



**KESSAKU TOWER 01**

Total apartments :  
Available :  
3bhk  
2bhk

# Exploring navigation in virtual 3D residential spaces

Project 1 - Internship

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Industrial Design Centre  
Indian Institute of Technology Bombay



# Declaration

I declare that this written document represents my ideas in my own words and where others' ideas or words have 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 misinterpreted 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.

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## Abstract

The project 'Exploring navigation in virtual 3D residential spaces' resulted in an home visualizing gesture based application designed for real estate companies to showcase their product to the buyers and to help home seekers better ways to visualize their future flat/house.

15<sup>th</sup> July 2015

TO WHOM IT MAY CONCERN

This is to certify that **Ms. Labeeba Kothur**, M.Des. first year student from IIT Bombay interned from **5th May, 2015 to 24th June, 2015** long at **OoBI**. His/Her internship activity includes familiarizations to all the departments / there operations / processes / there management overview involved with the product and technology of the company. She had majorly involved in activity of Design & Innovation and gained hand on experience of few Futuristic Interactive technologies. During the period of her internship program with us she had been exposed to different phases was found punctual, hardworking and inquisitive. We wish her every success in his life and career.

On Behalf of OoBI


**Atish J Patel, Co-founder**

## Firm : OoBI media pvt.ltd.

Founders : Atish and Kumar

Acquired by Proptiger

Design and innovation team, proptiger

Projects: Gestural interface products for  
real estate developers

- Website based home buying solutions
- Standalone kiosks

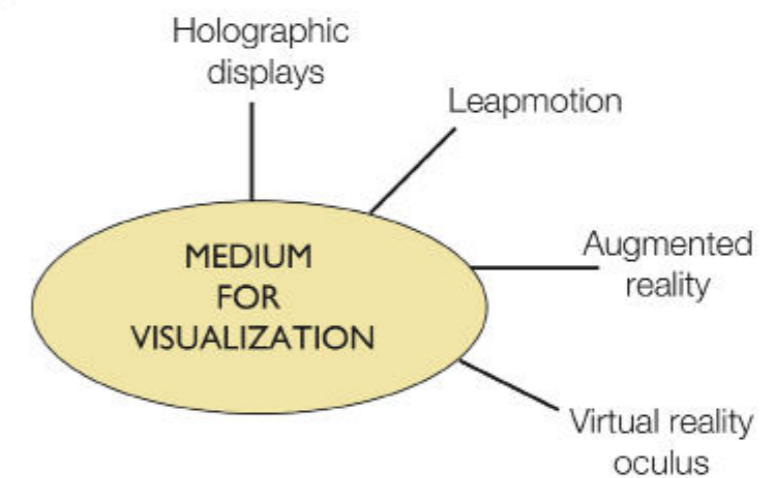
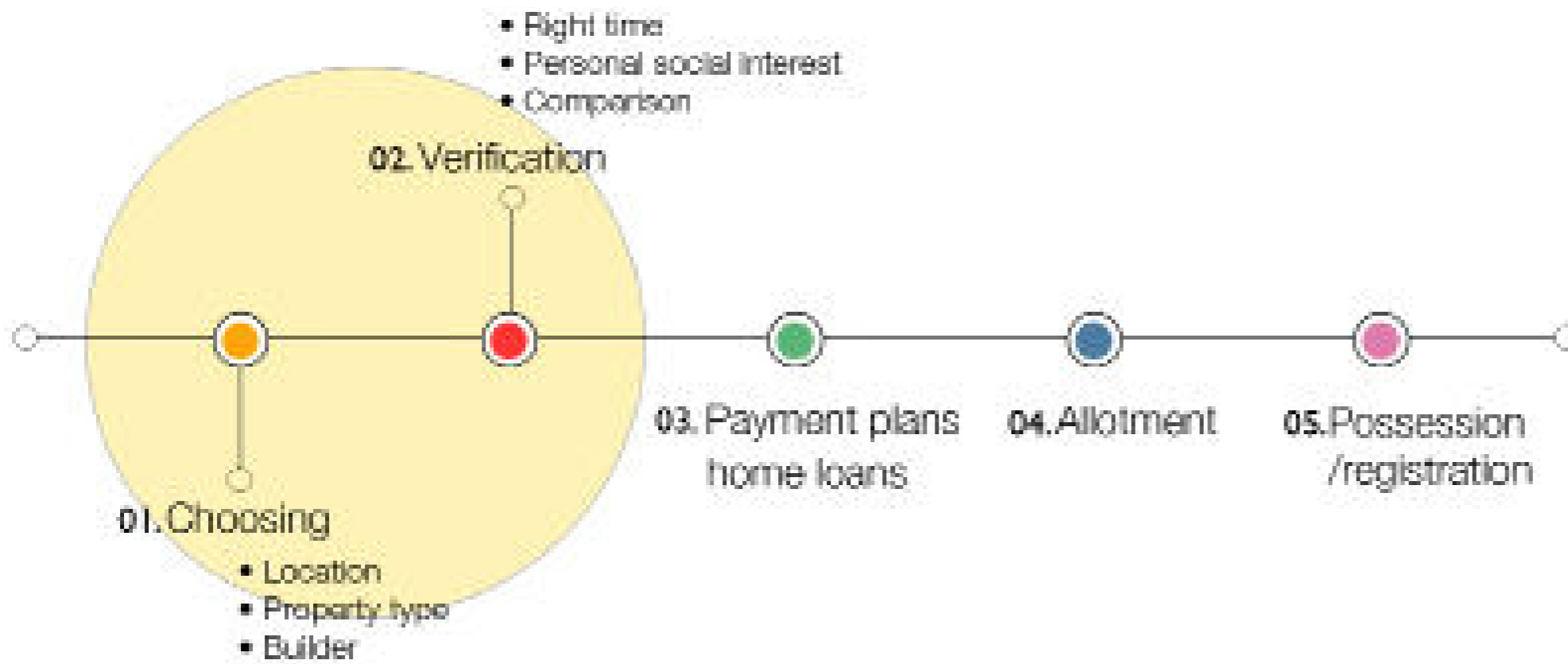


# Understanding the problem

The research started with contextual enquiry with the builders, real estate developers and home buyers to study the home buying processes and its nuances. In the interviews, I mainly looked at what shortcomings the home owners found in their flats and how it was diverging from their expectations and the truth projected by the builders.



