



D'source

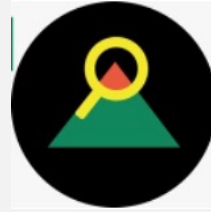
D'source Project



Open Design School



MoE's Innovation Cell



Case Study Project

Design Thinking & Innovation
Case Study: Ideation

Project: MARBO

Section: C11, Week 11



**THINK!
DESIGN**

Design Thinking & Innovation (DT&I)

Section: C11

Week 11



**THINK!
DESIGN**

Design Thinking & Innovation (DT&I)

Presented by:

Prof. Ravi Poovaiah

IDC School of Design, IIT Bombay



DT&I Case Study

C11 Case Study Project:

Marbo

- Ideation through Metaphors and Prototyping

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DESIGN



C11.1

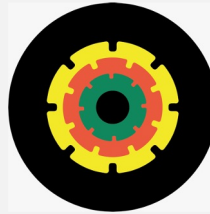
‘Marbo’

DT&I Course – Week 11:



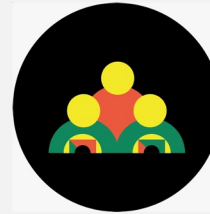
DT&I Process (20%)

- > Prototyping Part 2
- > Soft Prototype
- > 'Rough Sketches',
- > Paper Prototype
- > Scenarios/ Story-boarding



DT&I Tools (20%)

- > 'Rough Sketches',
- > Paper Prototype
- > Mock-Ups
- > Scenarios
- > Story-boarding



DT&I Project (50%)

- > Apply 'Rough Sketches', Paper Prototype, Mock-Ups, Scenarios and Story-boarding



DT&I Cast Study (10%)

- > Case Study Project: **Marbo**



Case Study:

Design a communication system/device to build closeness/trust between people

‘People to People, from close friends to strangers’





Interdisciplinary Team:

Team of Master of Des students:

Amisha Banker

Bombay
Applied Arts

Muthukumar

Chennai
Bachelor of Architecture

Pranav Mistry

Ahmedabad
Bachelor of Engineering – Computer Science



Design Process:

- . Problem Statement
- . Worldview
 - . Context – Users, Environment, Artifacts
- . Problem Space Visualisation
- . Design Goals
 - . Alternate Concepts
 - . Final Concept
- . Product Development
 - . Interface Design
- . User Feedback

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User Group:

Children



Who are Children?

Under 16?

Over 2?

Teen, pre-teens, children, toddlers, infants

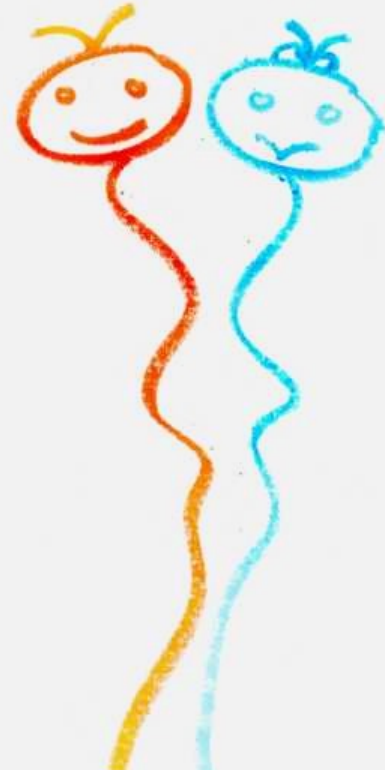
Cognitive classification – Piaget

Sensory-motor stage (Birth – 2 years)

Pre-operational stage (2 – 7 years)

Concrete-operational stage (7 – 12 years)

Formal-operational stage (12 -15)





Why Children?

- . Designing products for children is fun & difficult
- . They possess an unpolluted ready to learn mind
- . No specific communication device for children is available
- . Children are the future





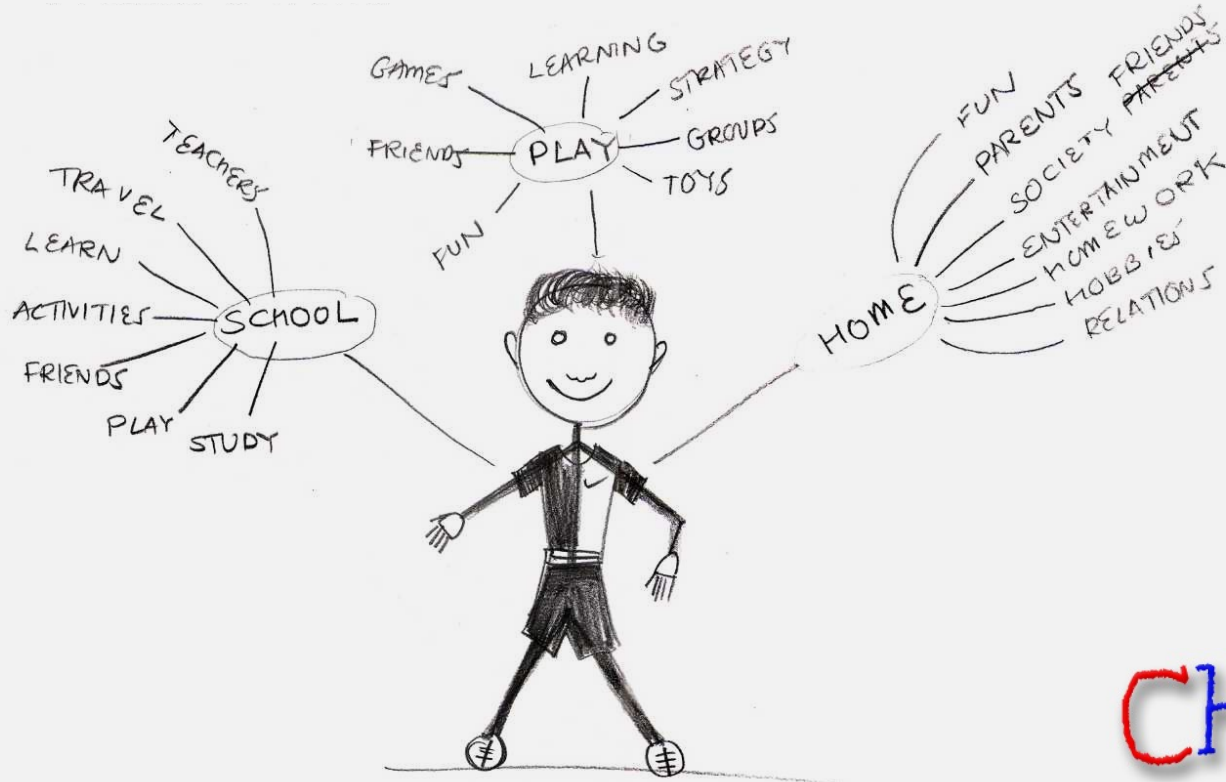
World-view:

