------|-------------------------------|
| Front Grille           | Body Graphics/Decals/Stickers |
| New Front bumper       | Logos                         |
| New Rear bumper        | Skid plate                    |
| Side Skirts            | Exhausts                      |
| Roof rails             | Spare wheel housing           |
| Roof carrier           | Spoiler                       |
| Wheel arch kits        | Air breathers                 |
| Body side moldings     | DRLs                          |
| Window visors          | Fins/Vents/Diffusers          |
| Sunroof                | Corner protectors             |
| Fog lamps              | Wheel covers                  |
| Protection bars        | Handles                       |
| Alloy wheels           | Mud flaps                     |
| Rear view mirrors      | Ladders                       |
| Body films             | Shark fins                    |
| Chrome accents/garnish | Underbody lights              |
|                        | Body paint-job                |

Q7.2 What are the accessories that people put in their vehicle that you find undesirable and ugly?

Q7.3 Any future plans regarding modification/customization of your car?

Q7.4 Why do you accessorize/customize your car?

Q7.5 If you get the choice of a 'Special Edition' or 'Custom-line' variants of your car from the OEM itself, would you go for it? Why or why not?

Q8.1 Which sort of character do you expect from an SUV that you would like to drive?  
(Please tick top 5 elements)

- |                   |                           |
|-------------------|---------------------------|
| Sporty            | Powerful                  |
| Masculine         | Urban                     |
| Dynamic           | Raw                       |
| Premium/Luxurious | Distinctive               |
| High-tech Sci-Fi  | Tall                      |
| Sleek             | Strong                    |
| Youthfulness      | Big                       |
| Elegant           | Quick                     |
| Rugged            | Sophisticated             |
| Simple            | Lightweight               |
| Aggressive        | Compact                   |
| Wide              | Others (Please mention) : |
| Innovative        |                           |

Q8.2 Please give the keywords that would describe the design of 'Maruti Suzuki GRAND VITARA'?

Q8.3 What changes would you recommend for the future GRAND VITARA?



[13]

## Conclusion - User Research

Hobbies:

Sketching/Painting	3
Adventure Sports (e.g. Go-karting, racing, Mountain biking, trekking)	7
Listening/Playing Music/Dance/Video Games	14
Love Driving	11
Travelling/Picnics	6
Family time/Socializing	6
Love Food	5
Automotive news/information/Reading	4
Sports: Football/Cricket/TT/Tennis/BB/Squash/Pool	10
Fitness: Swimming/Gym/Yoga	6

Outdoor Activities: Driving/Adventure Sports/Exercise/Sports	40
Indoor Activities: Music/Dance/Video Games/Reading/Painting	32

When observing the type of hobbies the surveyed people had in totality, it is visible that though most points have gone to outdoor and active hobbies compared to relaxed and indoor activities, but the difference is not much. Hence any major set of people were not into extreme-sports/off-roading/outdoor activities.

After conducting the user survey on 20 candidates, the collected data was compiled as discussed below.

Gender: Male ( all 20 )

Age of candidate:	Frequency
20-25	8
26-30	6
31-35	2
36-40	1
40+	3

Number of family members: (Active)

No. of family members	Freq.	Families with kids
2	3	0
3	2	1
4	10	1
5	3	0
6	1	1
7		0
8		0
9	1	1
10		0

The observed candidates were chosen from varied income brackets for best understanding.

Annual Income:	Frequency
N/A	5
5-10 lac	4
10-20 lac	6
20-30 lac	4
30 lac +	1

A tabulation was done of the various cars these users own and drive, related to which they have answered to my questions. This helps understand exactly which type of cars these observations and results have covered. Also it helps understand the current favourites in such cars and why, as we have a conversation with the user.

SUV Cars owned:

Mahindra Thar	3
Renault Duster	3
Mitsubishi Pajero	1
Toyota Fortuner	2
Mahindra XUV 500	5
Ford Ecosport	2
Ssangyong Rexton	1
Audi Q7	1
Land Cruiser Prado	1
Ford Endeavour	1
Nissan Frontier	1
Mahindra Scorpio	2

It was observed that most of them (if not all of them) used this SUV being used by them, as their primary vehicle out of a number of cars owned by them.

One (SUV)	1
Two, SUV as primary	14
Two, SUV as secondary	3
Three or more, SUV primary	2

At this point, it was necessary to ask the users about their frequency of SUV usage, places and purposes they use it for, categorised as weekday, weekend, month, rare and never frequencies.

Frequency of car (SUV) use:

	Weekdays	Weekends	Monthly	Rarely	Never
Commuting to and from work	13	4	1		1
Dropping family members	5	4	2	1	
Shopping		9	6	3	1
Road trips/Off-roading		3	9	10	1
Business trips			5	3	6
Functions/parties		6	7	4	
Chauffeur/driver usage	4			3	12

Average distance travelled by every user was recorded as shown in the table below. The top two highest numbers of votes have gone to 10-30, 30-50 kms per day. This shows that even though they are SUVs, primary usage still remains urban commute.

Avg. distance travelled per day:

10-30 km	9
30-50 km	6
50-70 km	3
70-90 km	0
90 km +	2

The next question was regarding their favourite travel destinations by road. As almost all of them have gone or frequently go for road trips in their SUVs, I tried to capture the type of places they usually visit and type of terrain and roads travelled (for the people surveyed in NCR).

Favorite travel destinations by road:

Himachal	7
Laddhak	5
Uttaranchal	6
Rajasthan	7
Jammu	2
U P/NCR	5
Mumbai/Goa/Pune	4
Hyderabad	1
Nepal	1
Haryana/Punjab	5

This led to the next question which was to know what type of activities they prefer involving themselves in when on a trip with or without family. The table below shows the number of votes for each type of activity performed on vacation/trips by this user set.

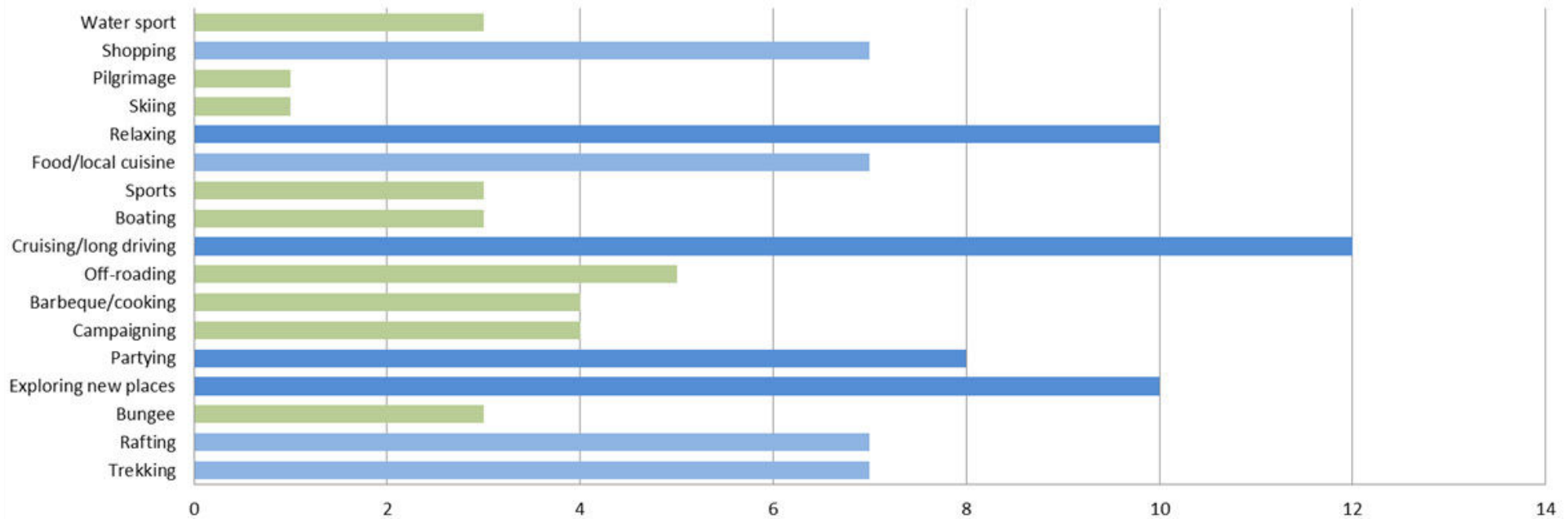
Activities participated in during the trips:

Trekking	7
Rafting	7
Bungee	3
Exploring new places	10
Partying	8
Campaigning	4
Barbeque/cooking	4
Off-roading	5
Cruising/long driving	12
Boating	3

Sports	3
Food/local cuisine	7
Relaxing	10
Skiing	1
Pilgrimage	1
Shopping	7
Water sport	3

A graph showing votes for each type of activities generally performed by these candidates, when on a trip. This tell us the mass behaviour/interests of the people of a certain area.

**Trip activities**

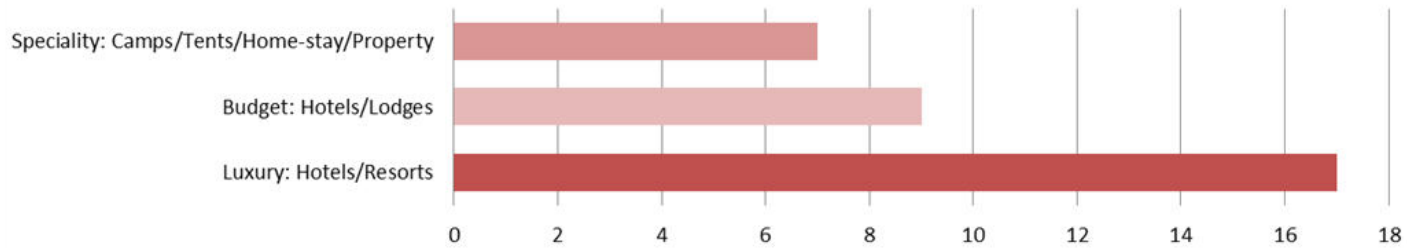


The next question tries to find out what sort of hotels/resorts/homes such people on SUV trips like to stay in. It was observed that though these people are on a road trip in their SUVs, with friends/family, but not many of them prefer actual trip accommodation like camps, tents etc. They still opt for luxury or comfort just like the city. This was a major point, as the SUV users of the city are actually more like sophisticated users and not pure SUV people as they would like to assume.

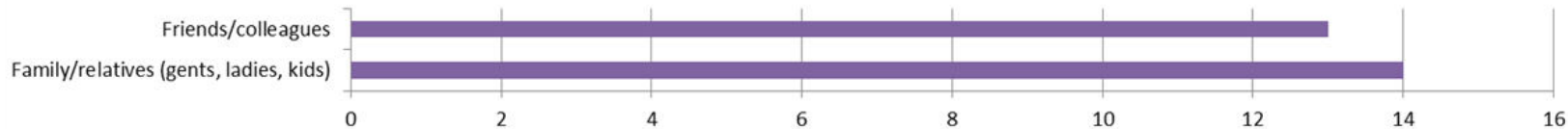
Where do they like to stay:

Luxury Hotels	9
Budget Hotels	7
Lodges	2
Adventure camps/tents	5
Resorts	8
Others: Home-stay, property	2

The following graph highlights the gap between sophisticated comfort accommodations preferred and real trip camps or tents opted by the users.