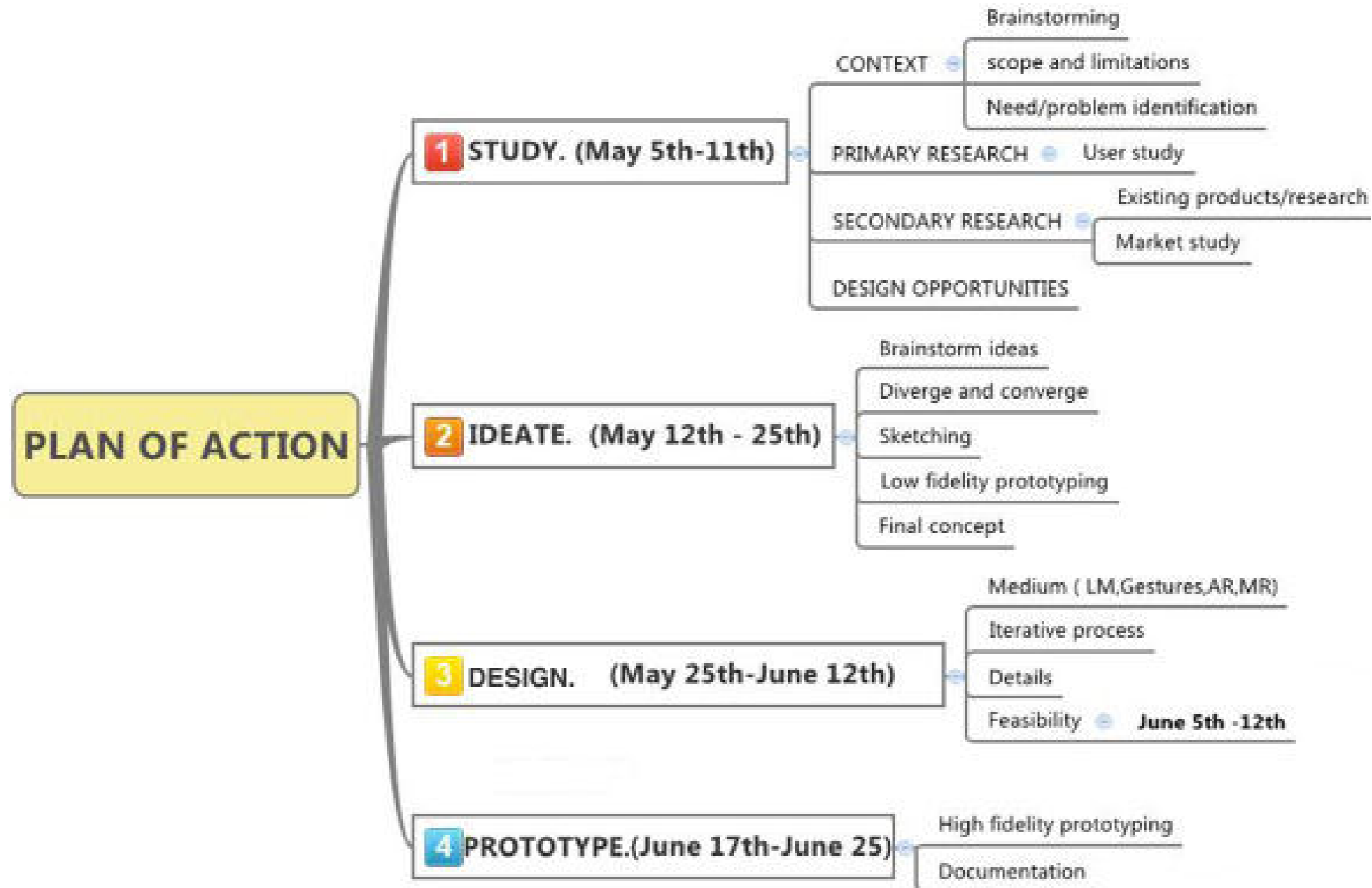
# Home buying process in India



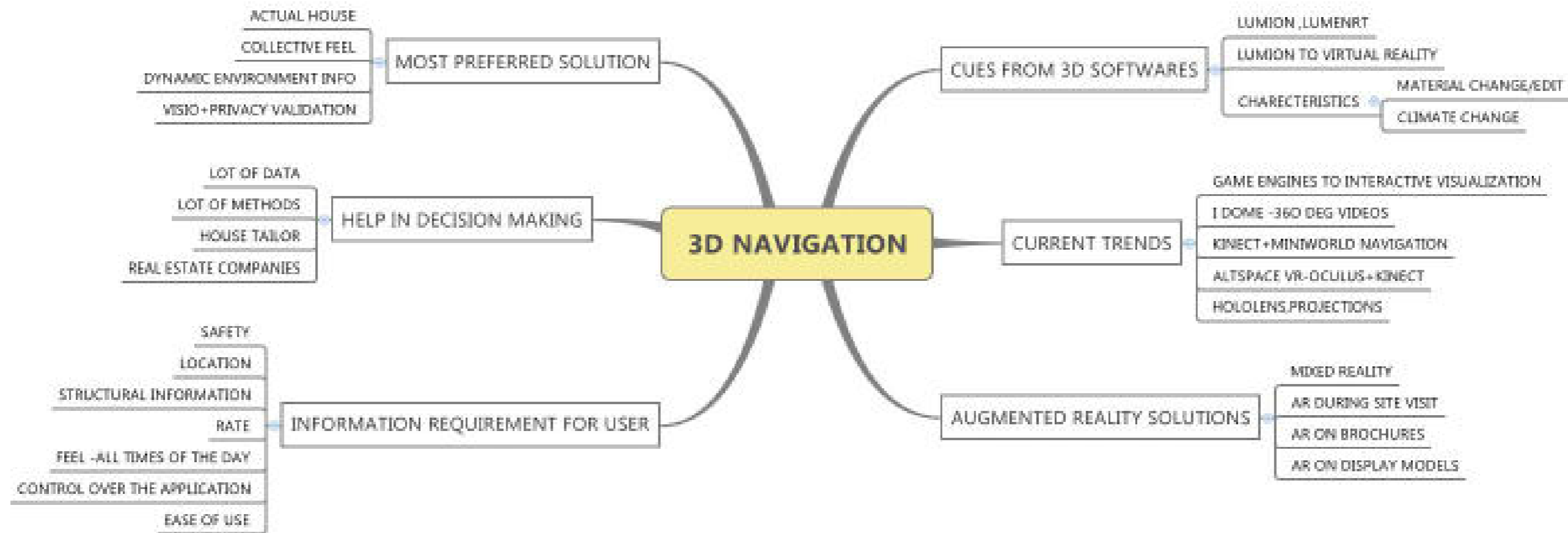
‘Exploring navigation in virtual 3d residential spaces’

**Project ●**

# Plan of action



Project ●



## secondary study

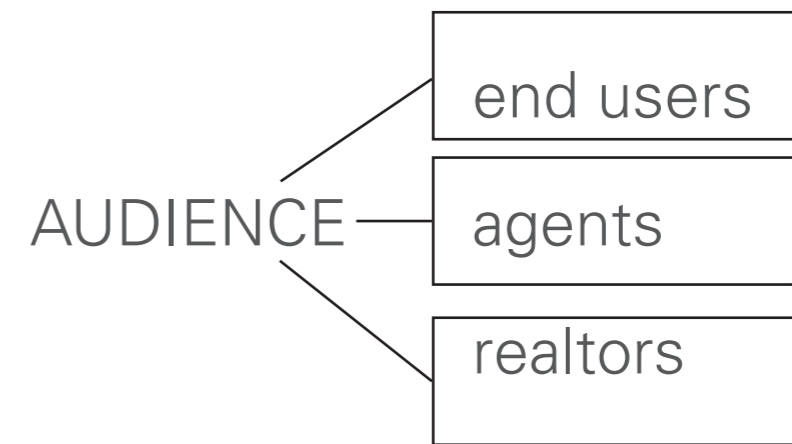
An extensive secondary research has been conducted on current ways of visualizing homes, floor plans and site to the users and modern techniques that can be incorporated from 3D softwares like lumion, sketchup, game engines etc and technologies like virtual and augmented reality.

For the details of the research, similar products and my views on, refer to my blog at [3dnavigation.blogspot](http://3dnavigation.blogspot)

**01 study.**

## Insights

- Visualization requirement - 5 major areas
- Location and budget-matters 60%
- User needs: help in decision making
  - comparitive analysis
  - Difficult terms and significance
  - Collective interest and selection