Brainstorming

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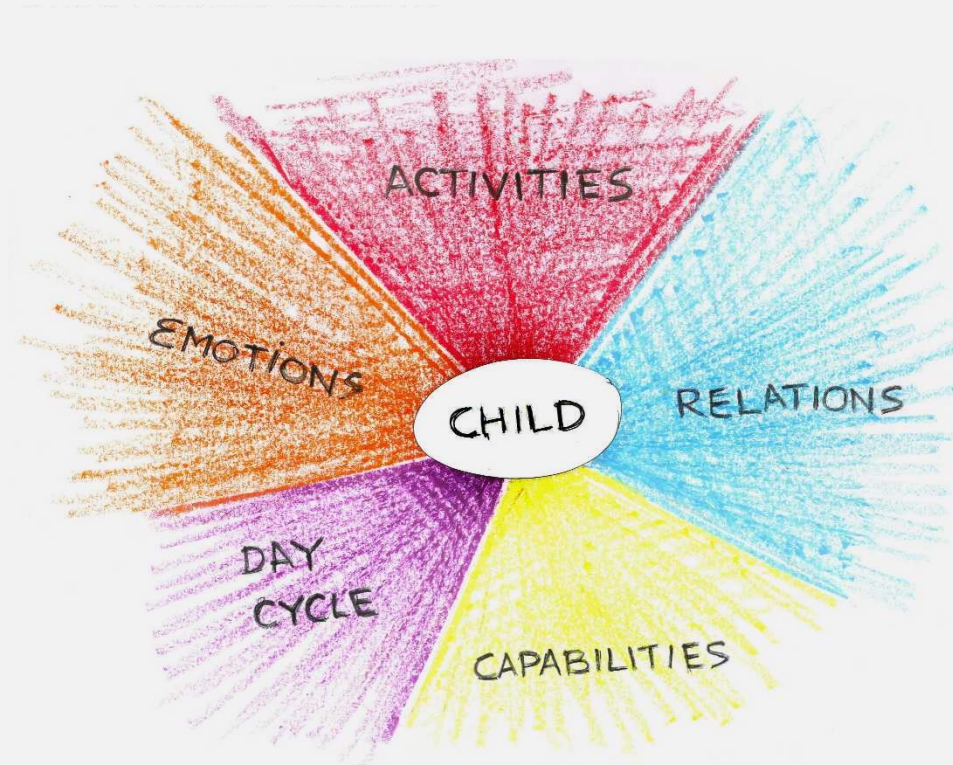


A Child's World:





Child related concerns:

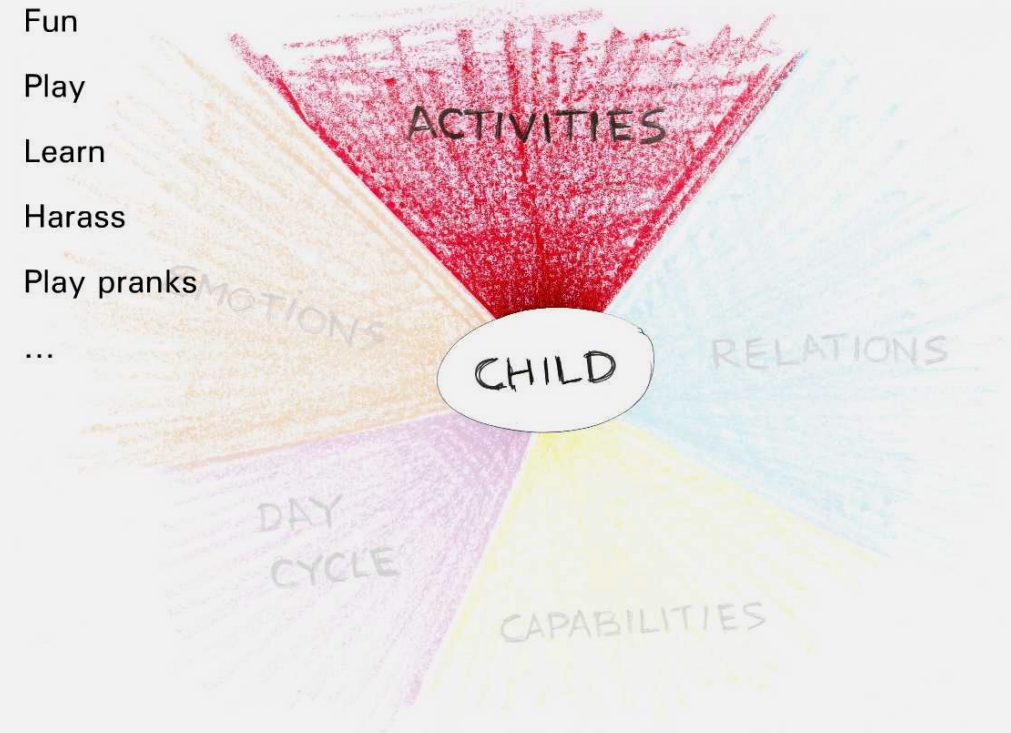


Children



Activities:

Fun
Play
Learn
Harass
Play pranks
...



Children



Relations:

Parents

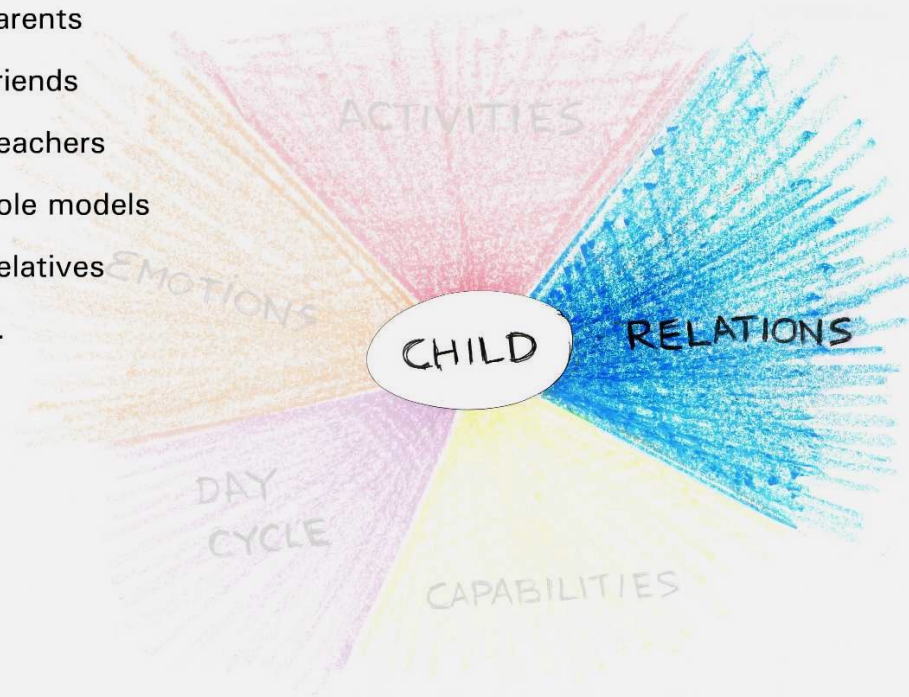
Friends

Teachers

Role models

Relatives

...



Children



Capabilities:

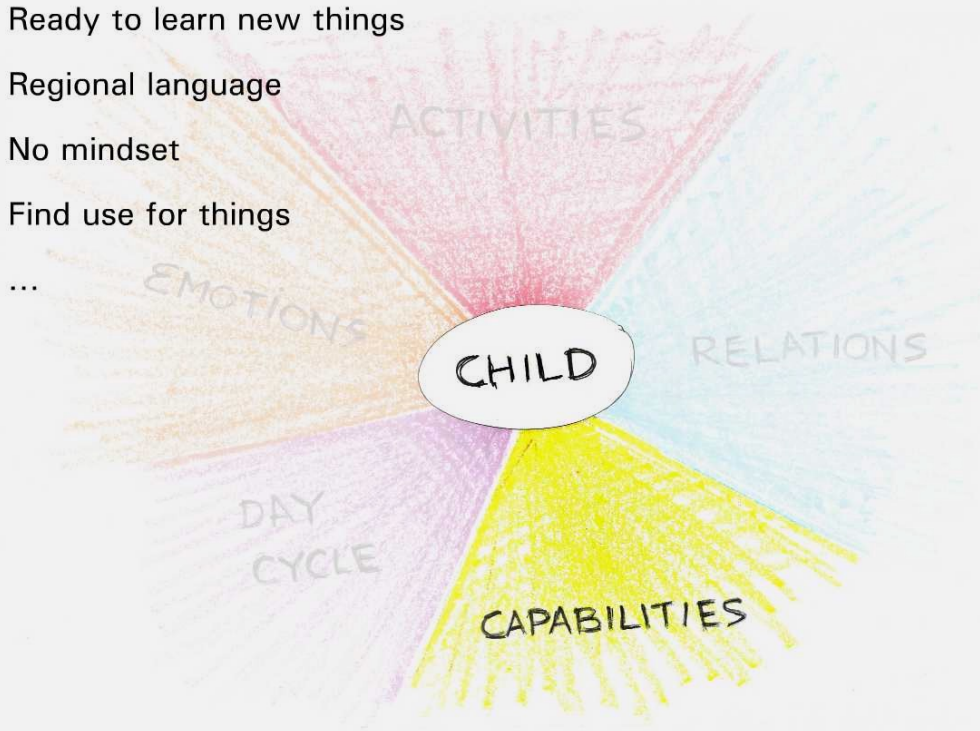
Ready to learn new things

Regional language

No mindset

Find use for things

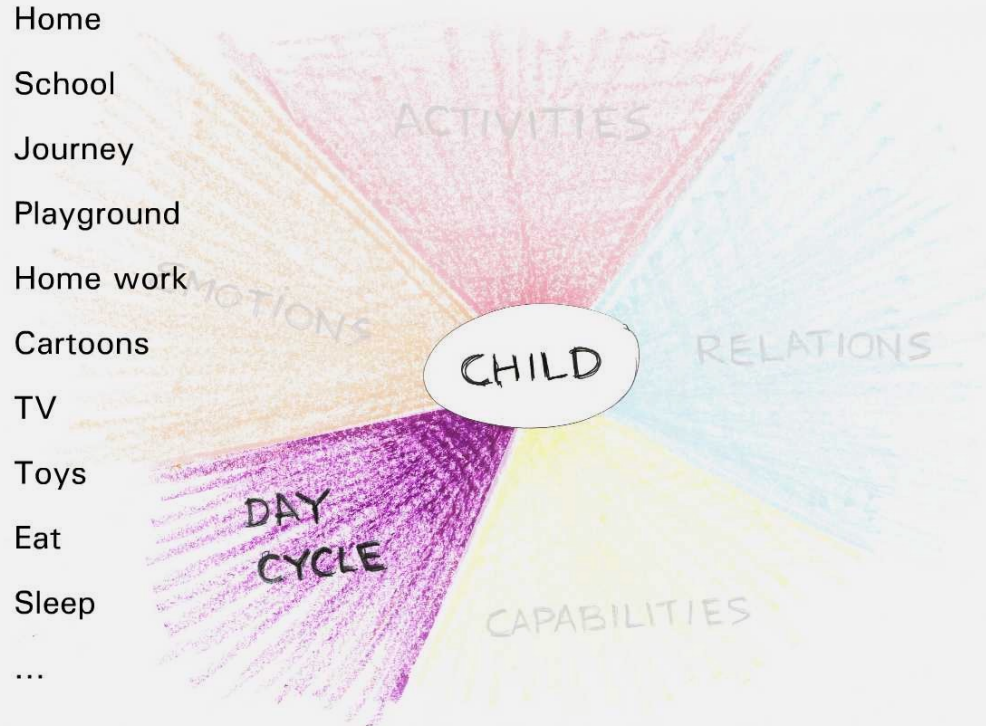
...



Children



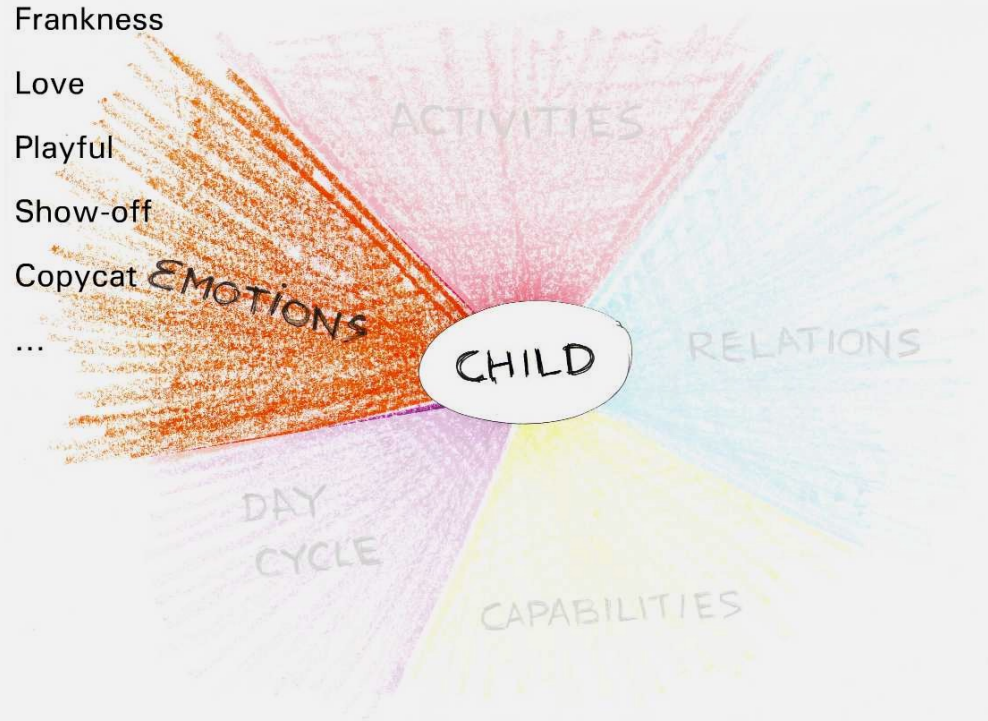
One Day Cycle:



Children



Emotions:



Children



Secondary Research:

Media & Literature study

Cooperative Inquiry: Developing New Technologies for Children with children -Allison Druin - Human Computer Interaction Lab - University of Maryland

Interaction design and human factors support in the development of a personal communicator for Children -Ron Oosterholt, Mieko Kusano, Govert de Vries Philips Corporate Design

One Shot Trust Game Experiment

Trust In Children -William T. Harbaugh, Kate Krause, Steven G. LidayJr.,Lise Vesterlund

Touch me, Hit me and I know How you feel: A design approach to emotionally rich interaction - Stephan Wensveen, Kees Overbeeke, Tom Djajadiningrat

Kid Pad -A collaborative story-authoring tool for children HCI Lab, University of Maryland

Children, Monkey King & Chinese language: An experiment

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Primary Research:

User Study



Interaction with children:

- . Conversations – touching various aspects with child at the center.
- . Practical testing of their interface navigation skills.
- . Interactions - with the children under different environments and in different situations.
- . Observations - exploration of their technological awareness.







Inferences from the study:

- . Well aware of new technology
- . Curious about using new products
- . After school hours, interaction happens with friends / neighbors / relatives
- . Find use for anything that is given to them
- . An urge to SHARE their experience is an inherent quality





Emerging Product Brief:

- . A fun device to break from the monotony of life
- . A device which would help them to make new friends
- . A device that brings out creativity among children
- . Something to give them a feeling of “a device that is specially meant for them”
- . A device that would help children to share, learn and play
- . The device should be unbreakable [child proof :)]





Cultural Inheritance:

Tangible

Toys, story books, epics (Mahabharata, Ramayana), fables (Panchatantra), photographs, gifts, compass box, games, own drawings or doodles, stationery (pencils, crayons, erasers),

Intangible

Stories, lullabies, festivals, customs, celebrations, traditional acquired skills (carpentry, pottery), prayers, riddles, puzzles





Inspirations:

Marbles

Pet

Kite

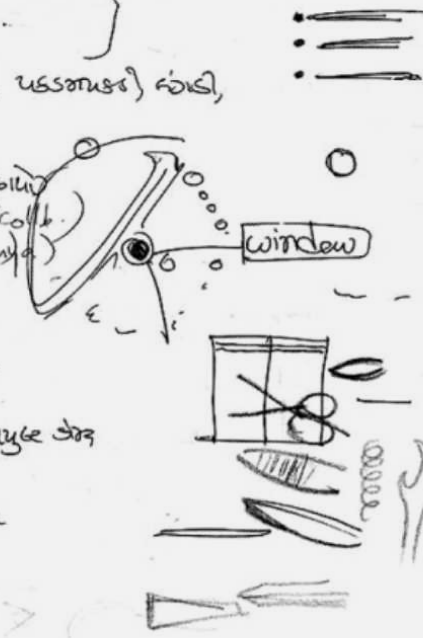
Slate

game :: - marbles
 silia - clay
 toys - wooden toys,
 toys - top (cane)
 silia - grandma stories
 silia - circus, zoo, fish,
 silia - gardens,
 toy - mikeno
 bldg. block/ playr. - ball, marbles,
 game - matchbox. (color)
 game - assli zama (color)
 game - zuci (color). (color)
 role play - zaza
 game - (color, color)
 pet - vishnu,
 role play - UNO, wolf
 games/toys - color, zama, sidhye zama
 game - CARS,
 toy - cube / color
 game/fest - kite
 silia/fest - holi
 daa