Some people travel mostly on such road trip in their SUVs with their family while others usually go with friends/colleagues. When asked to our candidates, the results were pretty competitive. There is no clear winner here as frequency of SUV trips with family are quite similar to those with friends. Hence we can assume safely, that in the market, such SUV cars are used by both type of users, one with family as the user and the other user who is young and has less responsibilities.



The following table captures the answers of our candidates when asked about the things they like about their SUV cars. Maximum votes were given to their liking towards the SUV capabilities of their cars, high ground clearance. Power and utility with a solid presence on road.

Things that you like about your car (SUV): votes

Things that you like about your car (SUV):	votes
Ruggedness	4
SUV Capability	14
Handling/Control	6
Ride Comfort	8
High ground clearance	9
Presence	10
Power	6
Volume/Space	6
Features/Utility	10
Interior Quality/Luxury	8

Equally important to know are the things that people usually dislike about the same car. This tells us the gaps and areas that can become opportunity for design to please such user needs.

Seating height/spacing	2
Styling	5
Lack of accessories	4
Less sporty	2
Big size	2
Mileage	4
Suspension	2
Interior Quality	7
Body Graphic	1
High maintenance	3

In the following table, the numbers show the popularity of a certain SUV amongst our candidates. These users are SUV users and hence might be having some desirable or dream-cars of their own which would be quite different from other people. It's to no surprise that the most popular SUV amongst our candidates came out to be the ones having a pure balance of looks, performance and features.

Most voted SUVs as favourites:

Range Rover Evoque	4
Toyota Fortuner	1
BMW X5	1
Mitsubishi Pajero	1
Jeep Cherokee	4
Hyundai Santa Fe	2
Porsche Cayenne	2
Toyota FJ Cruiser	1
Mercedes GL-class	1
Mercedes G-class	1
Skoda Yeti	1
Land Rover	6
Ford F150 Raptor	1
Audi Q5/Q7	3
Mini Cooper	1
Ssangyong Rexton	1

Land Rover, Range Rover Evoque and Jeep being the clear winners here.

The next question shows a list of accessories to these users. They are required to select the ones that they would like to put on their car, in future or they already have owned them. This clearly recognises the accessories that are in demand by our target customers. The users were free to add the names of some accessories in case it was not written in the questionnaire. The choices related to accessories change drastically with time and trends in the market. The users usually see and prefer only those that they know of or have seen somewhere and aspire to own it for their own care. Their choices are a bit limited.

The accessories that were given most votes are marked in red bars in the graph. These are the ones that are in the highest demand today.

Accessories/customizations preferred:

New Front grille	1
New Front bumper	2
New Rear bumper	1
Side skirts	3
Roof rails/carrier	8
Wheel arch kits	3
Body side moldings	3
Window visors	4
Sunroof	5
Fog /Projector lamps	2
Bull bars	8
Alloy wheels	11
Tyres	4
ORVMs	1
Body films	1
Chrome accents	4
Decals/stickers	
Logos	1
Skid plate	4
Exhausts	3
Spare wheel	1
Spoiler	3
Air breather/snorkel	1
DRLs/LEDs	7
Fins/vents/diffusers	

Corner/Door protectors	3
Wheel covers	
Mud flaps	2
Ladders	
Shark fins	1
Underbody lights	
Body paint-jobs	2
GPS device	2
Rear cameras	2
Extra/Rally Lights	5
Hard body-top	2
Reworked seats	2
Bonnet mirrors	1
OEM fitted items	5

Apart from the most desired accessory, most undesirable and bad accessories were also asked from the candidates to know the most hated accessorizing habits prevalent nowadays, courtesy aftermarket parts, as per their tastes.

The most undesirable accessories:

Chrome accents	7
Bumper protector	4
Graphics/Stickers/Logos	9
Neons/Lights	5
Mud flaps	1
Spoilers	2
Wheel covers	1
Corner protectors	1
Fake sunroof	2
Big Antenna	1

The most undesirable turned out to be the use of chrome, stickers and out of place light accessorization.

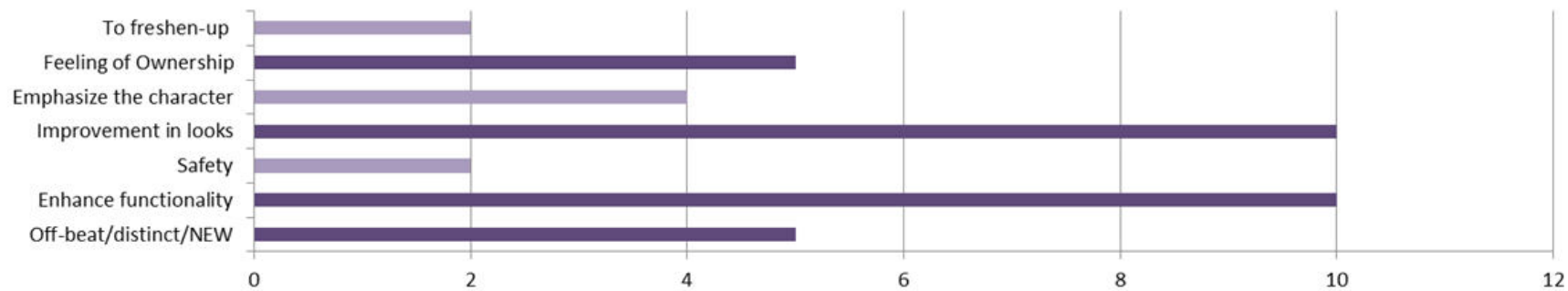
The candidates were also asked about their most immediate customization plans. This gave more understanding about their SUV usage, their activities, requirements and accessories demanded.

Any immediate Customization/accessorizing plans:

New Hard top	1
Extra Lamps	3
Bull bars	4
Winch	2
Better tyres	2
Alloys	4
Roll cage/Rear bars	1
Suspension	1
GPS	1

Seat covers	1
Body-warp/film	3
Camp/Tent/Shelter	1
Paint job	2

When asked about the “NEED” to accessorize/customize, the answers were similar to those expected. Question was: Why do you want to customize/accessorize?



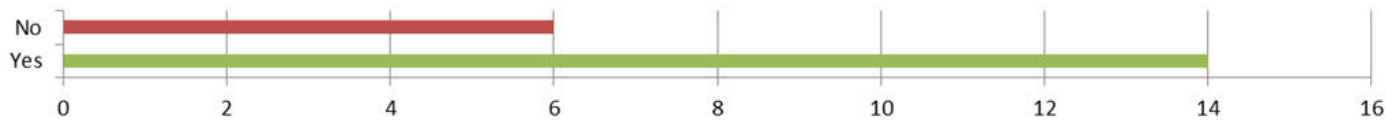
Up next, we tried to get the character keywords for an ideal SUV out of our users. The idea was to understand their expectation from the behaviour or looks of their car, the real character. These keywords would be taken further as my design keywords.

Sporty	9
Macho/Masculine	15
Strong/Powerful	16
Premium/Luxurious	9
Elegant	3
Rugged/Raw	10
Aggressive	7
Innovative/Distinctive	6
Big/Wide	4
Lean Machine/Pure Muscle	7
Safe	3

The keywords chosen by almost all of them and given maximum votes were (as shown by blue bars in the graph) Powerful, Masculine and Rugged.

The next question was to ask the users whether or not they are inclined towards buying accessories from the OEM itself. As many options from the aftermarket shops and online are available to accessorize, this question greatly highlights what the customer thinks in general about the OEM when it comes to its accessories. As the graph shows below, most of them clearly were in favour of buying accessories from the OEM. This is a very important question for the accessory business to flourish for an OEM.

Are you open to an OEM provided "Special/Limited Edition/Custom-line" variant of your car (Aesthetic only), for a little extra price? :  
(Given that they appeal to you as a user, accessories of your liking, your taste)



There were some reasons for the choices made by the candidates, tabulated below. Why most of the candidates would be open to buying accessories from the OEM itself depends greatly on their faith and assurance from the side of OEM.

Why:

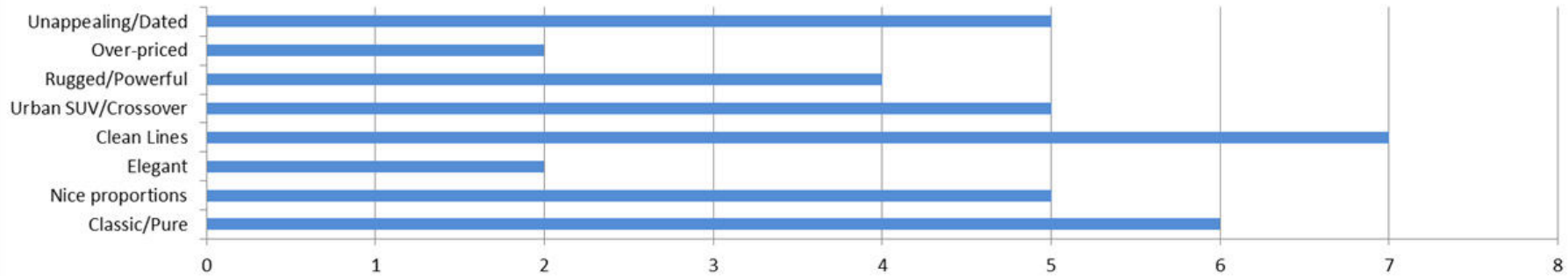
Reliability/Quality OEM parts	9
Lack of time/Accessory market	4
Good Design/Utility by OEM	7

Why not:

Poor accessory options by OEM	3
High cost	2
Doesn't like accessorizing	1

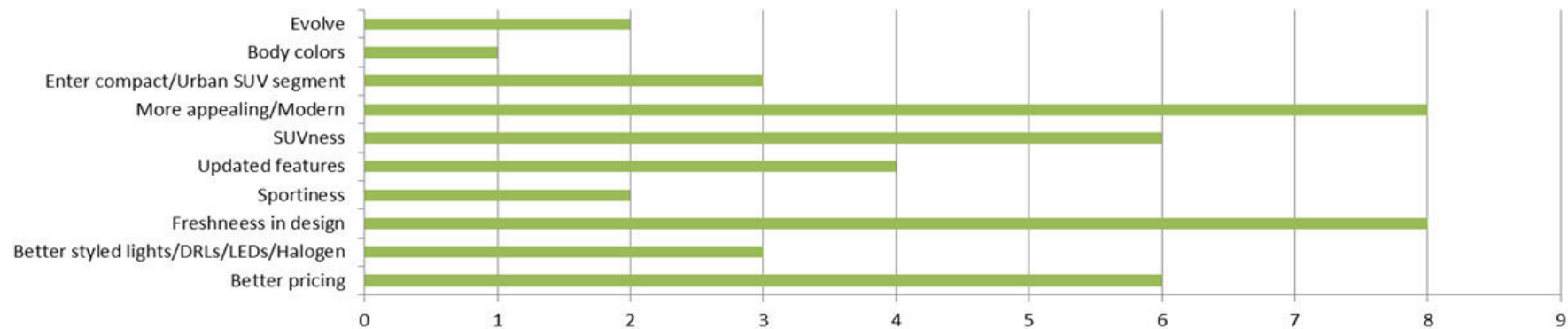
Towards the end of the survey, it was important to know their views about the design and character of Grand Vitara. The candidates were asked to describe Grand Vitara with some keywords. The most used keyword for the design of Vitara were clean lines, pure and well proportioned.