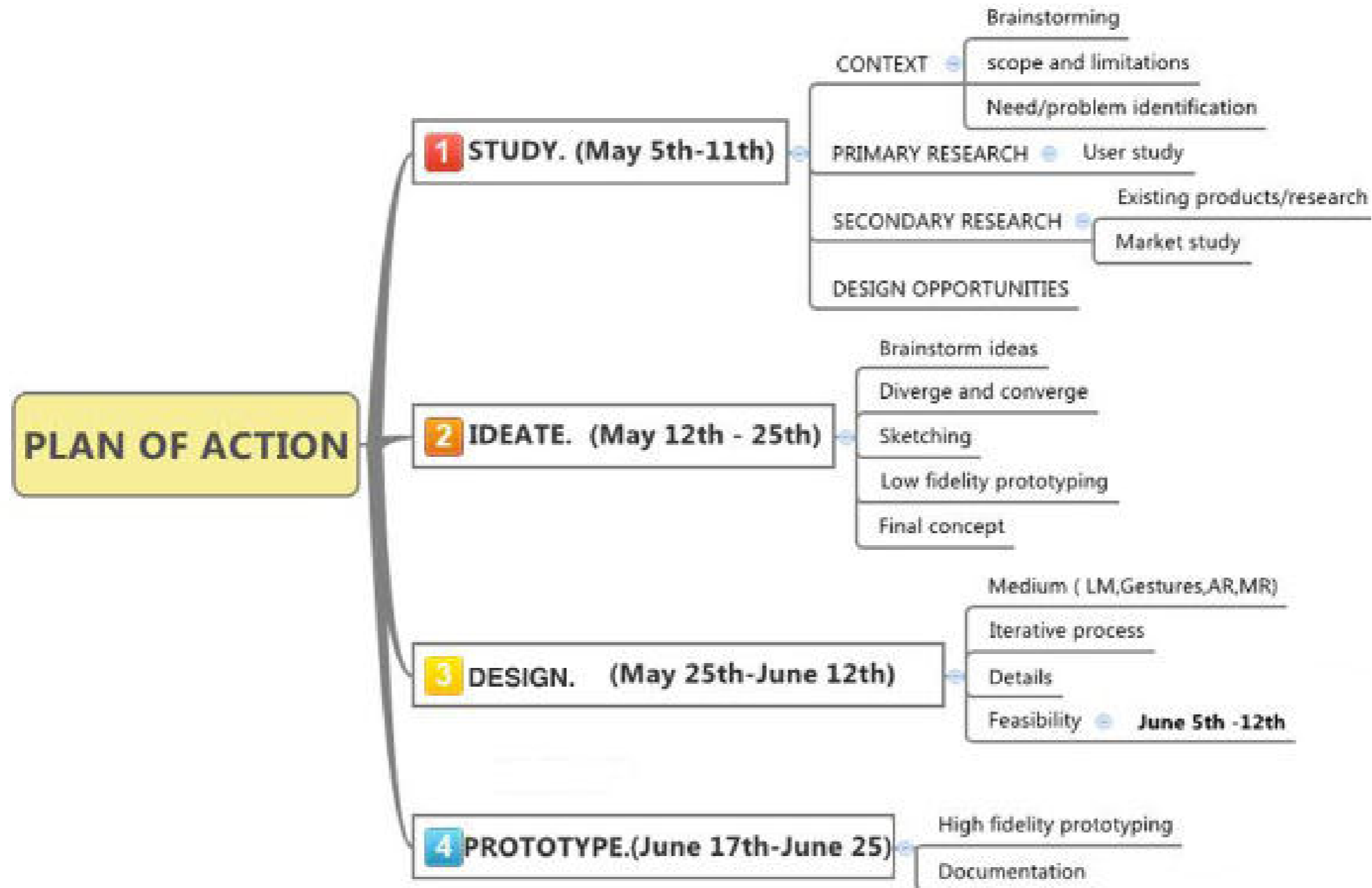
## Primary study

- questionnaire
- Interviews : 3 sales executives

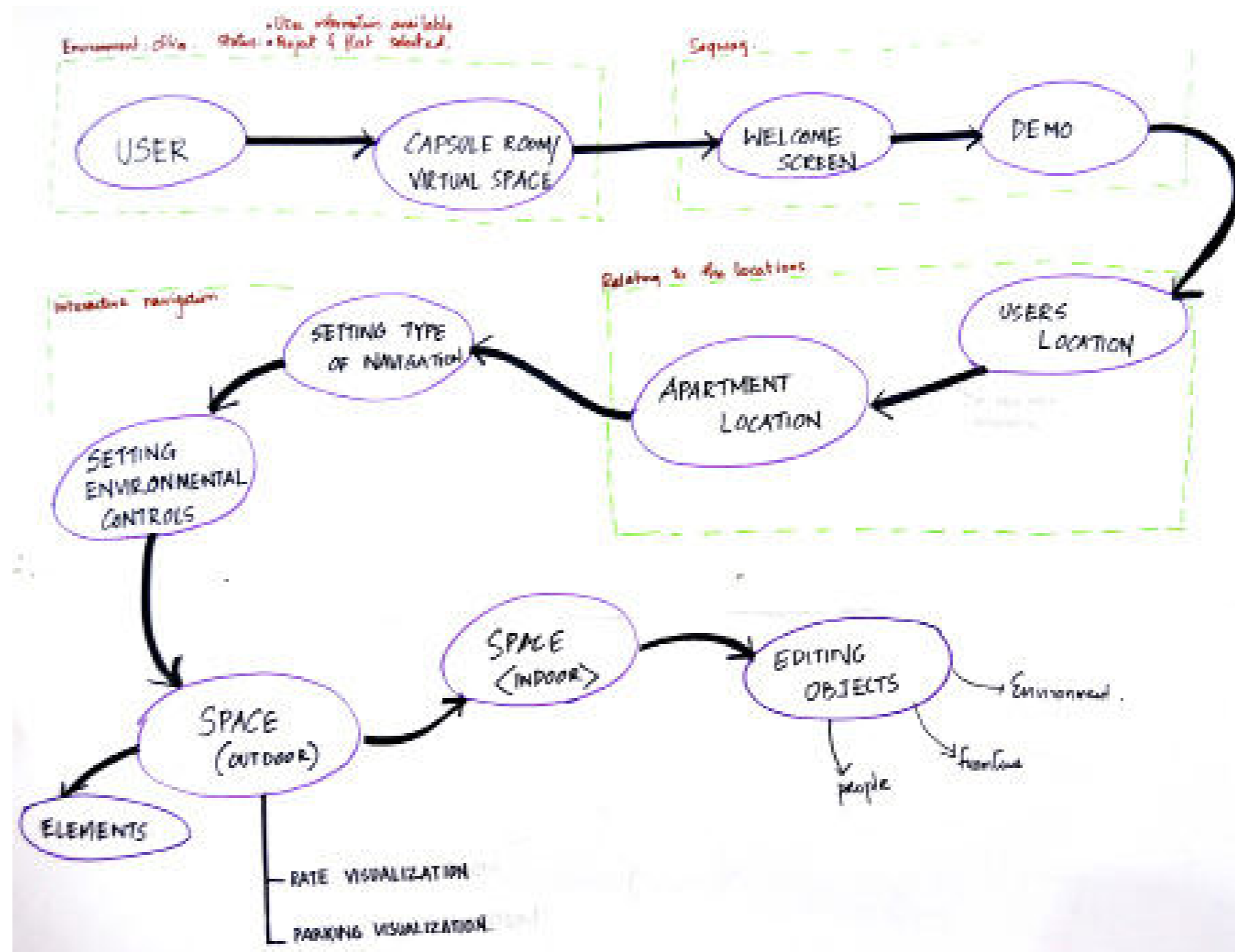
**01 study.**



# Plan of action



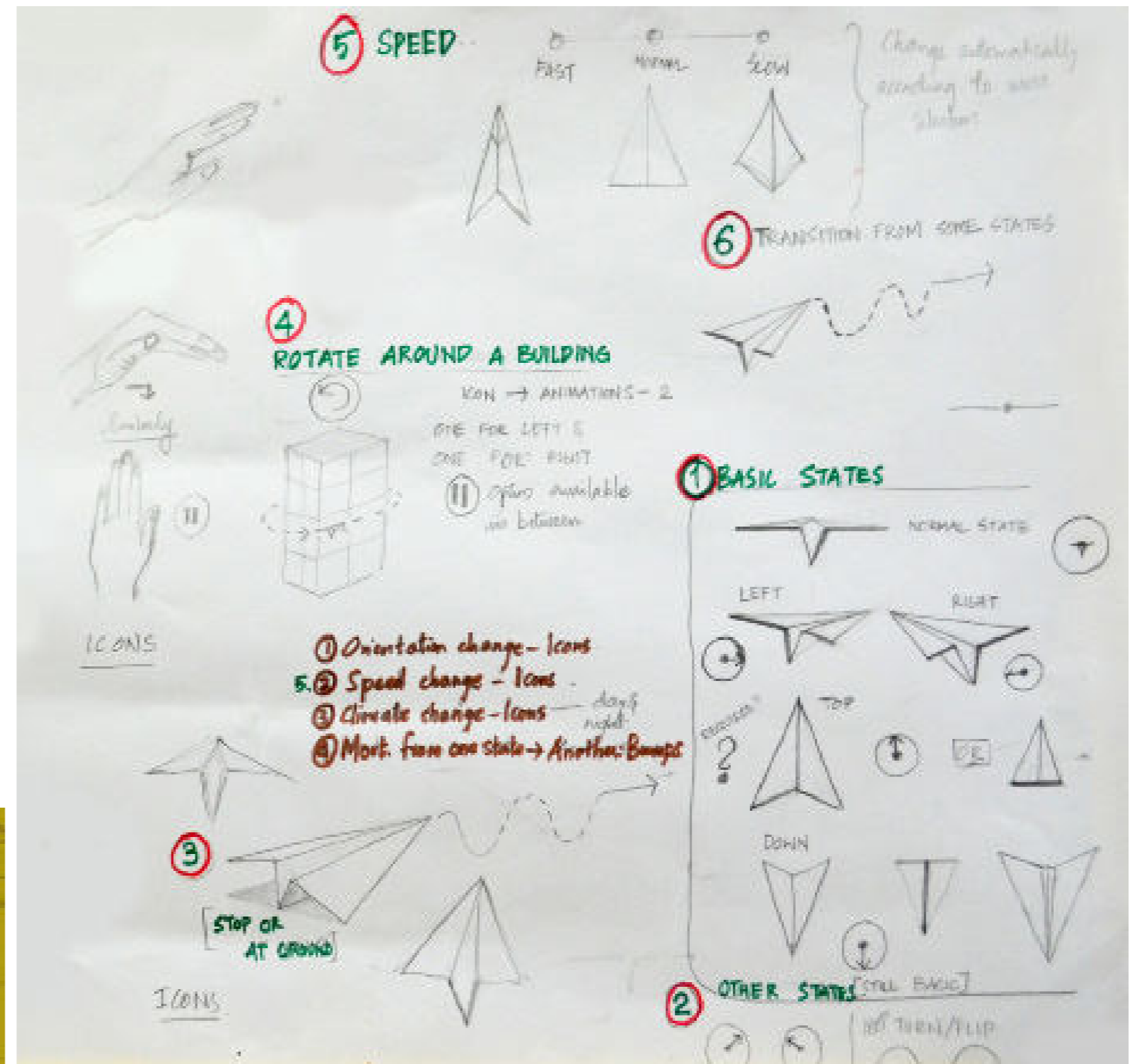
Project ●



Initial task flow

02ideate •

- Segway and screens
- Tour and tourist van
- Spider man or super power icon
- Paper plane, Car, broomstick



Metaphors for navigation

02ideate •

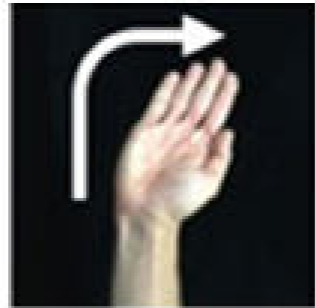
## Gestures and leap motion

Once the idea of paper plane as the navigator has been finalized, the various gestures for plane flight has been identified by user reactions with a static paper plane. This was correlated with the actual gestures possible with leap motion and the following were selected for prototyping and testing

