

# Concept exploration for open-view small SAFARI Vehicle with revolving seat set-up

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**Abstract:** Safari vehicle are specially designed vehicle for tourist purpose where the vehicle allows the tourists/passengers to go nearer the nature and feel it from within and also staying at a safe side. Several global research and modifications on comfortable safari vehicle design are still continuing. In spite of application of several ergonomics concept in safari vehicle design, viewing angle for seated tourists within the vehicle has still enough scope for rethinking and redesign. In addition to view angle, entry/exit design, leg space modification as well as change in ventilation system have also scope for rethinking. Present study is aimed for designing wide-viewed tourist vehicle along with exploring the possibility of introducing a semi-revolving seat for comfortable view posture for the tourist to increase the over-all view angle for the tourist. The scope of the study is also includes re-design of Entry/Exit from back for easier movements of tourists including abled person. Present study is aimed for designing wide-viewed tourist vehicle along with exploring the possibility of introducing a semi-revolving seat for comfortable view posture for the tourist to increase the over-all view angle for the tourist. The scope of the study is also includes redesign of Entry/Exit from back for easier movements of tourists including abled person.

## 1 Introduction

Safari vehicle are specially designed vehicle for tourist purpose where the vehicle allows the tourists/passengers to go near the nature and feel it from within and also staying at a safe side. Now a days a lot of SAFARI vehicles are out in various tourist places. They have different purposes and different places. Some are used in forests, some in beach side, some are also used for city conducted tours and many more. All these different uses have different needs to be fulfilled for the passengers. Some are used in day time where as some are used in night. They are also categorized as open hood or closed hood type of safaris. Many safaris are much more enjoyed if the vehicle is open hood and the passengers can take a fresh and down to earth feeling of being within the nature and feeling the environment from within. More over there may be more categories like how many seated vehicle they would prefer. Some prefers to travel with a small family and don't want any other intervention during their tour and travels.

As there are so many types of Safari vehicles there are many pros and cons for the passenger's ease with which they can travel and enjoy the safari.



## 2 Background

A minivan is a personal-use van with unibody construction sharing an automobile platform in a one-box or two-box configuration. Taller than a sedan, hatchback, or a station wagon, the minivan features a shared interior volume that can flexibly reconfigure to prioritize seating, with rear cargo access via a lift gate or tailgate. In earlier days, these mini-vans were used for safari vehicles in jungles and city tours.

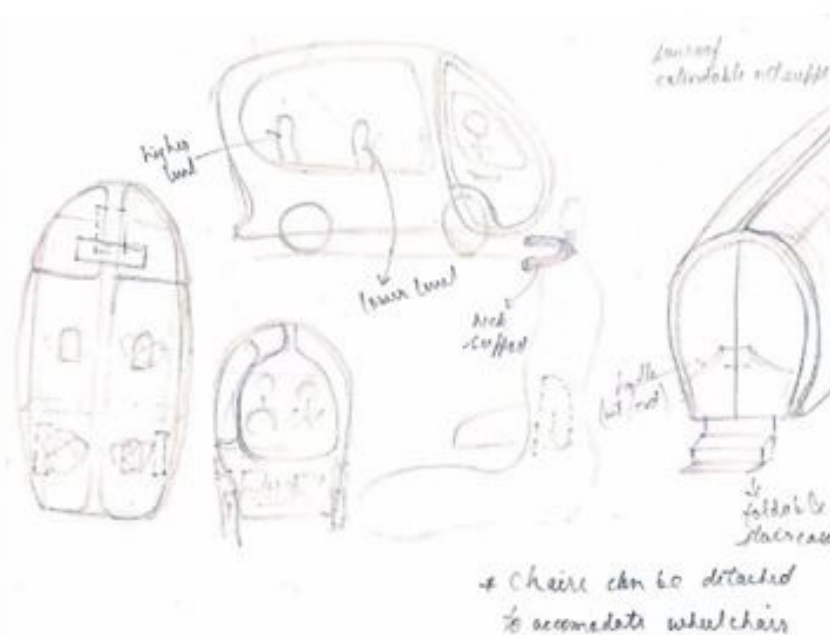
## 3 Work Requiring Areas

The various areas where I think work might be re-quired to make the vehicle more fit for the tourists are:

- View angle for the passengers to have maximum view angle while sitting at their respective individual seats.
- The seats should be ergonomically designed for comfortable and long safari/site-seeing tours.
- The entry/exit for the passengers should be such that they can move with ease and any differently abled person can also fit in that SAFARI mini-van.
- The vehicle should have both normal air ventilation as-well-as air conditioning system for varied climatic conditions during the trip.
- The seat should have enough leg space for easy and relaxed journey for the tour-ist/ passenger.