The next question asked was -  
Describe 'Grand Vitara':



It was quite important, with the flow of the discussion with every candidate, to ask their recommendations for the design of Grand Vitara. At this moment the candidate is well warmed up and has been talking about the same for a while now, hence his views about the car cannot be neglected. These are the users who are basically target audience for the project.

Recommended changes for 'Grand Vitara'



## Design Focus – Shortlisted Accessories

From the market research and user survey, some of the accessories were clearly the most important and needed to be incorporated in the car. As the accessories design cycle is quicker and ever changing as well, it was assumed that these shortlisted accessories would do justice to the vehicle in the present scenario. They are not being designed for a future model but to make an older model stand at par with other cars today.

5 Accessories Shortlisted from the research were:-

1. Alloy Wheels
2. Bull bar
3. Roof rails
4. DRLs
5. Extra/Rally lamps

While the first two were declared mandatory, the last three were open to experiment with. Apart from the selected accessories, additional innovative accessory ideas were also welcomed and desired in the project.

In my project I did the first four accessories from the chosen five as mentioned and instead of the fifth one, I provided some quick suggestions/ideas regarding the body wraps, side mouldings, accents and claddings instead. These will be covered later in this report in design section.

## User Sketch

After a deep user research, broadly two types of 'Users' were seen in our research.

One user is 'the DOER'. He is generally a young man with a passion for adventure. He is keen in adventurous activities like off-roading, rally racing, go-karting, sky-diving and similar adventure sports. He owns and demands performance from his vehicles and likes to test them to their limits. Such a person loves to live life off the edge. He is a guy who would rather like to stay in camps, tents or other such farmhouse stay which is away from

the road and in the middle of nature. He has lesser family responsibilities. He has performance/sports oriented gadgets and accessories. Aesthetics are important but secondary to function and utility. His love for adventure, fun and feeling of freedom is clearly visible in his world around him.

the doer



The second type of user is 'the ASPIRANT'. He is a person with a young family with or without a kid. He is very adventurous but not to the extreme. He likes to go to trips with family and do some exciting activities with very low or no risk factor. He loves to own sporty and pretentiously adventurous watches and gadgets that give a hint to others that this person

is very exciting at heart. He prefers to stay in luxury hotels/resorts when on a trip and not necessarily in proper camps or tents. He likes to drive long distances and visit new places but not necessarily give up on his comfort. He is aware of latest trends and technology, indulges in urban activities like shopping and socializing quite often.

## the aspirant



## Mood Board

The mood board for further design of accessories was based on the keywords that came from the users themselves. The first one was based on the keywords of: powerful, masculine and rugged.

Top left is a powerful wrestler, in control of his strength and aggression. Clockwise, on its right is an Urwerk watch that reeks of masculine looks. Right most image is of Robocop, a black armoured hero possessing power, ruggedness and masculine design. Clockwise, on its left is a microscopic image of one of the toughest and the most rugged element alloys known, tungsten carbide, whose design even at the microscopic level reeks of ruggedness. The leftmost image at the bottom is of a crocodile's rugged scaled skin armour.

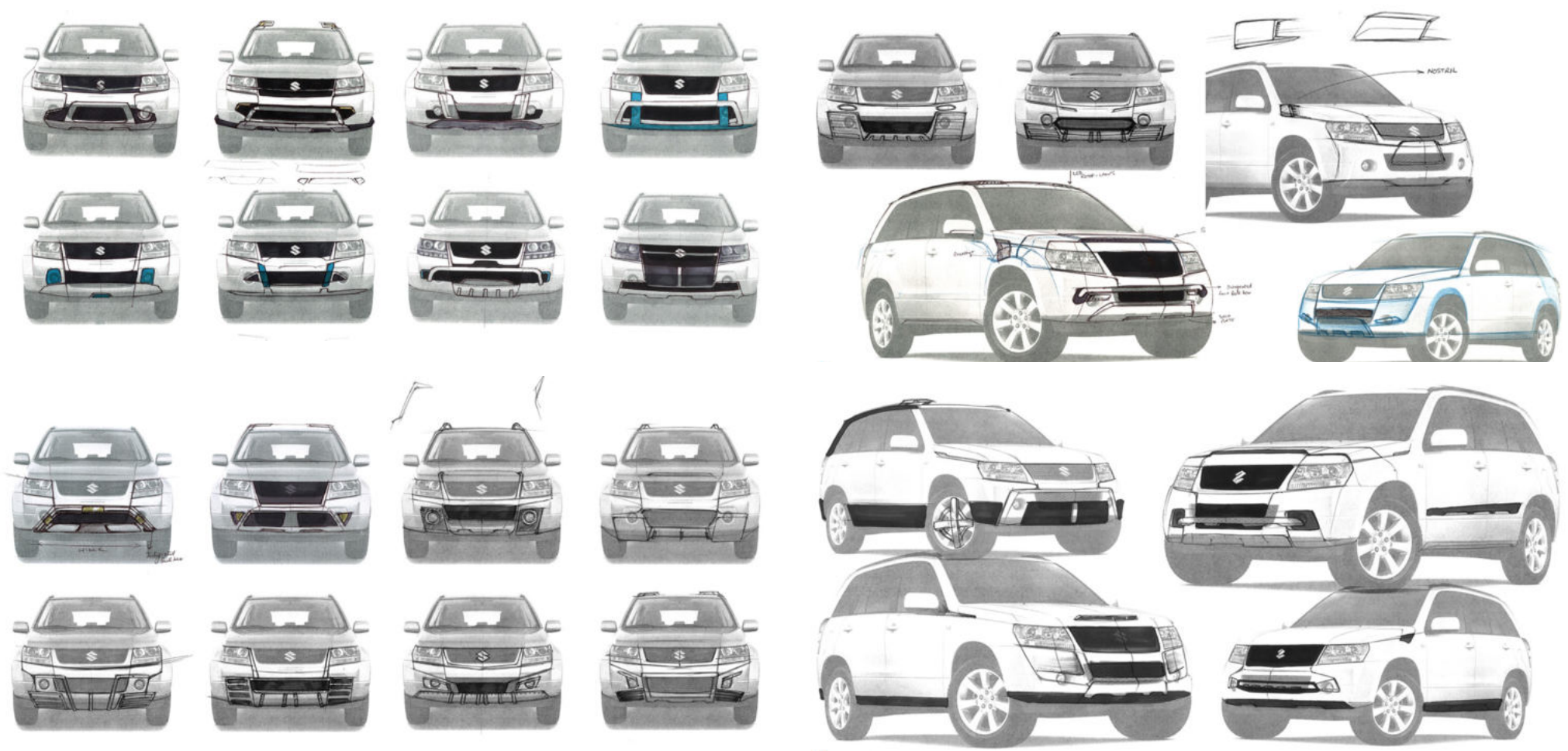


# Ideation

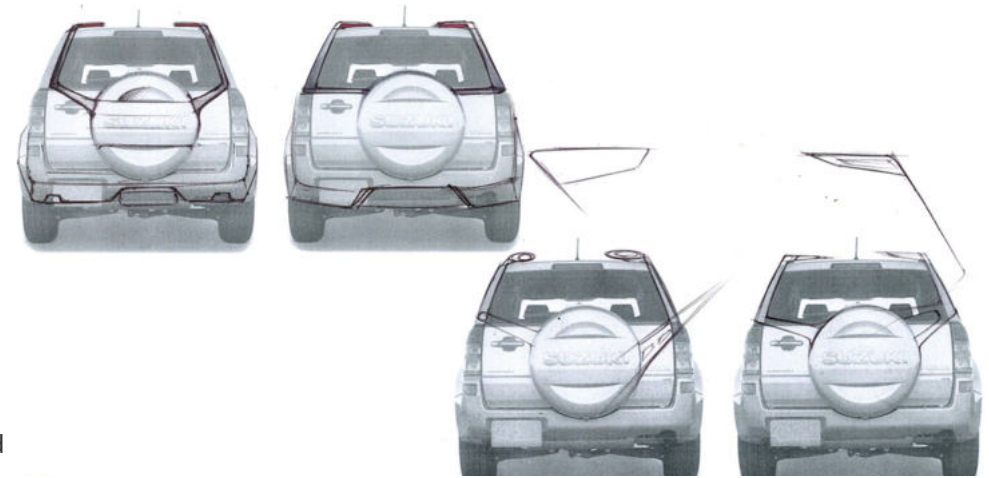
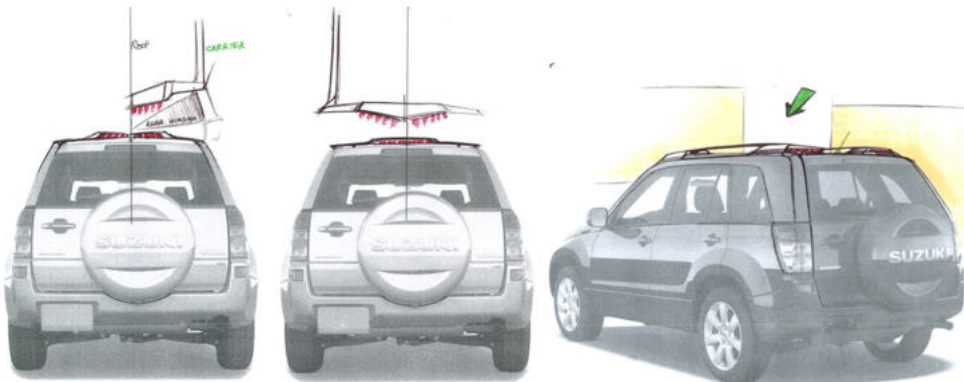
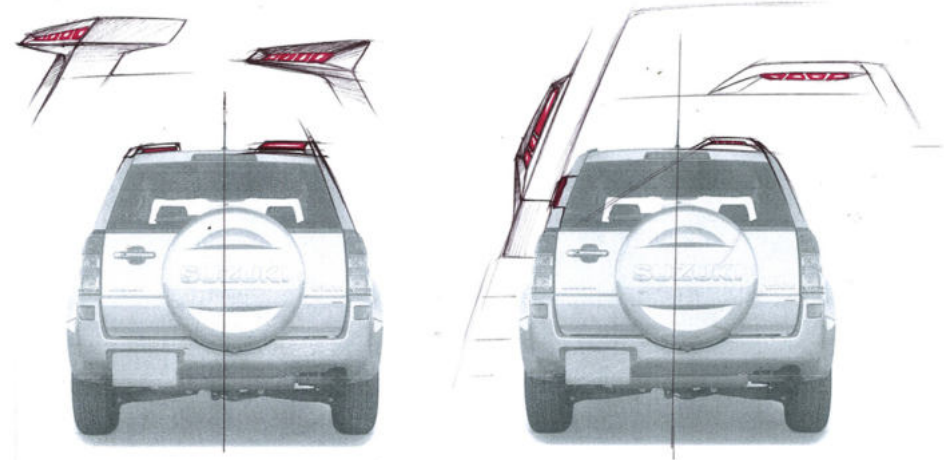
This includes various initial ideas that were shown for the Grand Vitara. As well as some initial sketch work of various accessories. A few accessories were ideated for their form and aesthetics. Many ideas came to my mind regarding some new accessories for the car other than the usual ones. They were also sketched and depicted.