**02ideate** ●



To take screenshot



To move right

MASTER PLAN



To activate 3d on master plan



To move left



To tap and select  
To rotate master plan



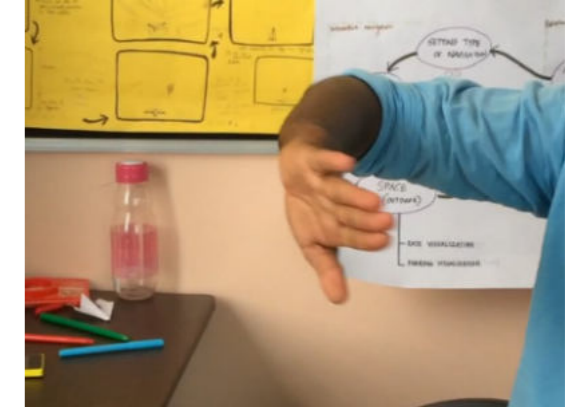
To stop and rotate object



Context | User | Keyquestion



To move plane upwards



To move sideways



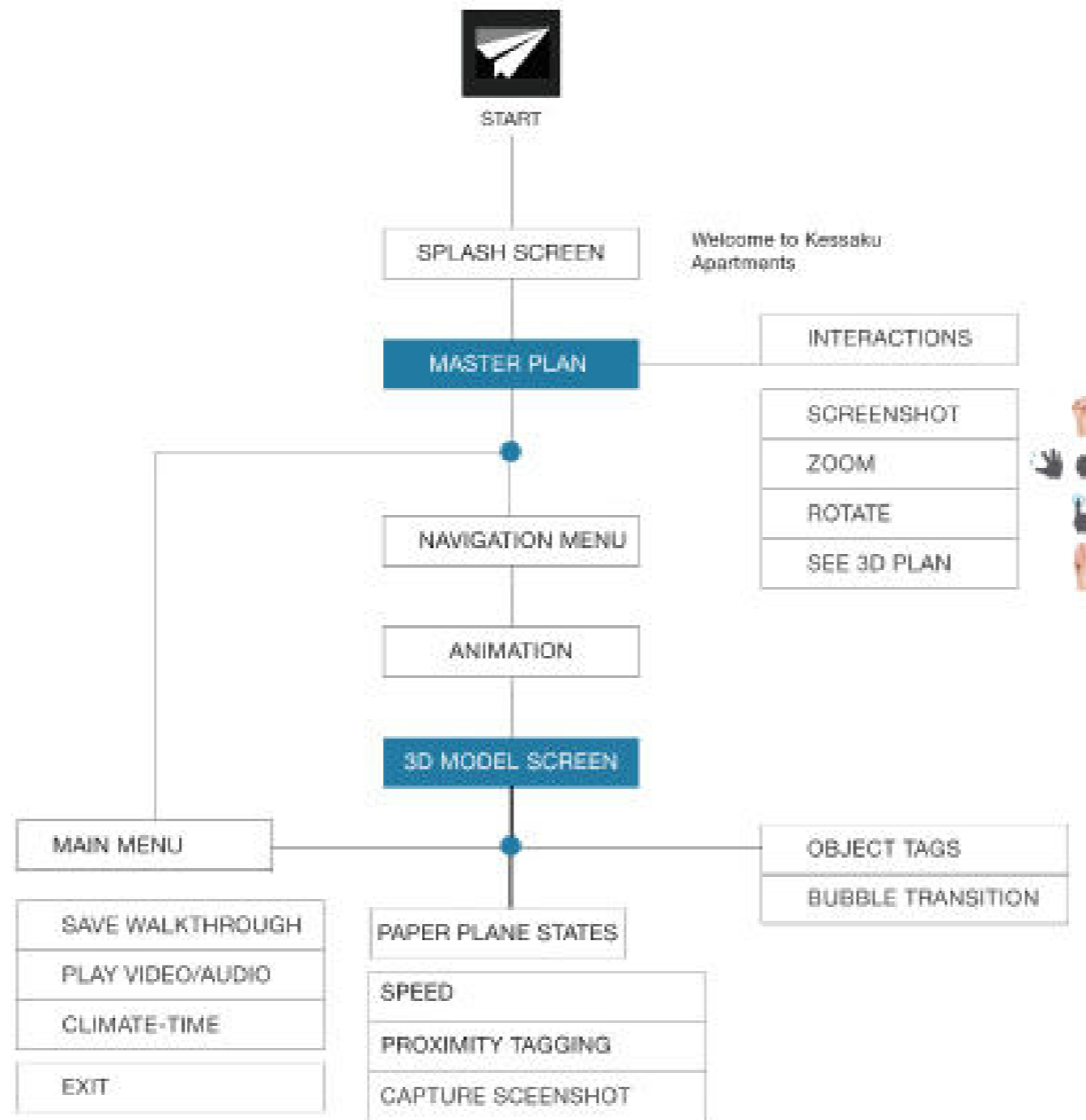