Children

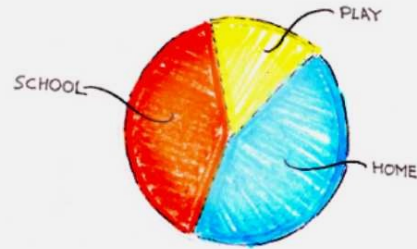
at old age

CHILD



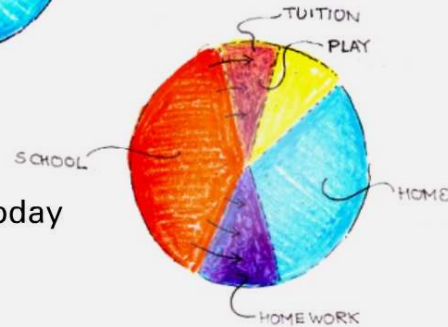


Environmental Zones:

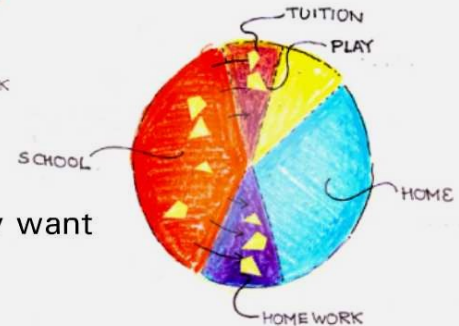


When we were children

What it is today



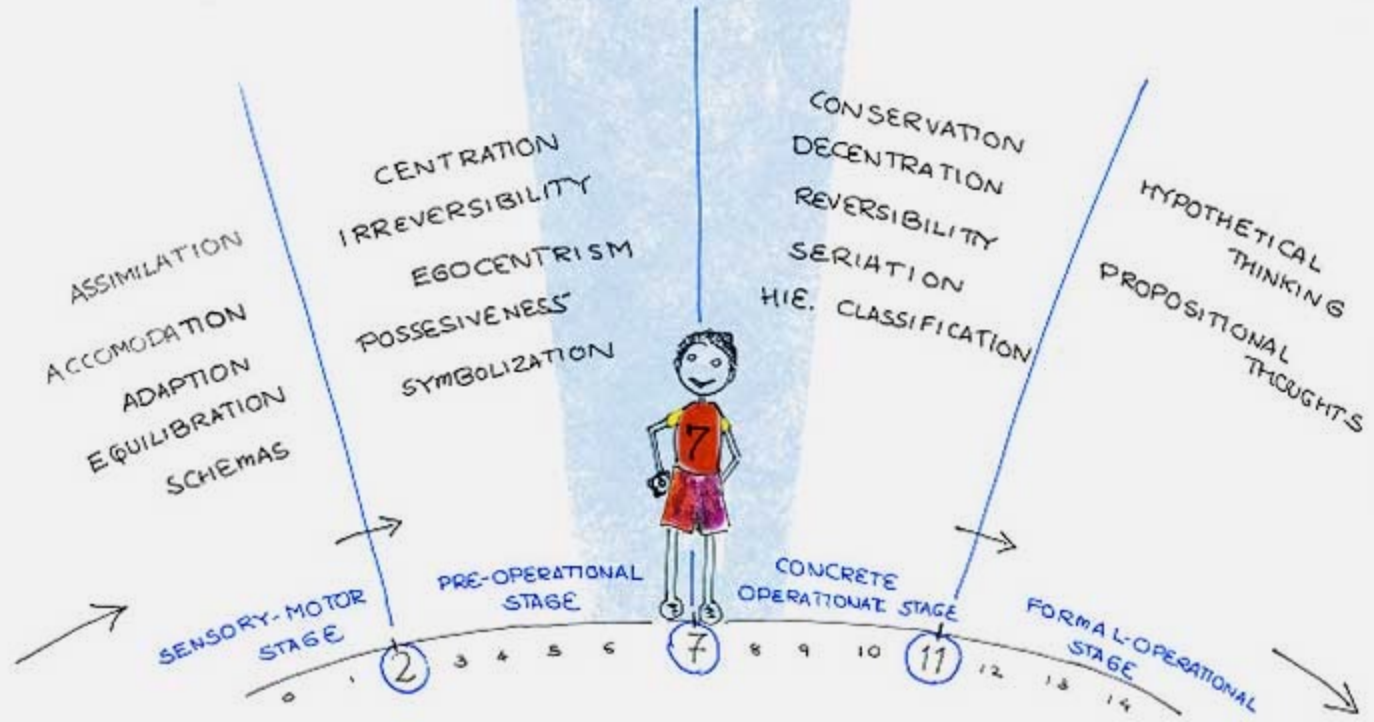
What they want



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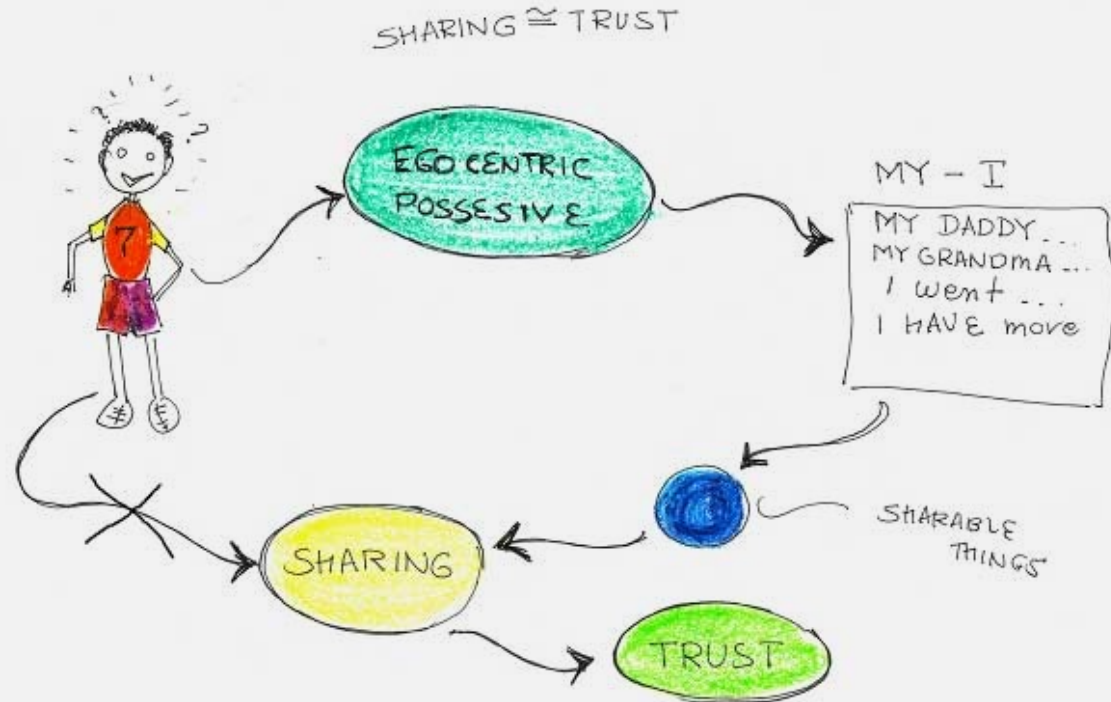
Cognitive Development by Piaget