Some initial ideas for the front of the car, including the bumper, bull bars, lights etc. are as follows:





Some initial ideas for accessorizing the car.



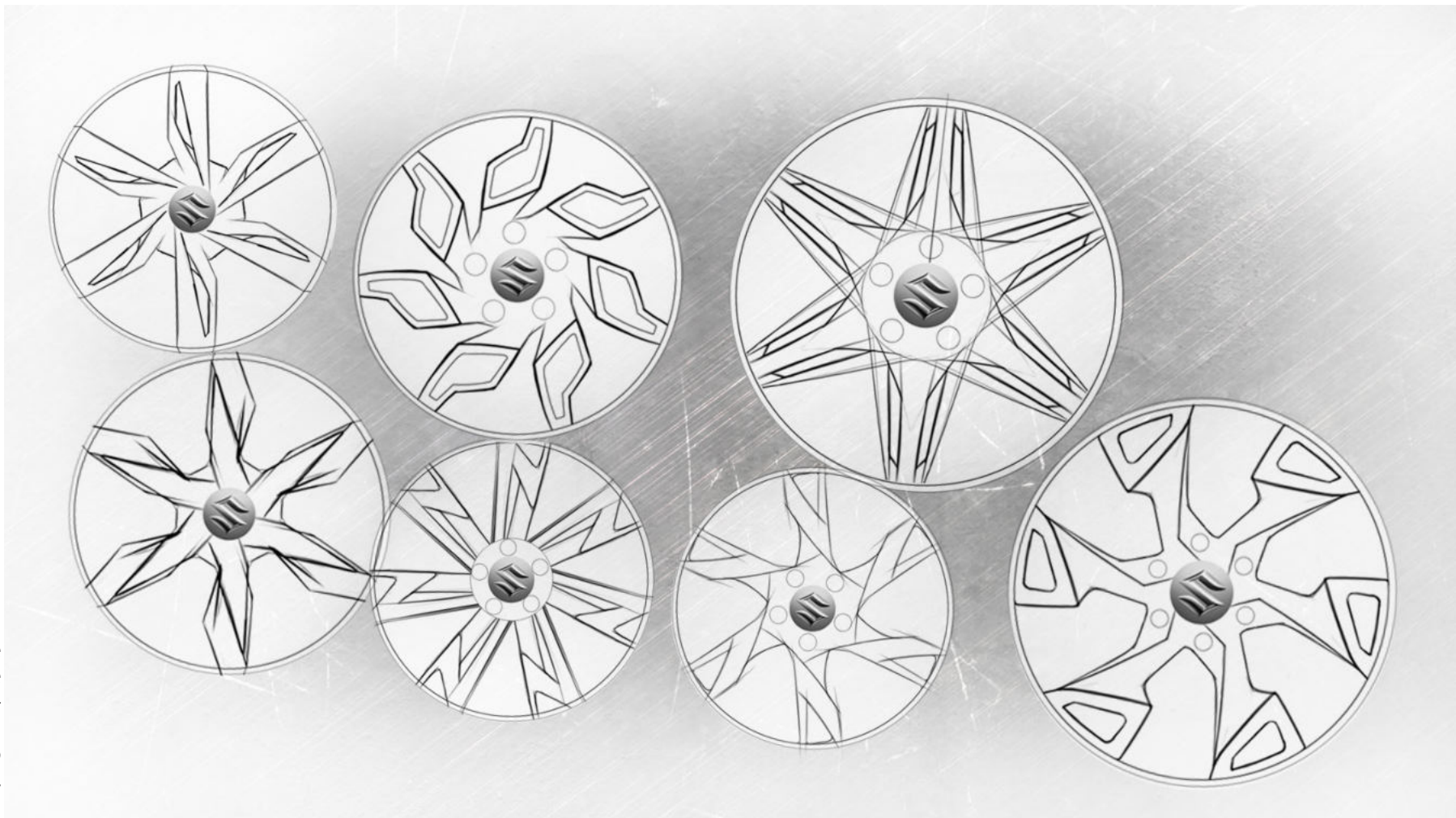
Some ideas for the rear of the car which included a new type of tail-lamp, LED lamp integrated roof rails, a rear-roll-bar accentuating the spare-wheel housing etc.

## Alloy Wheel Ideation

One of the most important and most popular accessory is the alloy wheels. There are numerous designs available in the aftermarket, but still many customers prefer the OEM designs for their sound engineering, reliability and serviceability from the OEM. Alloy wheels were ideated the most. Some feedback was provided by Mr Abhilash who takes care of alloy wheel and exterior styling at the studio. As per his feedback a few considerations were kept in mind before ideating for interesting alloy wheel shapes. Some engineering restrictions need to be considered e.g. 5-bolt wheels are standard for the company for



A few ideas like these were inspired more from dynamic rotating objects and had an unstable urge to perform of their own.



On the other hand, some ideas like these were quite influenced by forms taken from crocodile's parts. These look bolder and have a presence of their own.



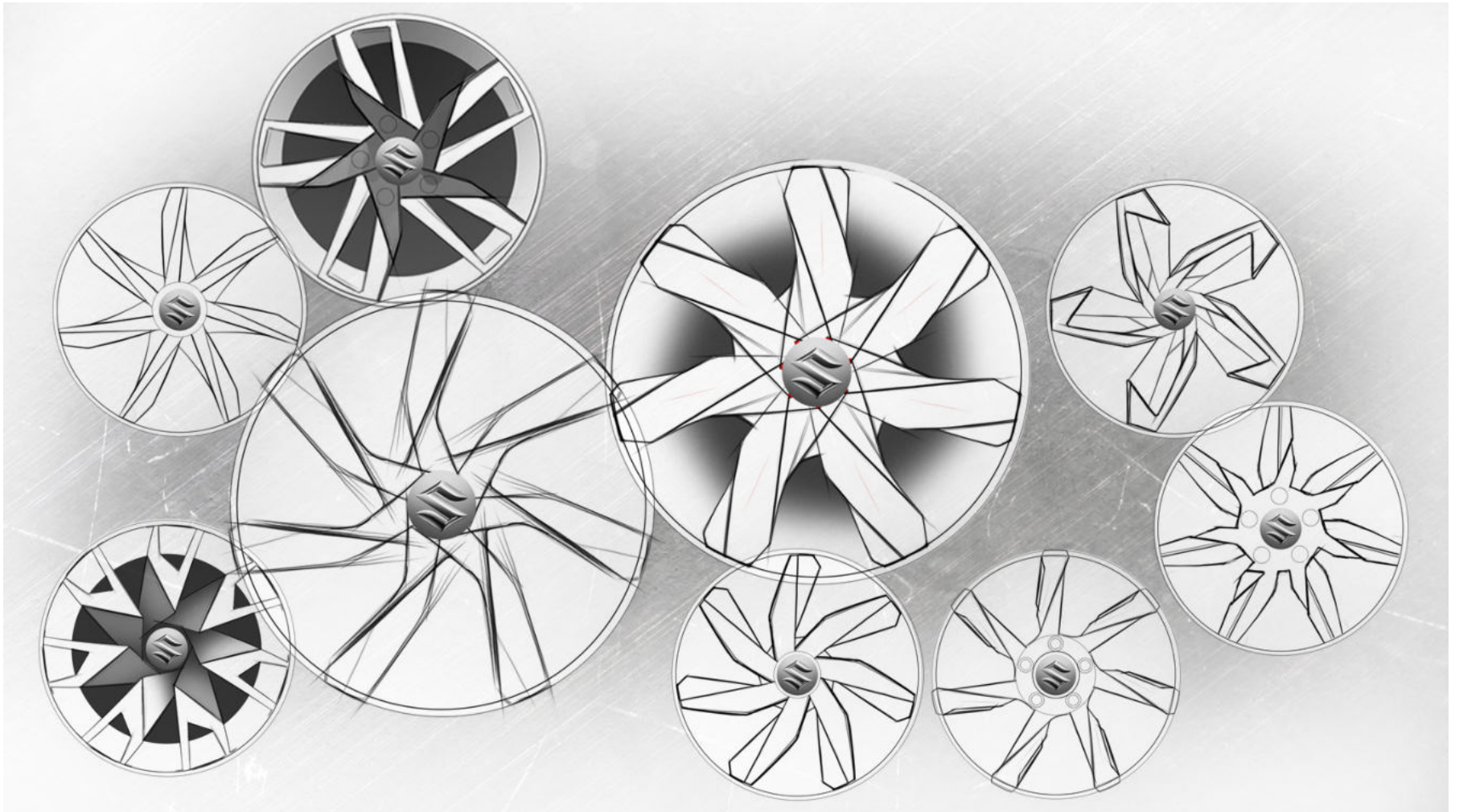
Many ideas tried to experiment with more than 5-spoke alloy design. A few ideas here are quite intense and dense. They possess quite a lot of graphic in them as well.



The ideas like these were deeply inspired from rugged parts of a crocodile and robocop's armour. Some of them felt really appealing to the viewers and were appreciated for further development.



The flowy and dynamic nature of an alloy wheel were experimented further, to find attractive, OEM-looking designs. The two big ones were appreciated for further development.



## Concepts - Alloy Wheel

### concept 1



This idea was selected for further development. The image shows the development from a sketch. This design falls in the category of a very contemporary and productionable alloy design for the OEM. This idea felt quite young and dynamic for the car.



The idea behind this design was to have two rotatory motions in opposite directions combine to create an attractive design. This way the design appears to be very active even when stationary. The red accents on the top act as a catalyst and enhance the rotation of one of the rotatory directions.



Here are some possible variants for the concept 1. The leftmost is the colorful variant with usual steel finish and glossy exterior. The one in the middle can be a possible variant with the final exterior finish of brushed metal, with engravings. The one on the far right is a colourless variant of the same design, which seems quite a bit production ready.