# Leapmotion gestures and testing

# 02 ideate •

## Information Architecture

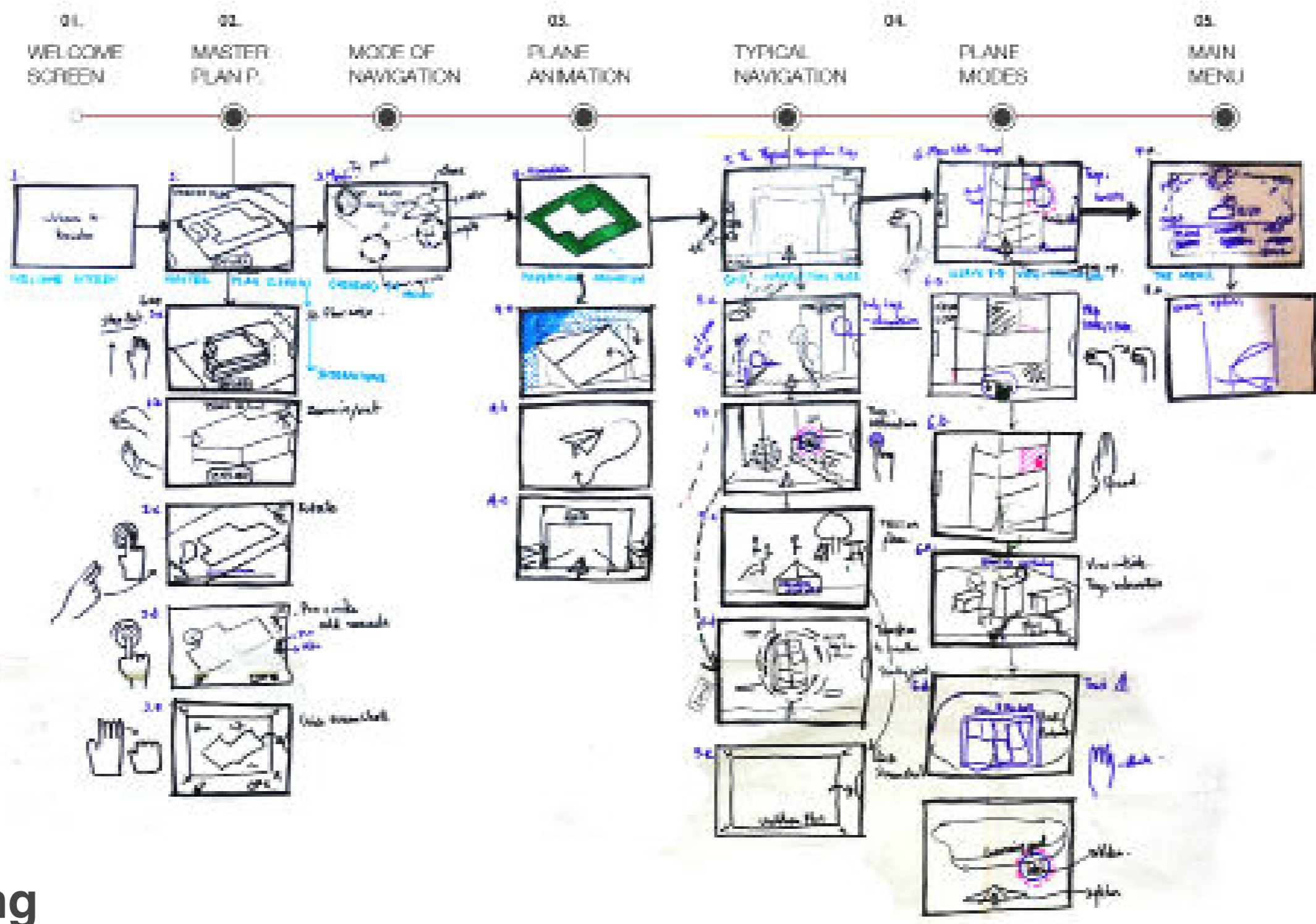
The idea was further conceptualized using Kessaku Residential project model. The user can navigate in the site to reach the building and look at the available and most suitable flats. The product gives more flexibility in terms of point of view, climate and overall outlook.