## 4 Development / Methodology

### 4.1 Design Consideration



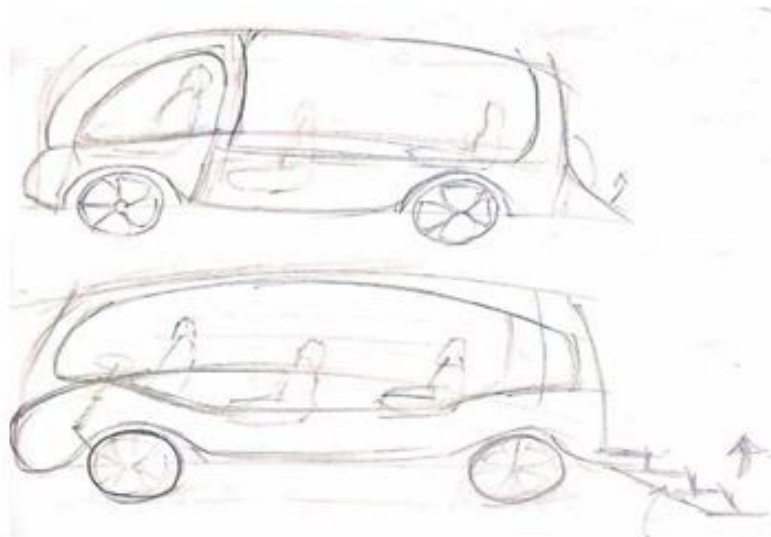


Fig. 1 A. This is the first concept sketch for a safari type minivan with better facility for tourist. B. This is another type of concept for bubble type safari vehicle with large transparent windows and drop down back entry/exit step.

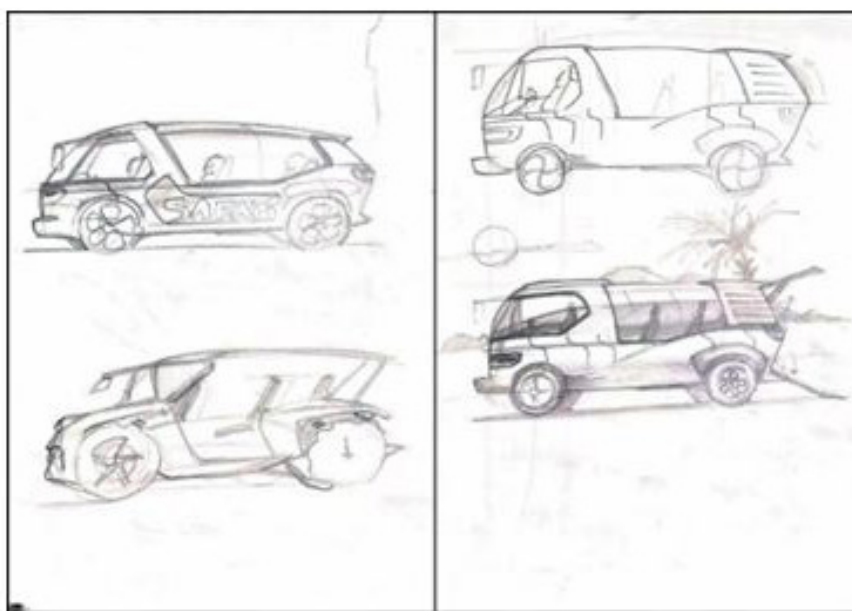


Fig. 2 Various modelling and graphics design for the SAFARI type minivan for enhanced visuals and effective understanding the purpose of the vehicle from a distant with ease. Also side view showing slide down back door with slope for easy entry/exit for people and also kept in mind for differently abled persons

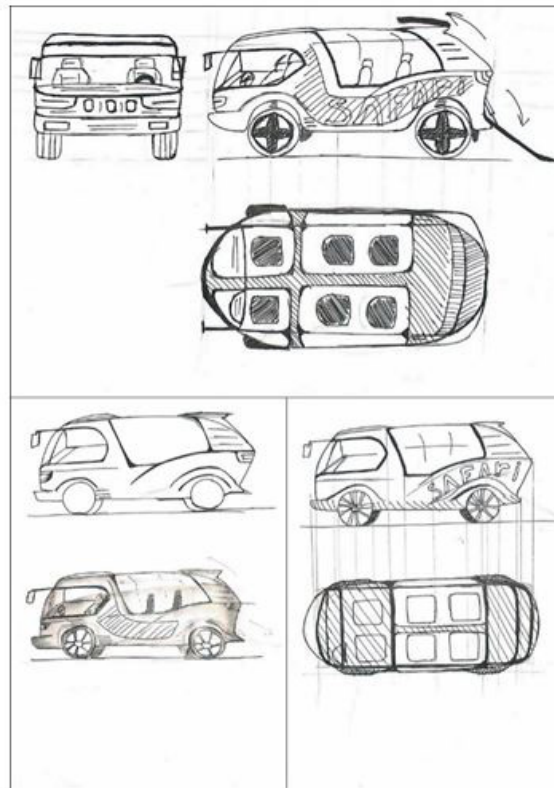


Fig. 3 Final Sketch for SAFARI type minivan of all sides with open of back door and body graphics.

## 4.2 Acceptability Evaluation/ Prediction

### 4.2.1 Postural stress evaluation

**Table 1** RULA Action Level

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#### Final RULA Scores - Requirements for Action

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1 or 2 - Indicates that posture is acceptable if it is not maintained or repeated for long periods.