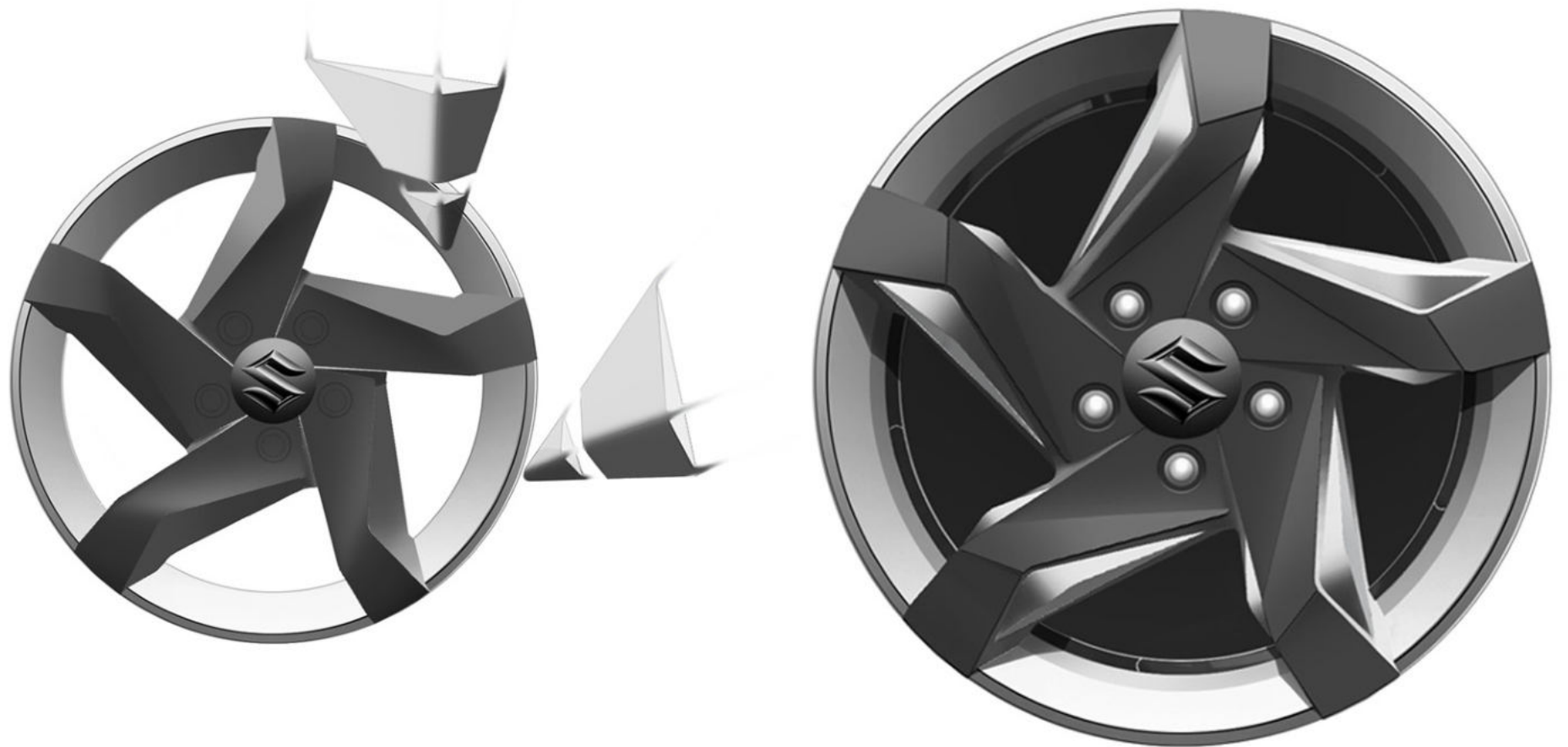


The next important step is to see how the design looks with the vehicle. Here, the Concept 1 alloy makes the car look younger, and provides a lot of energy to its wheels. It does go with the car and feel quite fancy.

## concept 2



The next shortlisted sketch was this one on the far left. This appeared very bold, and promising being visually capable of bearing all the SUV load and performance requirements. It does feel very showy and is a bit unconventional. It has a black matte coating with a wedge shaped metallic part embedded in every spoke. Every spoke feels like a strong fore-arm. The colour and slits on the spoke to give it a plated feeling is inspired from the robocop armour.



The basic idea behind this design was to have 5 strong forearm like armoured spokes, that look very capable and strong, yet feeling ready to march. A wedge like uncontrolled metallic body pierces its way through this spoke and unable to leave it completely, stayed embodied and creates a shiney zone of interest between matte black coatings.

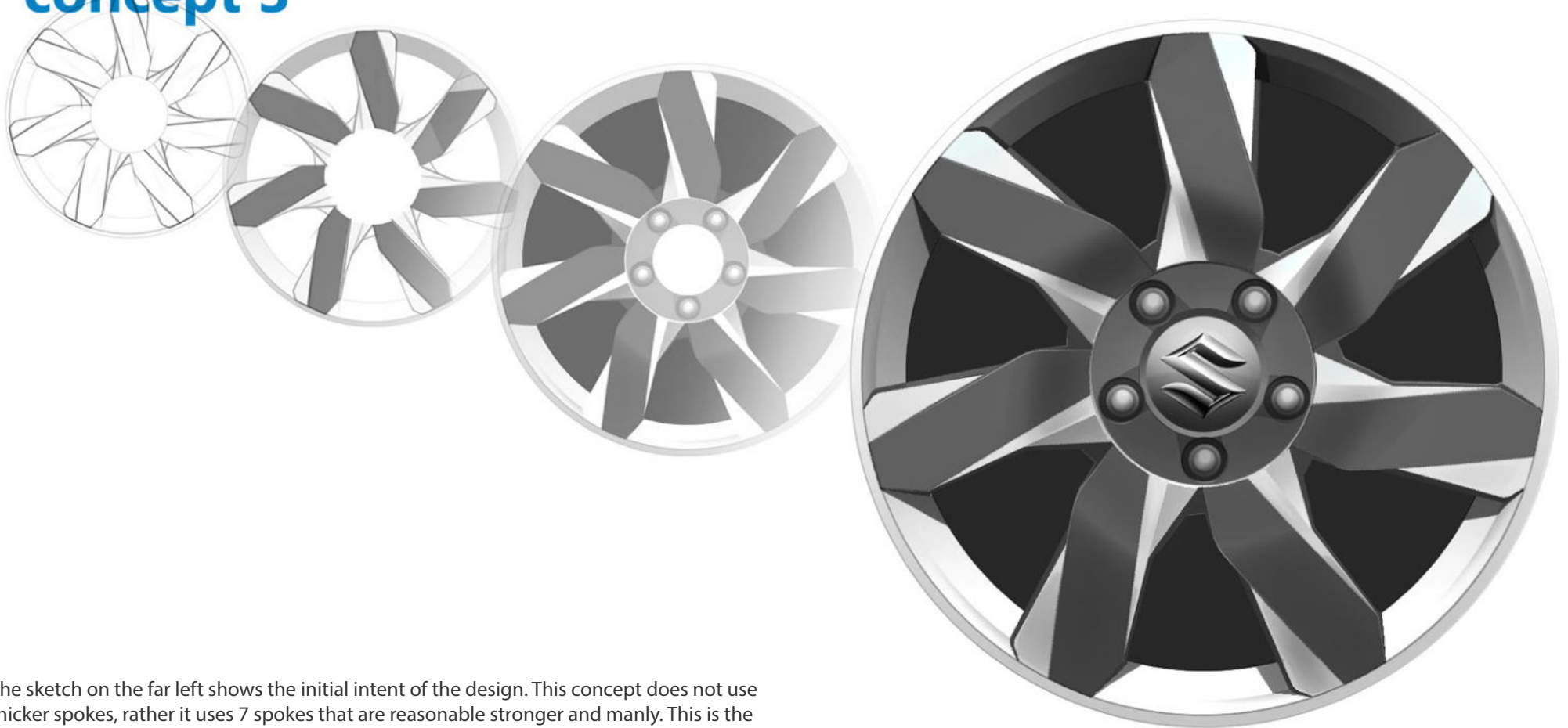


There can be some variants of this design. A plated black matte armoured one on the left with metallic wedges embodied in every spoke is one iteration. Another very interesting and very much appreciated design can be introduction of bright metallic red in only one of the wedges. It feels quite unique and one of its kind.

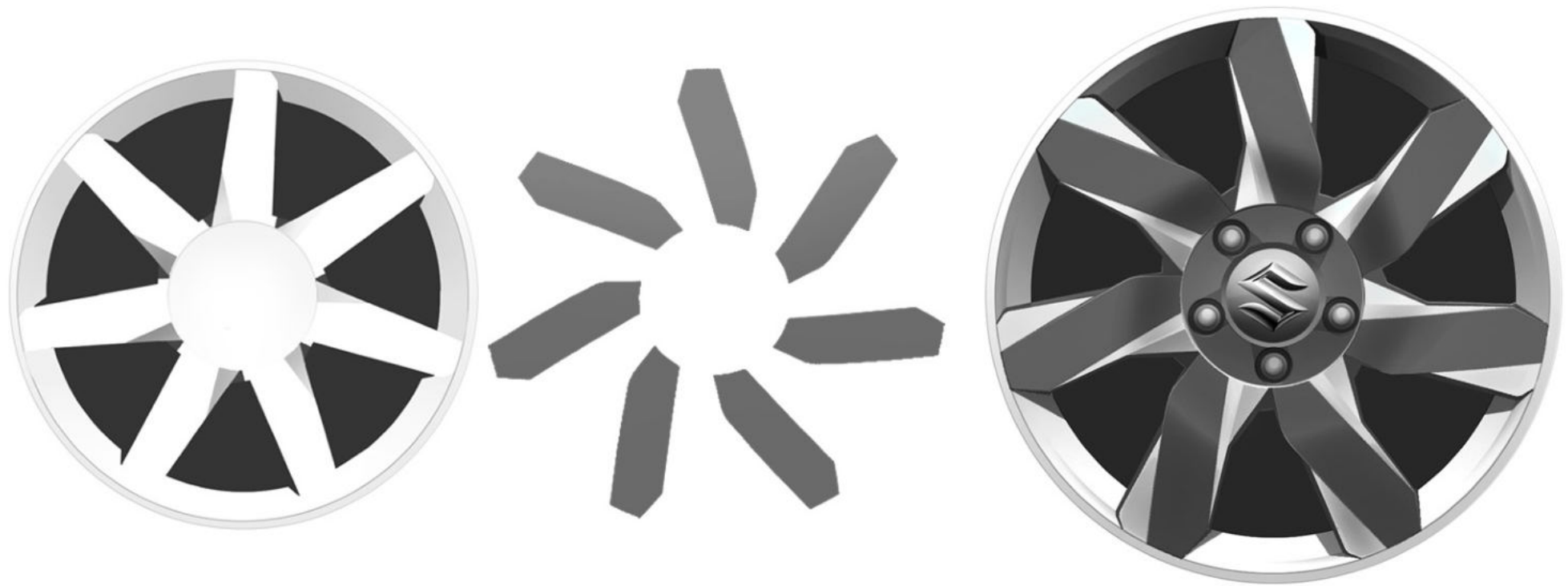


With the car, this concept of the alloy wheel does feel visually stronger compared to the last design. It is more towards the conceptual level and less conventional. It makes the car feel bolder and fancier and hence is chosen by many.