**03 prototype ●**



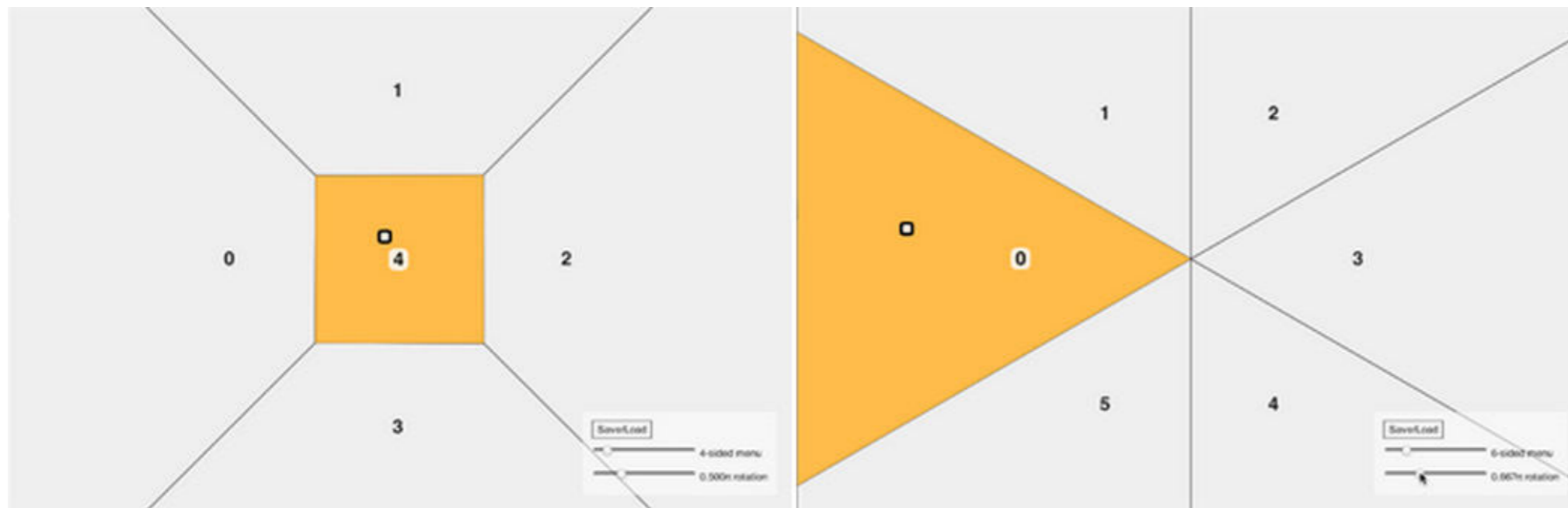
Final task flow

03 prototype ●



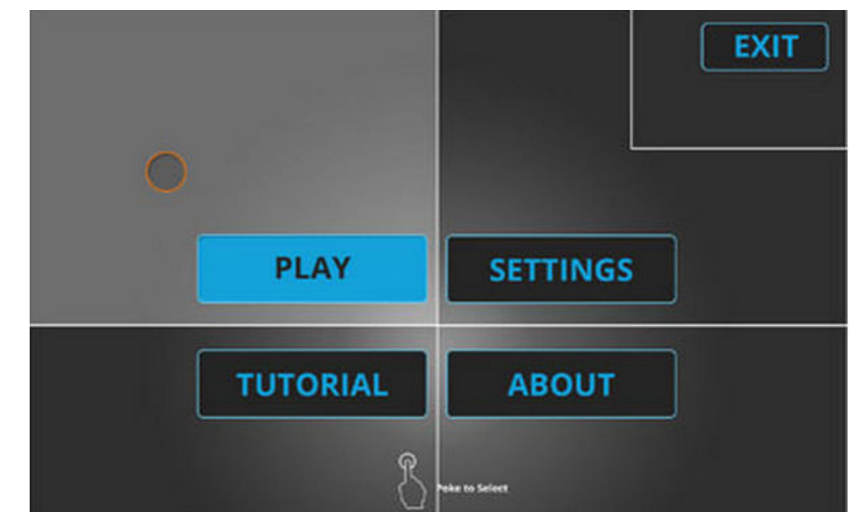
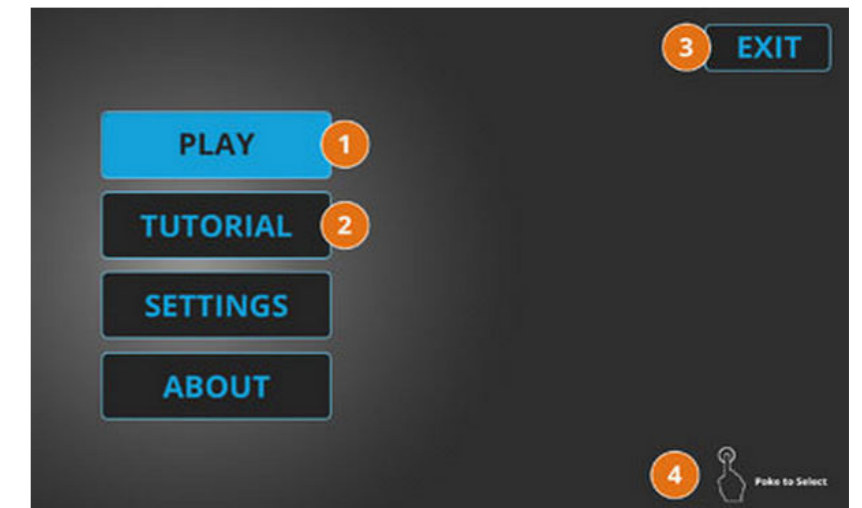
# Wireframing

- menu interactions
- Proximity based highlighting
- Radial menus
- Grid menu
- Menu access and exit



5 Cell Radial Menu with Center Target

6 Cell Symmetrical Radial Menu



## Menu design guidelines

# 03 prototype •

- dynamic tags on objects
- Futuristic screens
- Feedback status
- placement of plane

**Font** | helvetica neue, helvetica tt



**Parameters** | Leapmotion menu guidelines

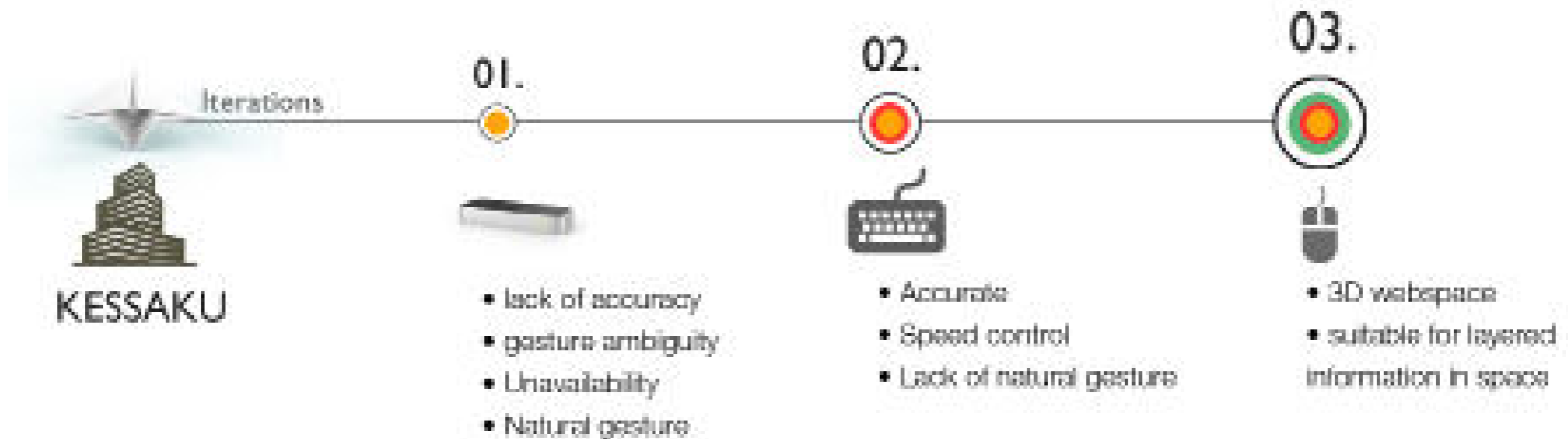


**Visual design**



**03 prototype** •

Developed in unity 3D for Kessaku real estate project  
Paperplane aerodynamics, lag used to gamify the experience



**03 prototype •**

- Finetuning the application
- Usability testing - Gestures, placement and accuracy of model
- Location: deployable in standalone kiosk at builders office
- Function : for project introduction
- Technology : leap motion sensor or oculus



**Future**

**Project ●**

- Designing gestural interfaces - Dan saffer
- [https://developer.leapmotion.com/documentation/csharp/practices/Leap\\_Menu\\_Design\\_Guidelines.html](https://developer.leapmotion.com/documentation/csharp/practices/Leap_Menu_Design_Guidelines.html)
- <http://3dnavigation.blogspot.in/>
- [donotclick.it](http://donotclick.it)

**References**

**Project ●**



Thank you