3 or 4 - Indicates that further investigation is needed and changes may be required.

5 or 6 - Indicates investigation and changes are required soon.

5 - Indicates investigation and changes are required immediately

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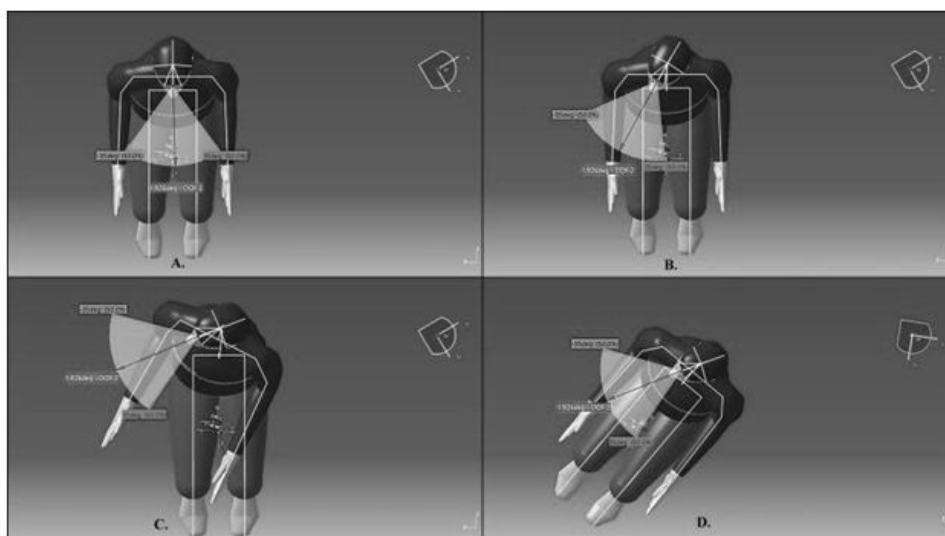


Fig. 9 A. The limit for the line of sight when the manikin is sitting upright on the seat. B. The limit for the line of sight when the manikin is sitting upright with head rotated till 300 of angle. C. The limit for the line of sight when the manikin is sitting upright with head rotated till 300, thoracic is rotated till 300 and lumbar rotated till 100. D. The limit for the line of sight when the manikin is sitting with head rotated till 300 and the seat rotated at an angle of 400 giving same line of sight.

## 5 Analysis and Conclusion

The SAFARI type mini vehicle designed have following salient features which makes it better from tourist's point of view:-

- Large cabin space for the tourists to give a feeling of vastness.
- To add to the vastness, this vehicle has wide-open glass windows which extends up to the roof for wide view angle for the tourists. Unobstructed side and upper view for the tourists makes it easier for them to get the real feeling of safari.
- 400 Semi-revolving passenger's seats are designed for easy movement (L/R) on both ways to have an easy and comfortable view angle of 2100 which is enough to get a complete view of that environment and its surroundings.
- For easy entry/exit the vehicle has back drop down type doors. The door drops down to the surface to form an easy slope for the tourists of all age and anthropometric characteristics to en-ter/exit with easy.
- To increase the entry/exit height the rear glass window can slide up on the roof with roller mechanism and thus reduces the overall height of the vehicle when the doors are wide open. This makes it easy to open door at any situation even where the space is less.
- The vehicle may have a variable suspension system for driving the vehicle in varied circumstances. In forest safari, we need a higher ground clearance and better suspension system, where as in city tours we need a hard suspension and lower ground clearance.

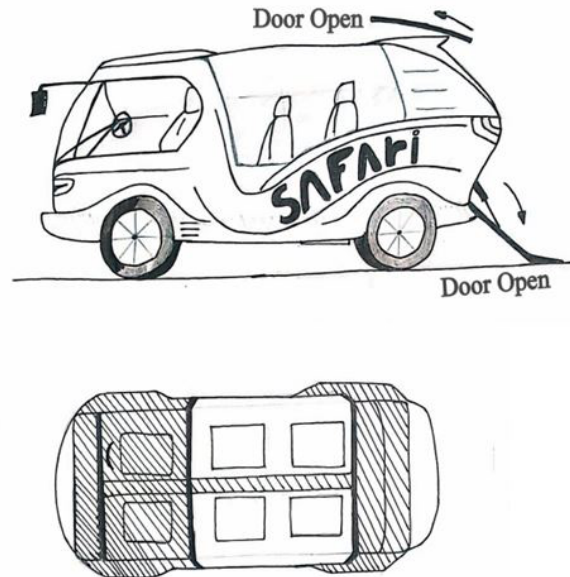


Fig. 10 Final Schematic sketch of SAFARI type minivan

## 6 Limitations of the study

The study considered only the concept depending on some suggestions from faculty members and other summer interns of Dept. of Design, IIT Guwahati and while meeting with some people comprising friend circle who has experience of visiting tourist spots. Proper studies are required on the feasibility and the design details of the above concept conceived during the summer internship period in May, 2015.

## References

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