## concept 3



The sketch on the far left shows the initial intent of the design. This concept does not use thicker spokes, rather it uses 7 spokes that are reasonable stronger and manly. This is the final concept for the alloy wheels.



The idea behind this concept was that a rigid and reasonable strong yet wheel like alloy is introduced with a rotatory motion, in opposite direction to that of the wheel. If the tyre rotates clockwise, in the image, the black accents on the top rotate anti-clockwise and hence create a very interesting situation.



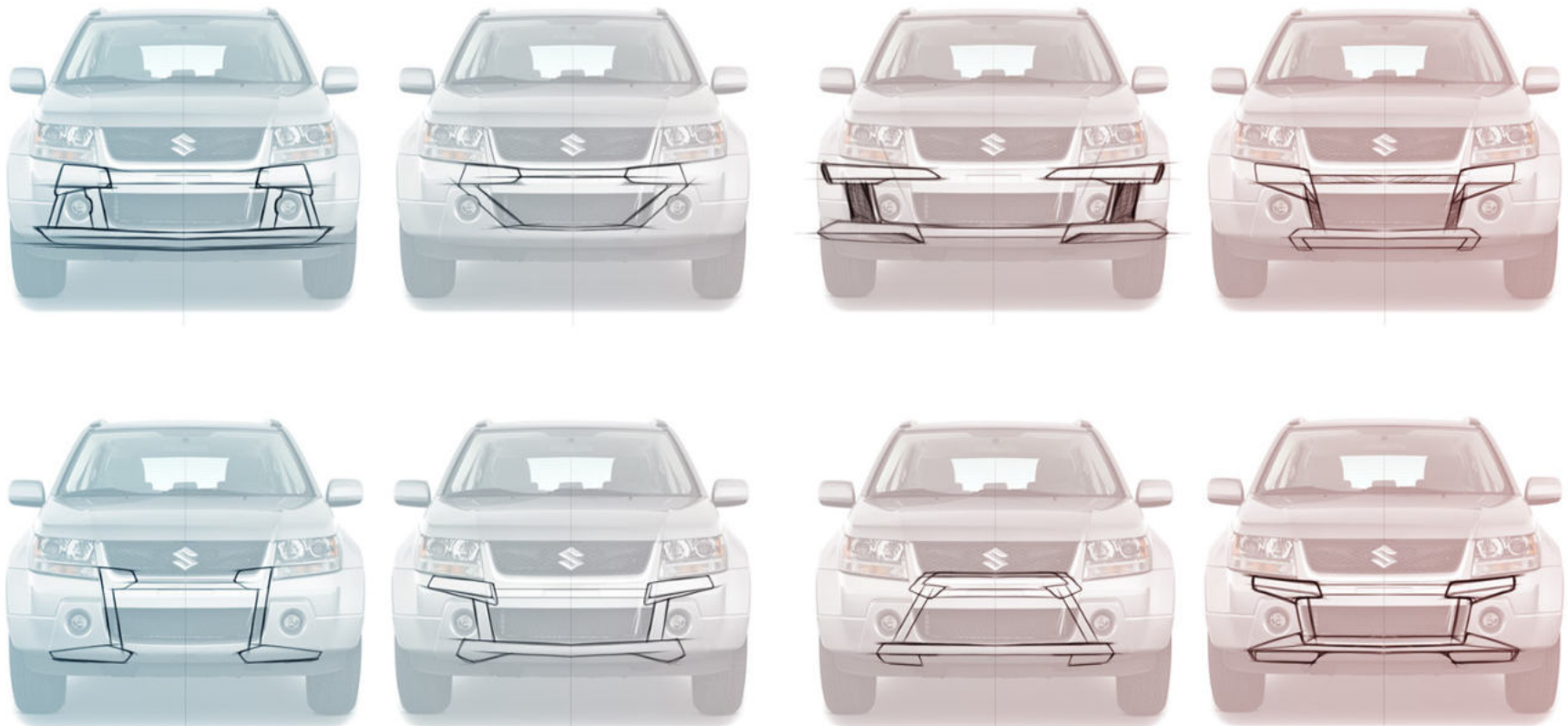
The variants for this concept can have different finish of the black accents. The one on the left shows a carbon-fibre like finish while the one on the right has a black-metal grille type perforated accents. The one on the right was appreciated quite a lot.



This design makes the car even more macho looking. It adds to the SUV feeling and looks different and interesting primarily because of 7 spokes which are in dual finish. This concept stands between the first two concepts, as it is not very conventional and not very conceptual either.

## Bull Bar Ideation

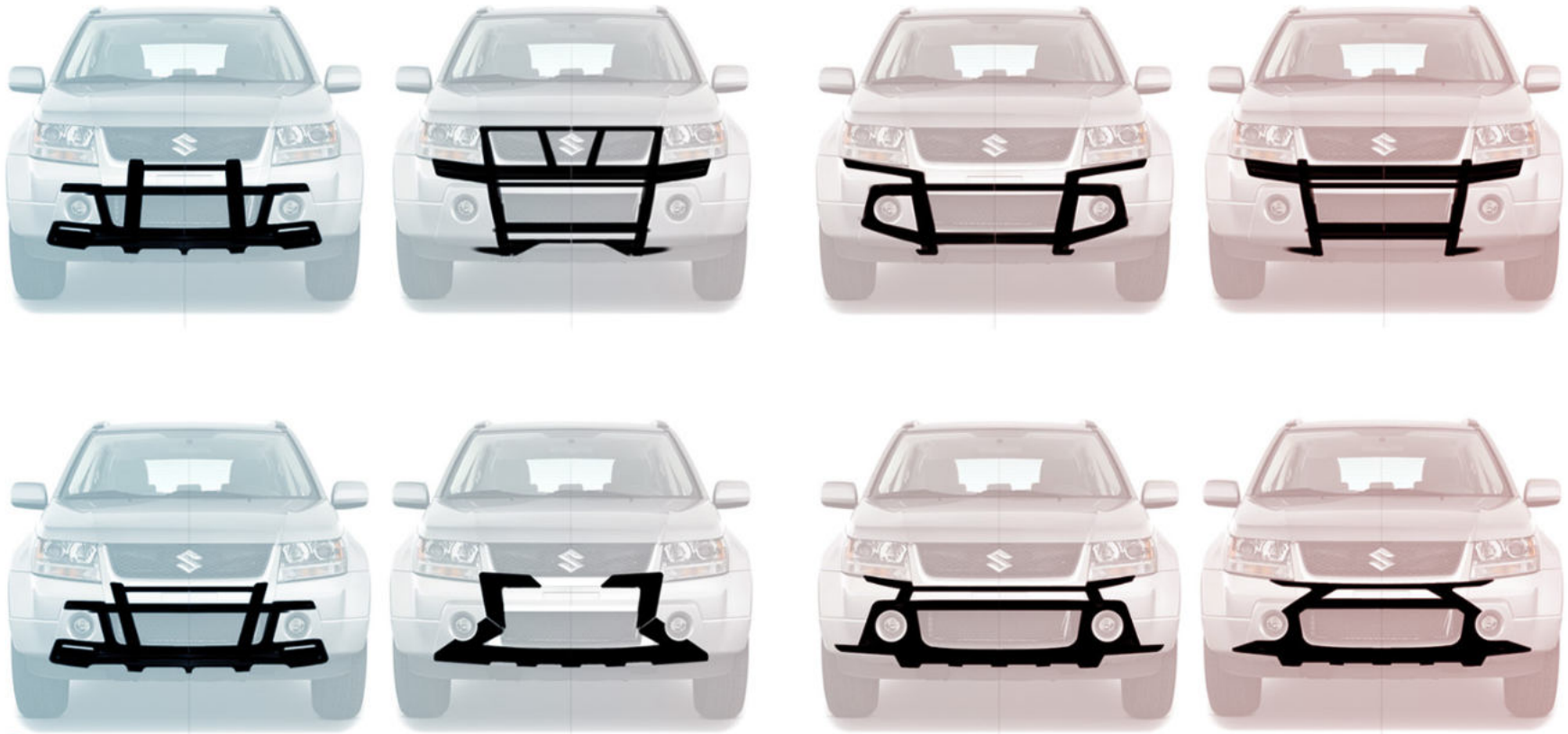
Next accessory was a bull-bar for the SUV. Out of many quick ideations, a few selected ones are shown below.





The idea was to go away from the conventional look of a typical 'bull-bar' and make it young and bolder. the design should go with this particular car as well and should feel OEM made and not a standard aftermarket item.





A few of them were going with the overall feel and stance of the car. Three of the selected ones were taken further to be developed in a better way.

## concept 1



For the first concept, here is a bull-bar design which makes the car a little bit more aggressive and adds a little bit attitude to its front. It sticks to the lower bumper as a cladding, unlike the very common metallic-rod bull-bars that are bolted. This has very aggressive diffuser-like opening at the bottom, with chrome rods completing the look on the top. This one is bold and aggressive with a hint of SUV attitude.

## concept 2



Concept two goes away from the normal bull-bar definition a little bit and looks a bit fancier. It is an unconventional design and jazzes up the front of the car a little. The idea was to spice up the front and enjoy the lines of the front nose of the car. This design also sticks to the lower bumper and stands upright near the top. The two triangular cross-sectional rods look very fresh and fancy as well.

## concept 3

This concept tries to find a perfect balance between fancy and aggressive. This one feels the most apt bull-bar for the car and is appreciated the most. It feels smart and meant-for-the-car design. It appears to expand the thin front nose of the car. It also is fixed to the lower bumper and the upper part of the bull-bar is in front of the body and in the air. That very smart air-intake like treatment at the bottom makes it really cool and the two vertical columns enhance the existing grill lines of the car as well.