Trust and Relations:

- conceptual model



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Early Concepts:

Children

Early concepts & Marbo

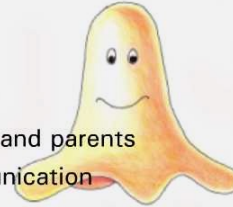
Kito

- Physical meeting
- Skill
- Strategy
- Effort
- Fun



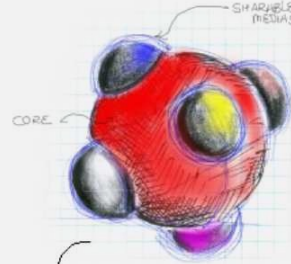
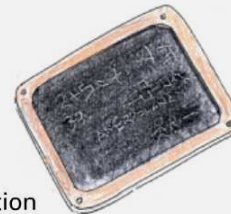
Jelly boy

- Companion
- Sharing feelings
- Link between child and parents
- No physical communication
- User group limited



Living Memory

- Learning
- Trust
- Share
- Scribbling
- No physical communication





Final Concept



Marbles – Features:

- . Personalization
- . Exchange of marbles
- . Different sizes, colors, designs
- . Parent and secondary marbles
- . Strategy for different games
- . The more u play, the more u learn
- . Entertainment for players





History of Marbles:

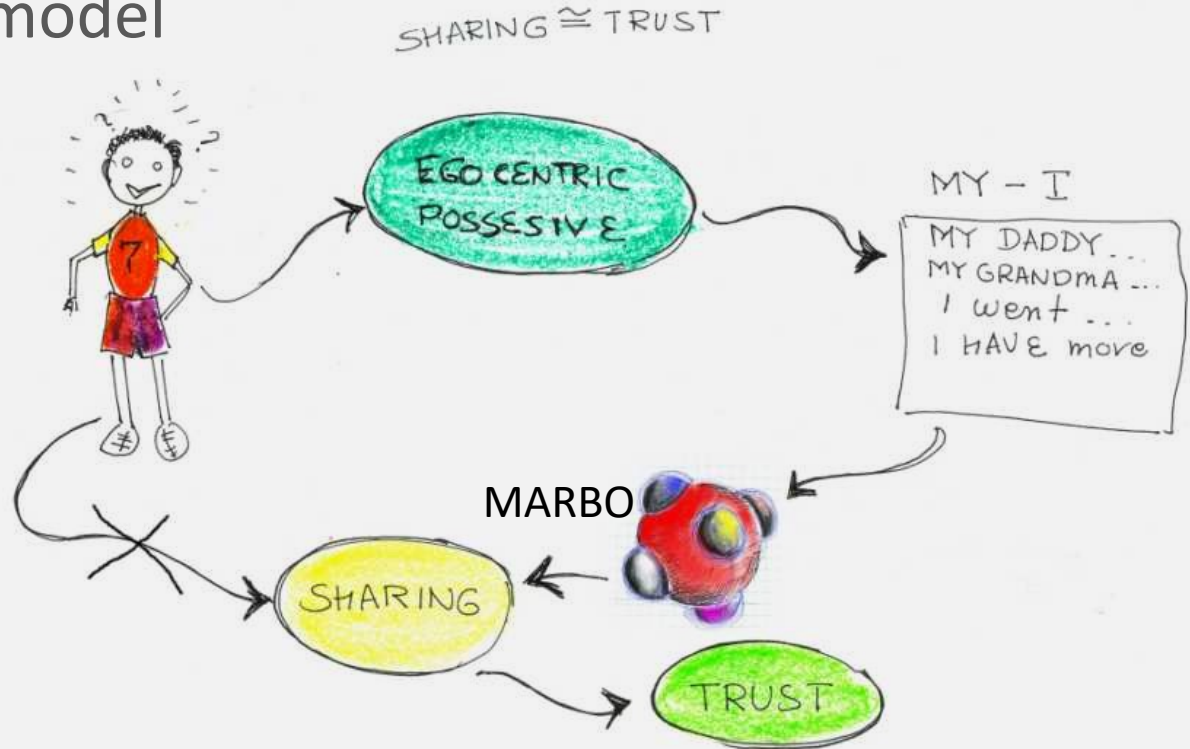
- . 3000 years old
- . Clay marbles found in ancient Egyptian tombs
- . Found in Mexico and USA dating back to 100BC
- . 19th Century marbles were being mass produced
- . Originally marbles were made of many kinds of materials - clay, bone, polished nuts and stones, and indeed marble
- . Now most marbles are made of glass





& we found the solution:

- conceptual model



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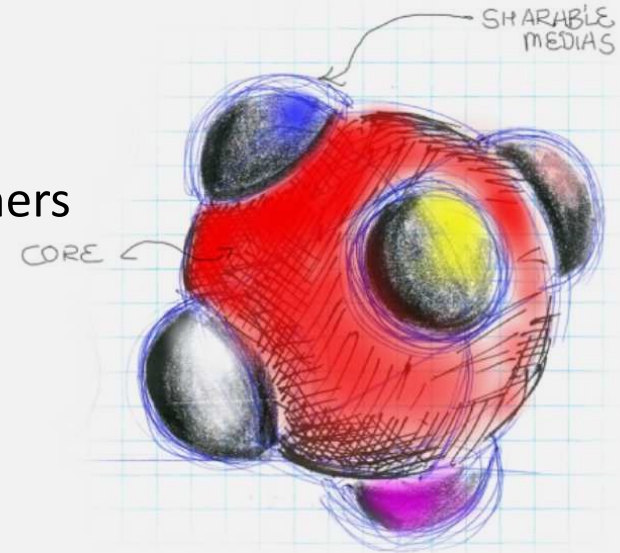
marbo

share your marbles



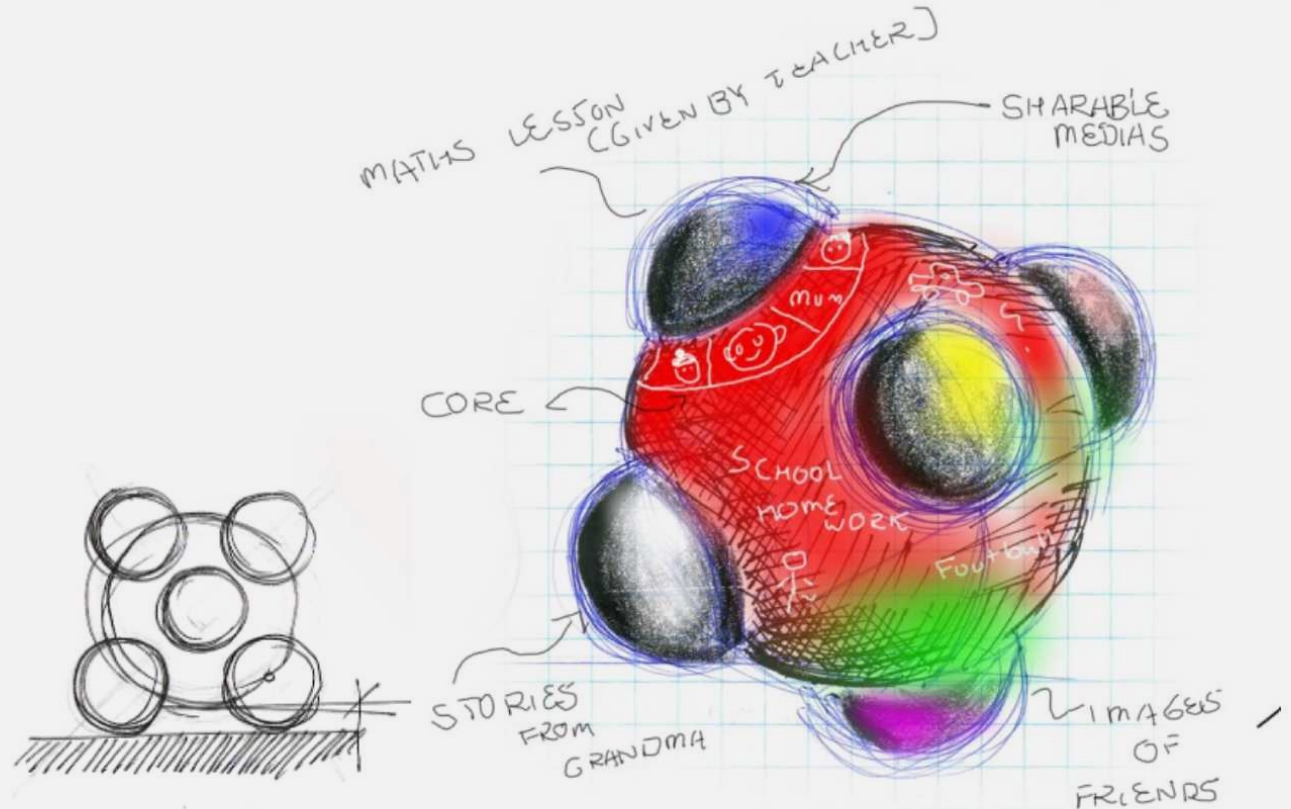
Marbo – Product Features:

- . Customization- look, color, feel
- . Sharing – stories, pictures, learning, ...
- . A device to invite friends
- . Language building
- . Detachable marbles that can be given to others
- . Sharing scribbles, doodles and photographs
- . Morphing of shape and skins
- . Collaborative learning





Marbo – Product Features:



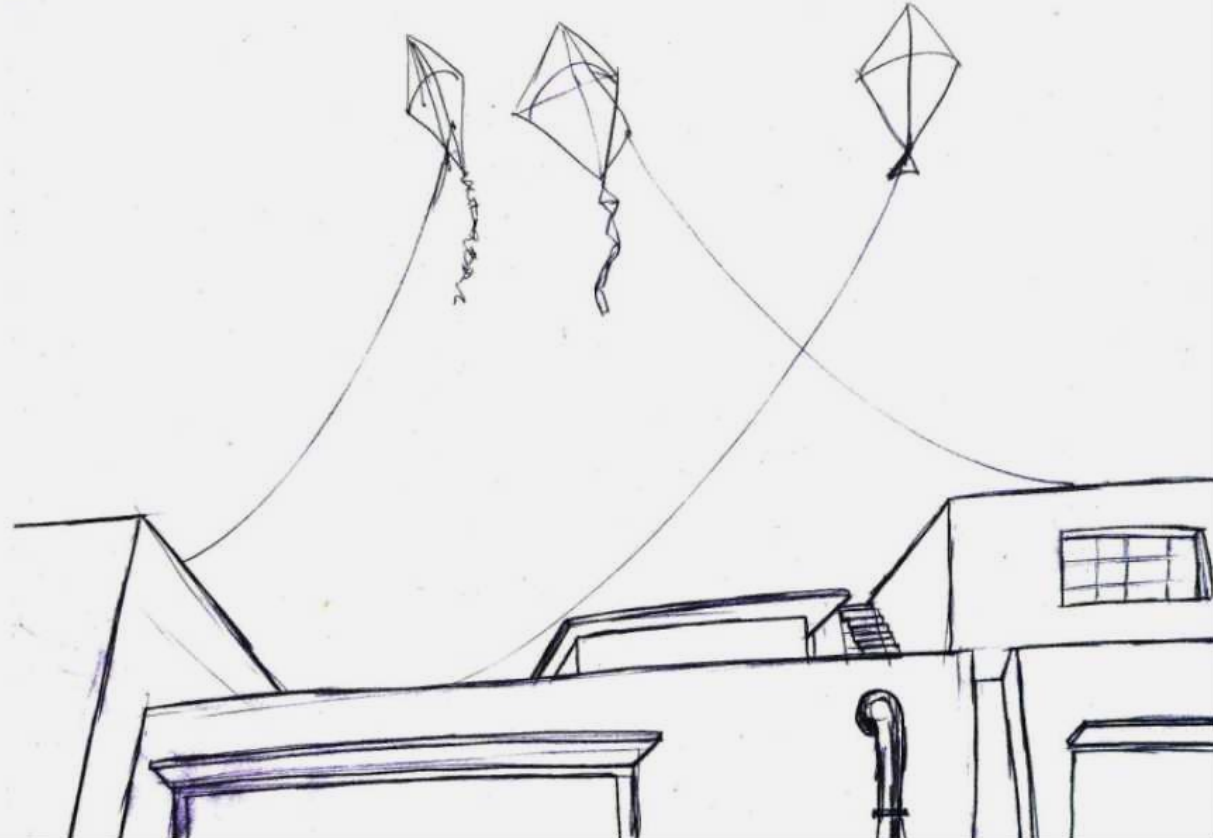


marbo
share your marbles

Scenario



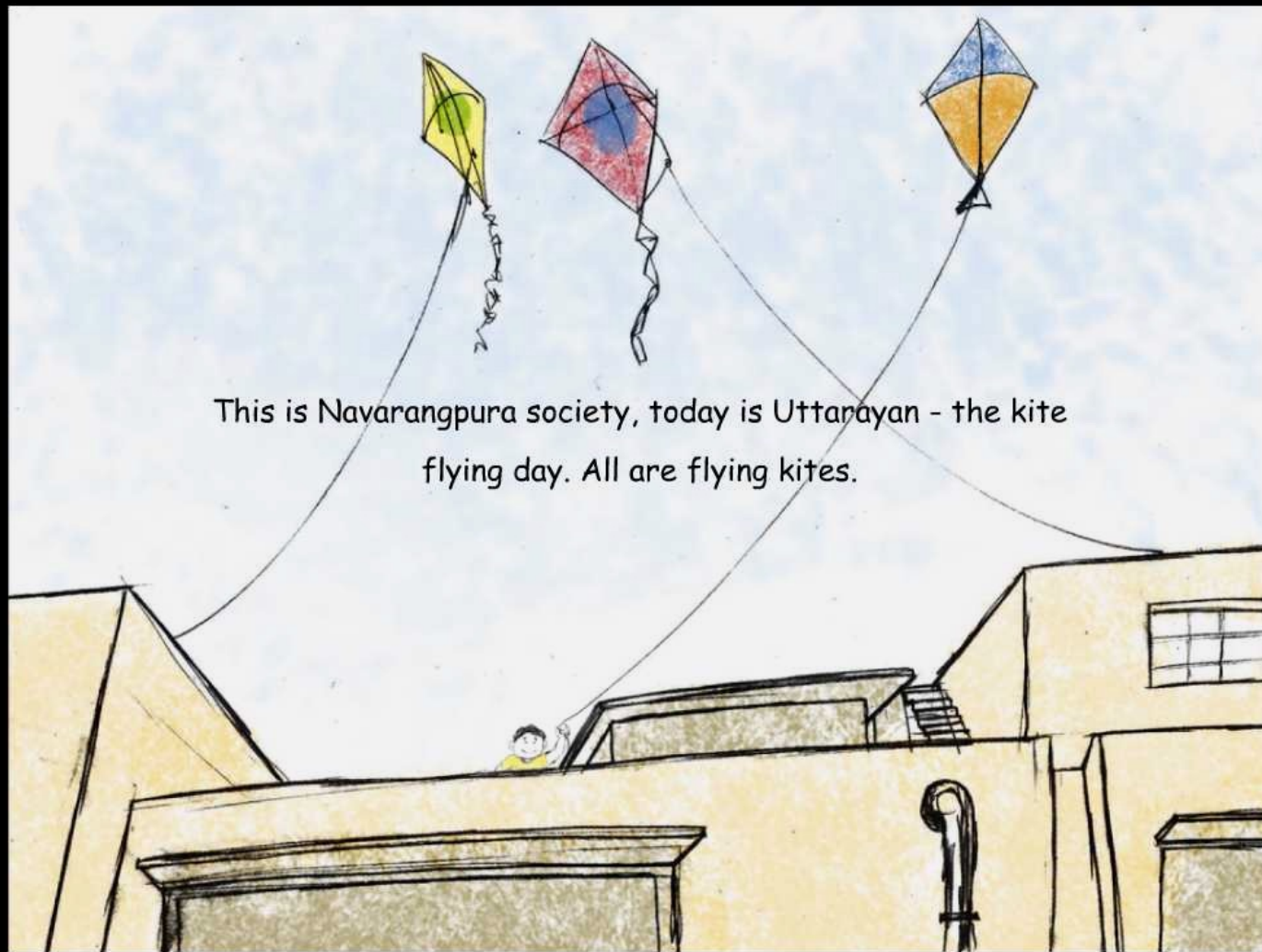
Scenario:



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DESIGN

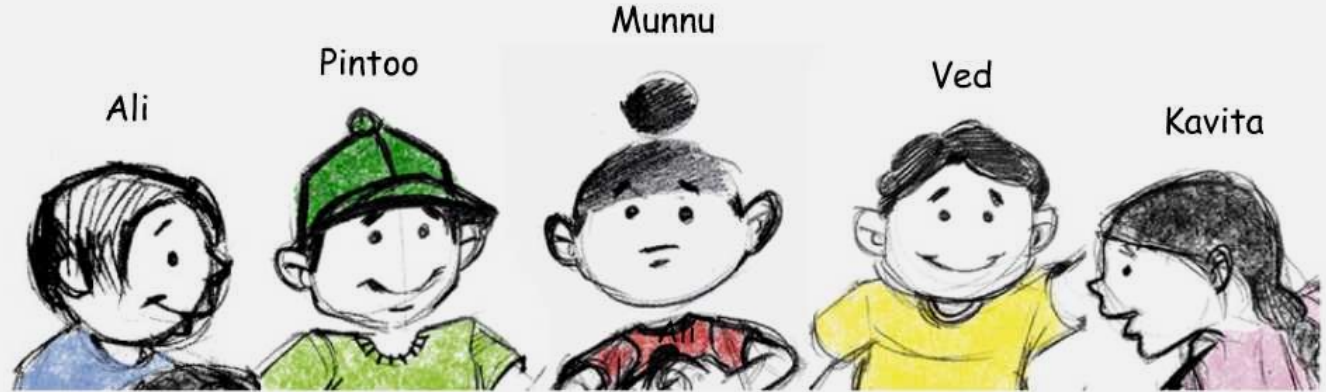


This is Navarangpura society, today is Uttarayan - the kite flying day. All are flying kites.



Ali, Pintoo, Munnu, Ved and Kavita are friends in the society, nowadays a fat guy called Motu is also there in the society

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Jugal - the MOTU

Ved is also flying kite....

"Look, my orange kite is flying so high"

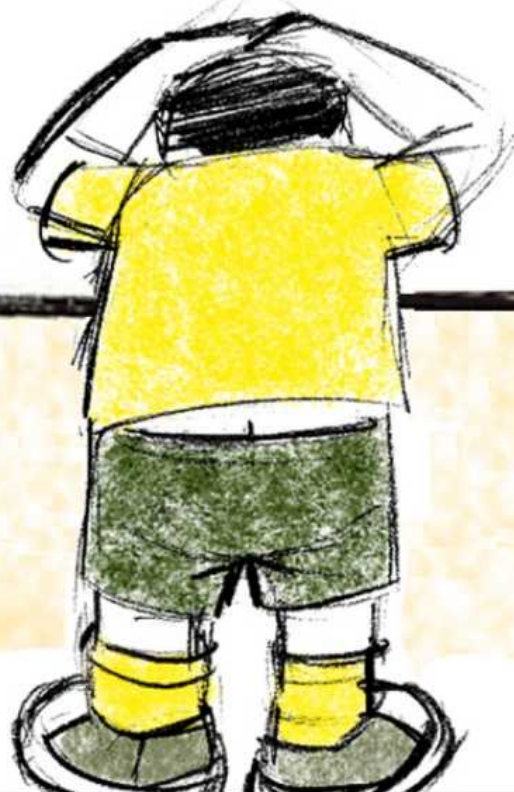


THINK!
DESIGN



Someone cuts Ved's kite...

"Oh no!! somebody cut my kite"



THINK!
DESIGN



THINK!
DESIGN



"No problem, i have another one"



THINK!
DESIGN



"Even this one is flying so high"



Someone cuts Ved's kite again... this time he gets very upset

"Oh no!! someone cut my kite again"



THINK!
DESIGN



Ved looks out at the opposite terrace, it was the fat guy motu cutting Veds kite

THINK!
DESIGN



Hehehe!! hahaha!! hehehe!!

THINK!
DESIGN



"You motu!! i will see you..."



Ved tries to contact his friend Pintoo with his Marbo and asks for help in cutting Motu's kite

THINK!
DESIGN



This is Ved's friend, Pintoo, he is also flying kite in his terrace...



THINK!
DESIGN



Pintoo has a similar Marbo as Ved, when Ved contacts Pinfoo, his marbo starts ringing

THINK!
DESIGN



"Oh Ved is trying to
contact me..."



Ved scribbles a message for Pintooc on his Marbo...

THINK!
DESIGN



THINK!
DESIGN



"Oh Ved needs help in
cutting Motu's kite ...
We cant do this alone, let
me ask Munnu for help"

This is Ved and Pintoo's friend Munnu...he also has his own Marbo

THINK!
DESIGN



"Oh Ved and Pintoo need
help in cutting Motu's
kite... No problem, lets
together scribble a plan on
on our Marbo"

Together they make a strategy to cut Motu's kite

THINK!
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THINK!
DESIGN



"Ok I will go first...
i can see Motu's kite"

According to the strategy they decided on their Marbo, Ved, Pintoo and Munnu attack Motu's kite

THINK!
DESIGN



"Ok I will go first"



"Ok I will go left"



"Me from the front"



Thats how together the three friends cut Motu's kite with help of their Marbo

THINK!
DESIGN



"This is how we cut MOTU's kite"

THINK!
DESIGN



"All three together
cut my kite, but how
did they make a plan?
they are all in
different terrace"



Munnu takes MOTU's picture on his Marbo

THINK!
DESIGN



All friends have a look at Motu's photo in Pintoo's Marbo..

"Lets look at Motu's photo in my Marbo"



THINK!
DESIGN



Munnu sharing his marble..