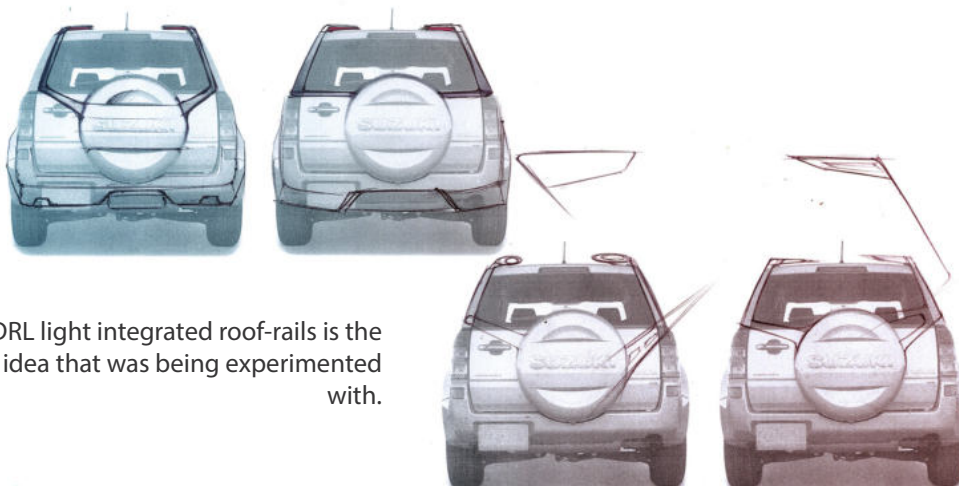
## concept 3



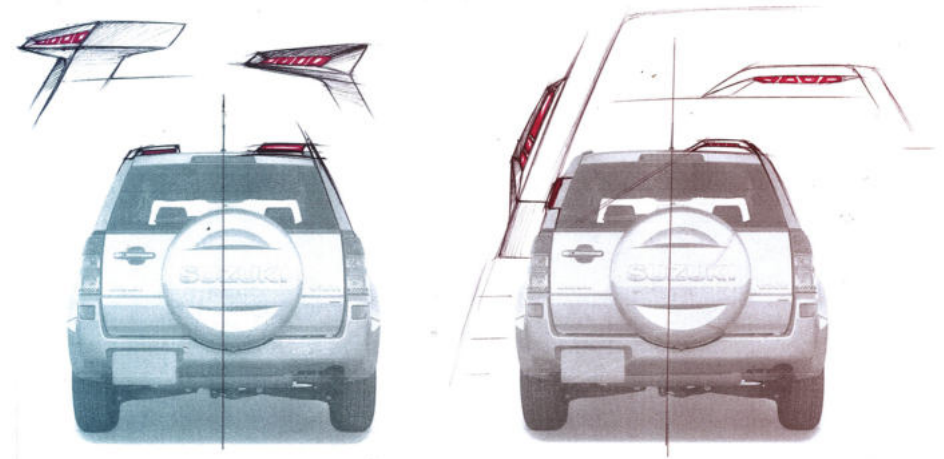
This one was selected and hence shown in another view. It is different from the conventional bull-bars. It is an amalgamation of a bull-bar and a protective cladding.

# Roof Rail Ideation

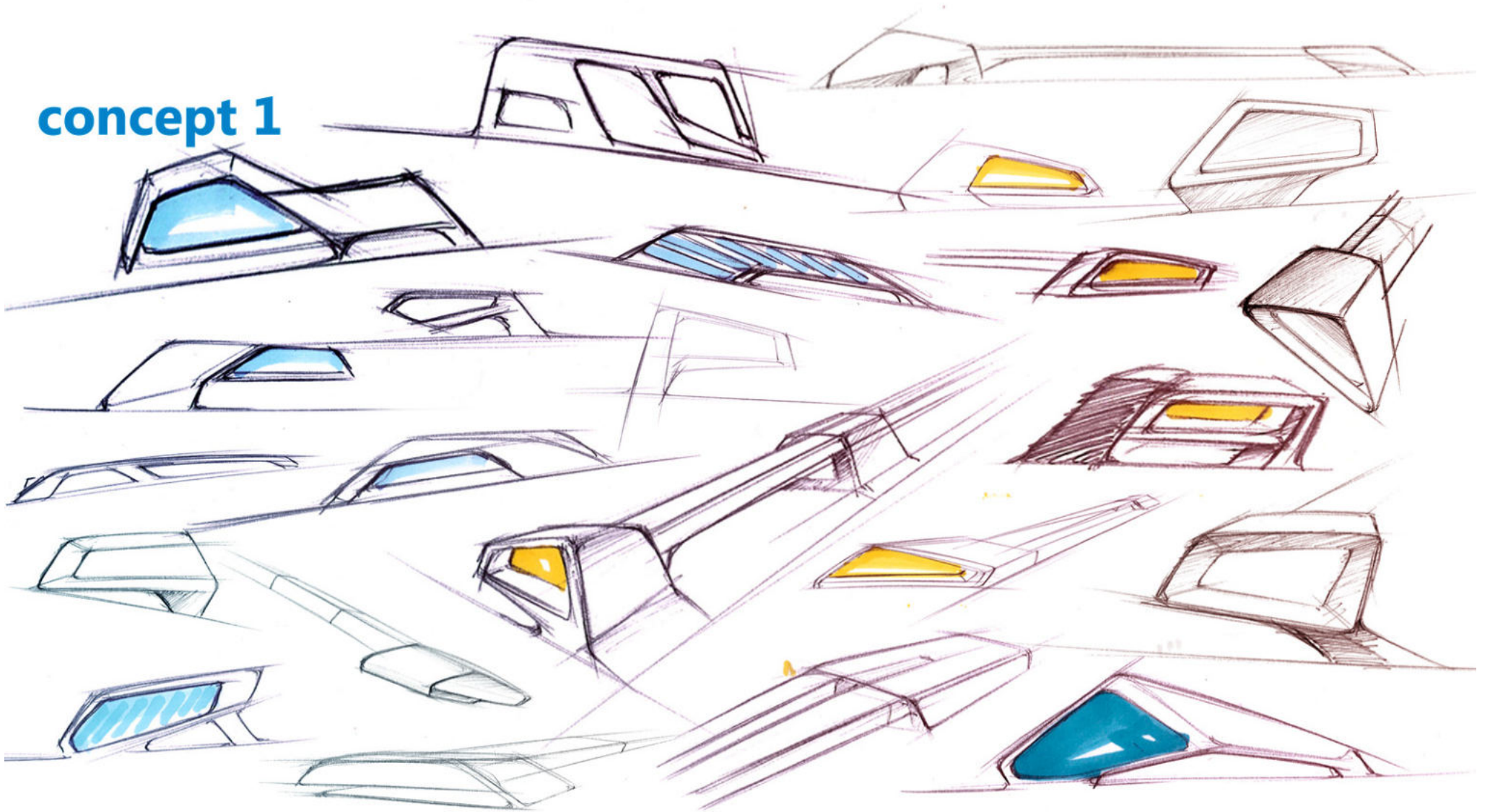
The next accessory was roof-rails and DRL lights. My idea of combining the two was given a push and hence was developed further.



DRL light integrated roof-rails is the idea that was being experimented with.



# concept 1

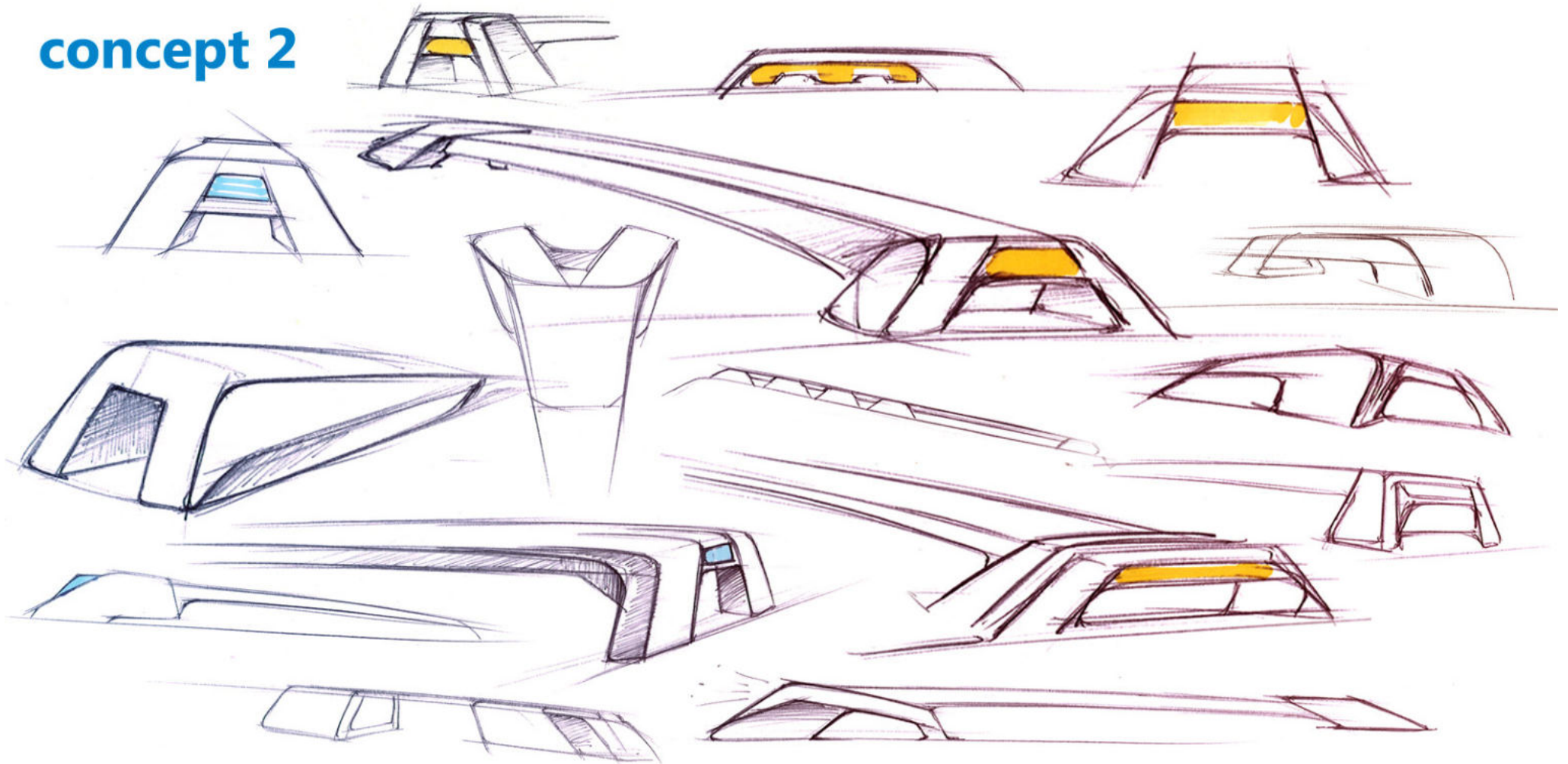


## concept 1



From many ideas for this accessory three were selected. This is concept 1. It goes with the bold and upright image of the car. It tries to capture the stance and straight volumes similar to that of the car. This design is quite smart and apt for the car, hence was appreciated the most.

## concept 2

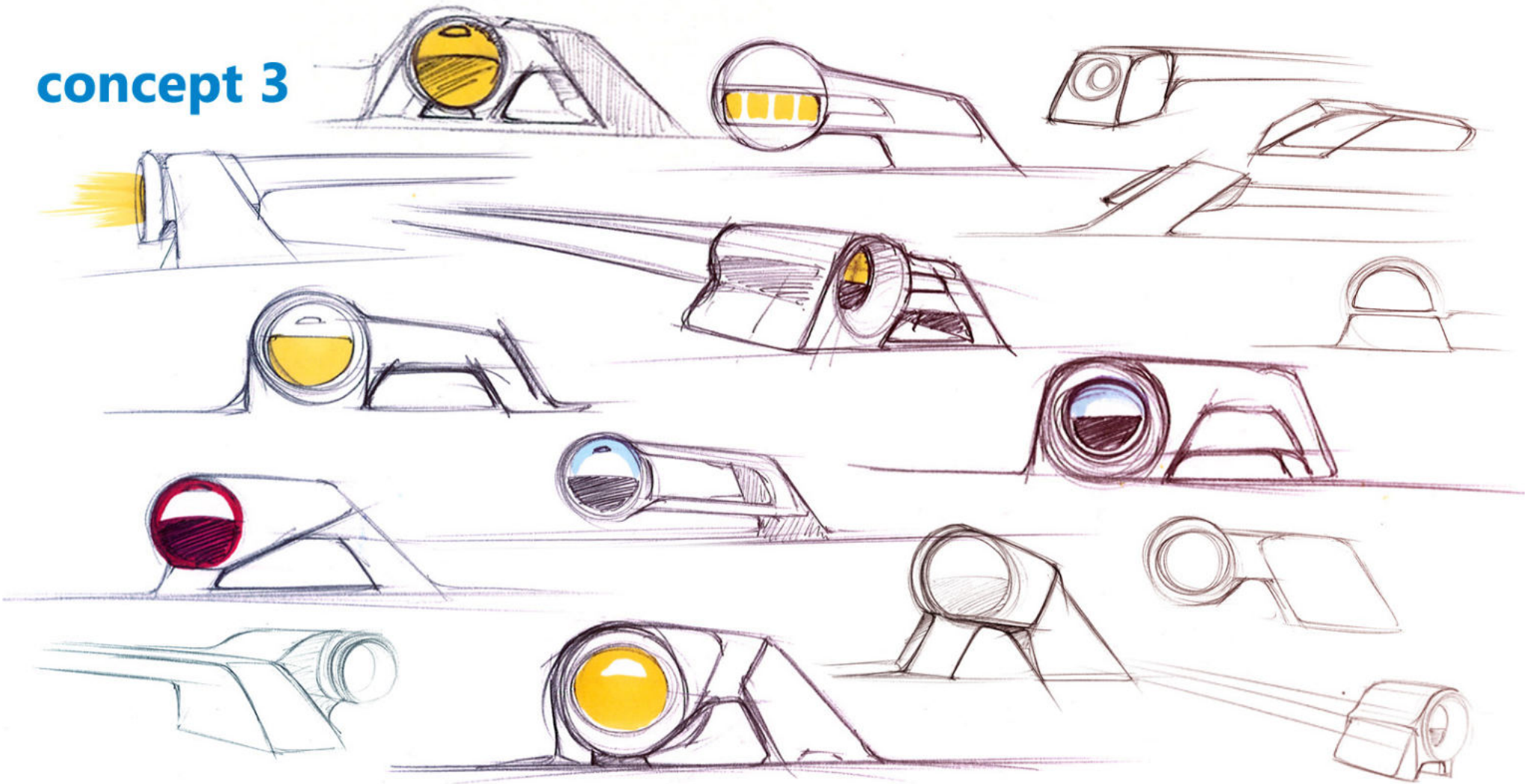


## concept 2

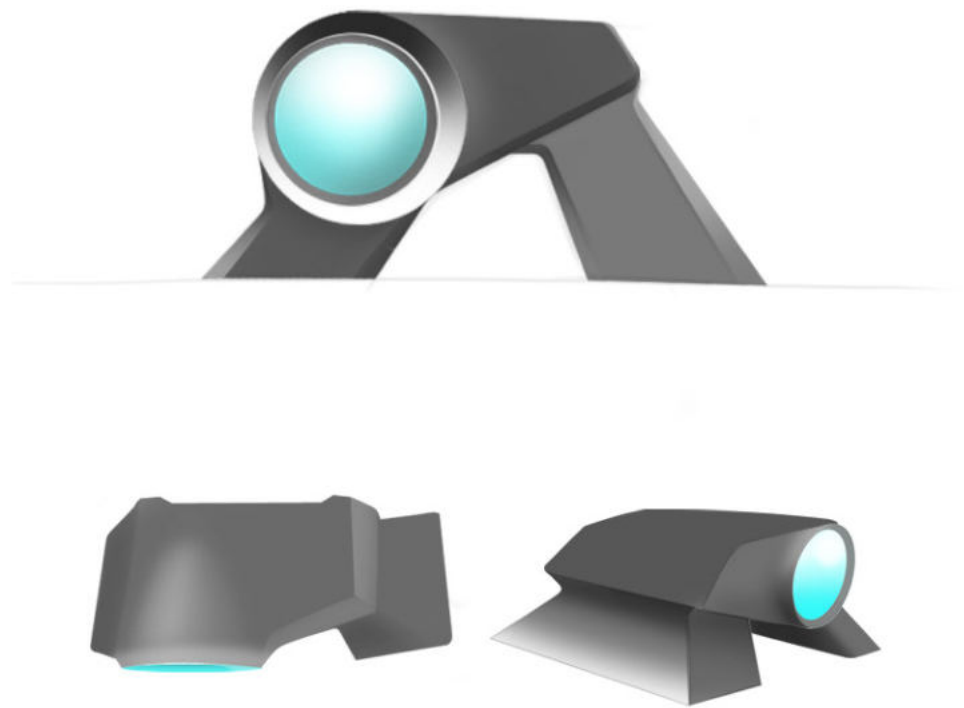


Concept 2 is more like a fancy accessory on the top of a sophisticated vehicle. It is sportier than the previous because of its stance and the A shaped posture on the top of the car. Black body of the rails and a chrome treatment are as well.

**concept 3**



## concept 3



The concept 3 tries to play with the circular form as there are many such circular elements on the front of the vehicle. The circular fog-lamps, circular head-lamp bulbs are well accompanied by a circular DRL integrated in a roof-rail on the top.

# Ideation - Body Wraps | Accents | Mouldings

To complete the overall look makeover of the vehicle, certain body additions like body wraps, side claddings, accents and mouldings were ideated as well. Here is a glimpse of a few of the ideas.



### body cladding 1



For the side body cladding, these were the suggested ideas. The first being a very minimal cladding in all black. It makes it look smarter by being almost non-existent. The second idea for the cladding is a thin side cladding kit, which adds to the rugged bolder image of the otherwise vanilla side body of the car. The third idea takes the sophistication out of the equation and its jagged look makes the car look suddenly fresh and noticeable on the wheels.

### body cladding 2



### body cladding 3



## roof wrap 1



The basic idea with the first roof-wrap is to break away from the plain large surfaces that make the car look less interesting. There was a need to break these large surfaces. The second roof-wrap idea was appreciated the most. It tries to make use of a partial black roof-wrap and cuts the A-pillar in such a way that it gives a sudden feeling of restlessness to the otherwise boring side view. Addition of side moulding streaks further helps break the large plain surfaces and gives a quick directional feeling to the big surfaces.

## roof wrap 2



## side mouldings



### bonnet vent 1



Another idea for this car was to enhance the bonnet-side vent on the car, which has been there for ages and has become an identity for the vehicle. The side vent needed emphasis to become prominent and hence it was experimented with subtle (in the first image on the left) to very edge (in the image at the bottom) side vent claddings. It can have some black cladding as an enhancer and a grille element as well.

### bonnet vent 2



### bonnet vent 3



## headlight | taillight accents



To enhance the appearance of the headlights and tail lights without actually changing any of them needed some accents around them. The idea here is not to use the typical chrome-accents for these lights, but to sport black metallic grille or perforated accents around the lights. It has a younger looking appearance of its own and highlights the lights without adding that outdated chrome shine all around it.



## body wraps



Though the project initially did not need the graphical elements like these to be designed, but as a suggestive work these few body wraps, side mouldings etc. were also touched upon. The idea was the same, to break the big plain side surfaces of the vehicle and add some area of interest.

Here is a quick look of some combinations using the few suggestive accessories from the previous pages. Many ideas as combinations were tried and the nicer ones that really worked for the vehicle were taken forward and are properly depicted in the following pages.

**combination 1**



**combination 3**



**combination 2**



**combination 4**



# Final Package

## package 1

the doer



## Package 2

the aspirant



One package was suggested using certain combination of the accessories discussed before, which would be for the first user category defined in my project as 'the doer'.

A second combination package of the accessories was suggested for the second type of user category defined in my project as 'the aspirant'.

## package 1



This is the final package 1 for the user category 'the doer'. It reeks of ruggedness through its jagged features and bolder alloys. It has rougher look compared to the existing car and

the next package. This one feels more towards the performance vehicle from its looks than just completely showy. The package also adds masculinity to the unaccessorized car.

## package 2



This is the final package 2 and belongs to the user category 'the aspirant'. This package makes the car a bit fancier and increases its road presence by miles. The conceptual alloys

enhance its head-turning ability. Same bull bar and roof-rails are used as these felt quite versatile and were appreciated the most. This is a young looking package comparatively.

## 3D Model

Out of the few suggested accessories for the car, the Concept 2 Alloy wheel design was advised to be taken further to the 3D CAID modelling stage. A 3D Alias model was built for the selected alloy wheel design as shown below in these images:



## Physical Model

For display purposes, a 1:2 scale model of this 18" alloy wheel design was made.

## Image References - links:

[1] [http://www.netcarshow.com/suzuki/2006-grand\\_vitara\\_v6/800x600/wallpaper\\_12.htm](http://www.netcarshow.com/suzuki/2006-grand_vitara_v6/800x600/wallpaper_12.htm)

[2] [http://www.autoguide.com/gallery/gallery.php/d/464635-3/startech\\_range\\_rover\\_evoque\\_11.jpg](http://www.autoguide.com/gallery/gallery.php/d/464635-3/startech_range_rover_evoque_11.jpg),  
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[3] <http://blog.caranddriver.com/wp-content/uploads/2012/11/2013-Ford-Explorer-Sport-by-Forgiato-101-626x382.jpg>  
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[4] [http://tuningsuv.com/albums/userpics/10001/Audi\\_Q5\\_tuning\\_3851.jpg](http://tuningsuv.com/albums/userpics/10001/Audi_Q5_tuning_3851.jpg)  
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[5] <http://indianautosblog.com/wp-content/uploads/2012/07/Elia-Dacia-Duster-Darkster-Concept-1.jpg>  
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<http://bycarinfo.com/renault/all-new-renault-dacia-duster-facelift-premiere-at-frankfurt-motor-show/attachment/all-new-renault-dacia-duster-facelift-hd-wallpapers-4/>  
<http://www.team-bhp.com/forum/attachments/modifications-accessories/1076816d1366720825-dc-designs-duster-customization-additional-3-49-lakhs-dc-de>

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sign-duster-front.jpg

[6] [http://www.mahindra-customisation.com/scorpio-lifestyle.html#https://c1.staticflickr.com/5/4133/5208084851\\_7338530cea\\_z.jpg](http://www.mahindra-customisation.com/scorpio-lifestyle.html#https://c1.staticflickr.com/5/4133/5208084851_7338530cea_z.jpg)  
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