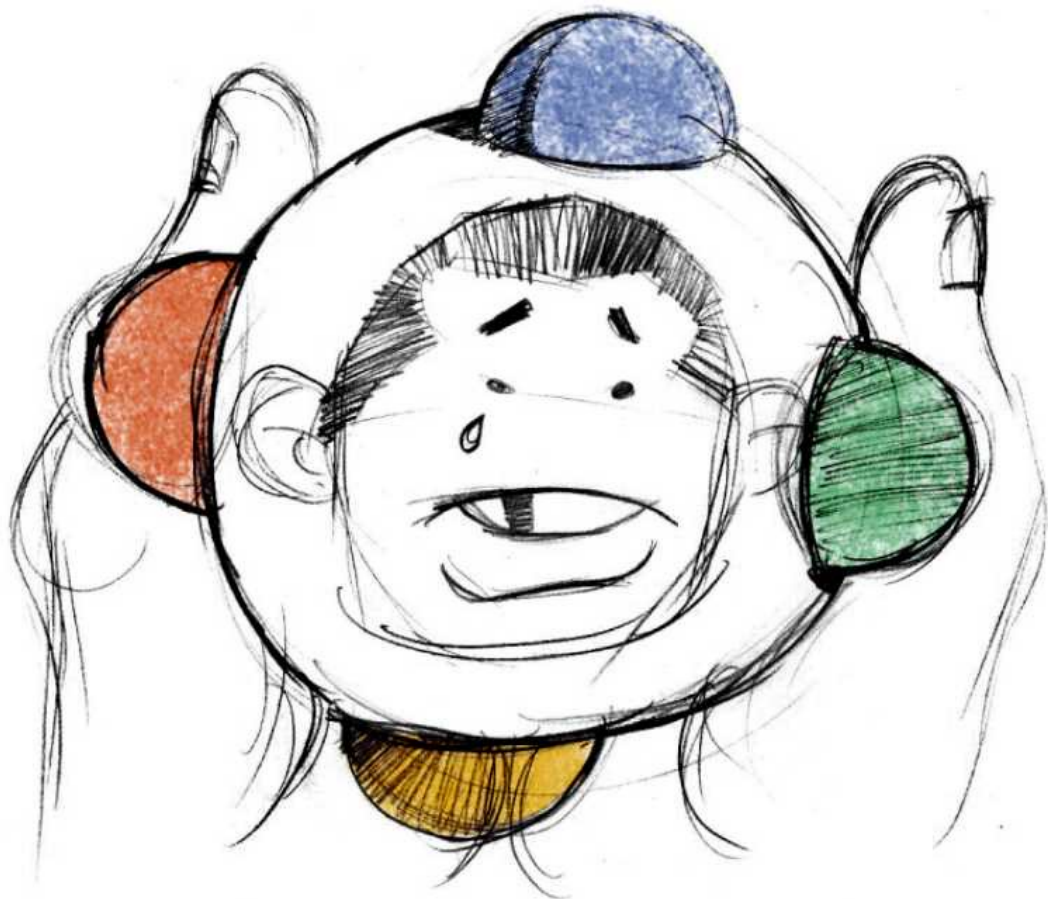
THINK!
DESIGN



"Look guys i have
the picture of Motu
in my Marbo"

Munnu shares his marble

THINK!
DESIGN



Suddenly Popat uncle comes there..

THINK!
DESIGN



"Listen children, dont make noise
today evening we have a cultural
program in our society. why don't you
kids perform a drama for that?"

Popat uncle suggested them to make 'Ramayan' skit... 'Ramayan' is a holy Indian epic of God Rama

"Ye!! ye!! we ll do 'Ramayan'"



THINK!
DESIGN



THINK!
DESIGN



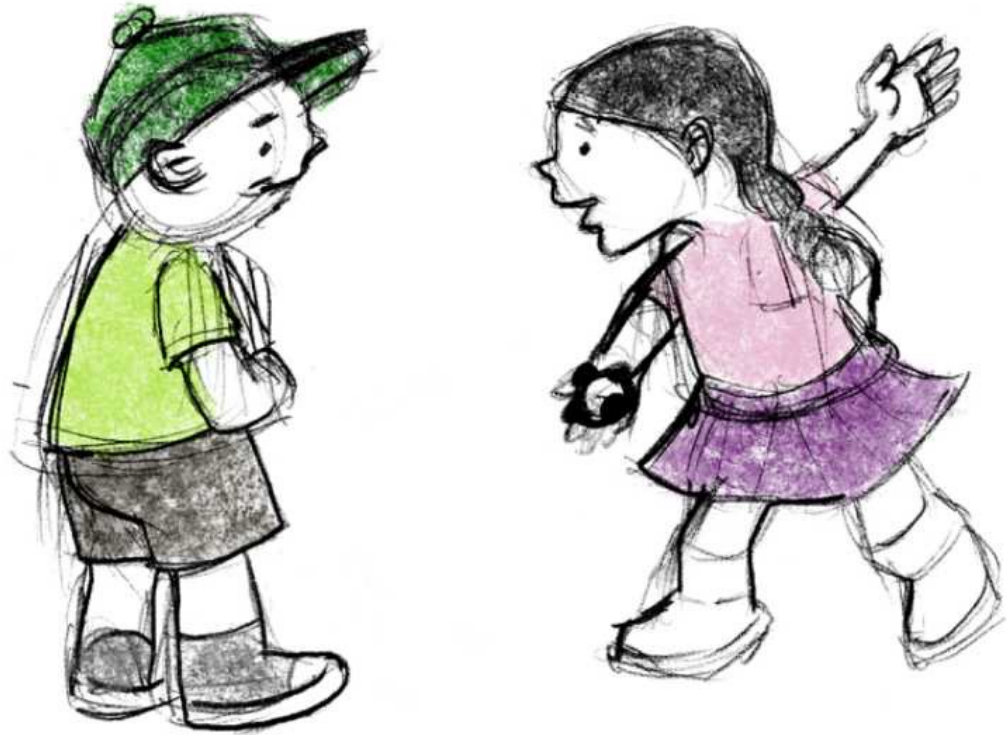
"But do we know the
story of Ramayan?"

Kavita had the story of 'Ramayan' in her Marbo. Her grandma told her that a day before.

THINK!
DESIGN



"I have the story of Ramayan in my Marbo"



Kavita gives her 'Ramayan' marble to Pintoo and they all hear the 'Ramayan' story in grandma's voice

THINK!
DESIGN

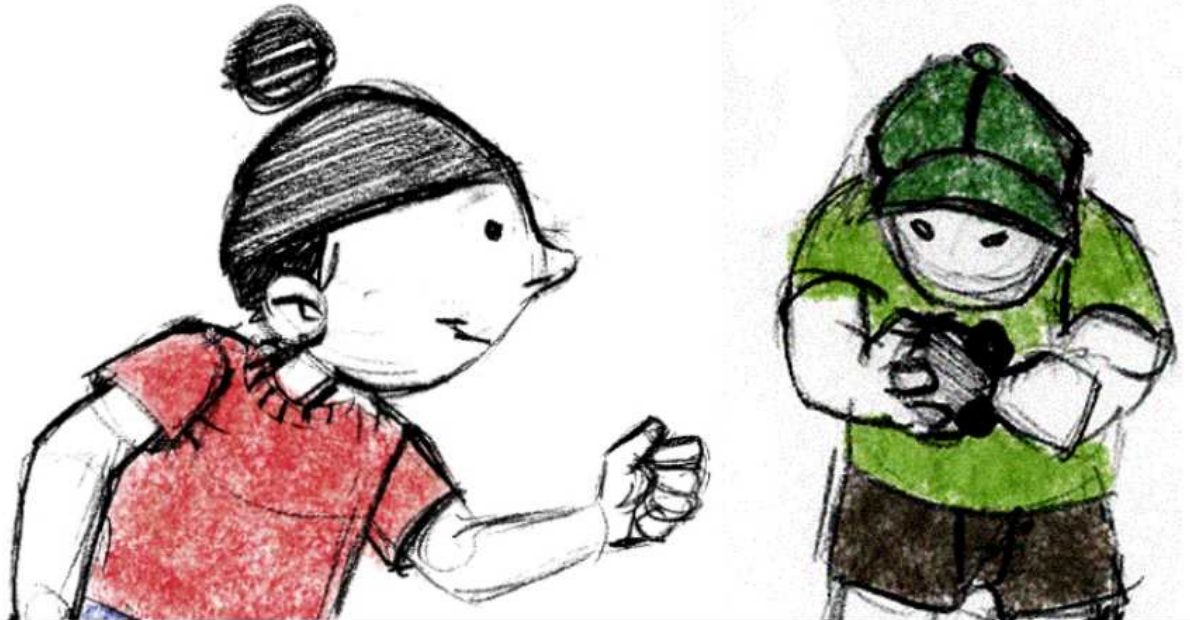


Hanuman is an important character in the story of 'Ramayan'. His face is like that of a monkey

THINK!
DESIGN



"But who will become Hanuman?"



Pintu modifies Motus face to Hanuman in his Marbo with the pen tool...



THINK!
DESIGN



And shares it with Pintoo..

THINK!
DESIGN



"Look, Motu looks
just like Hanuman"



Suddenly Motu was also there ..



"I will become Hanuman"

THINK!
DESIGN



"Ye, we ll do Ramayan"



A dark grey circle containing the text "THINK! DESIGN" in yellow, bold, sans-serif capital letters.

THINK!
DESIGN



.....& they all performed skit of
'RAMAYAN' that day in society
cultural program

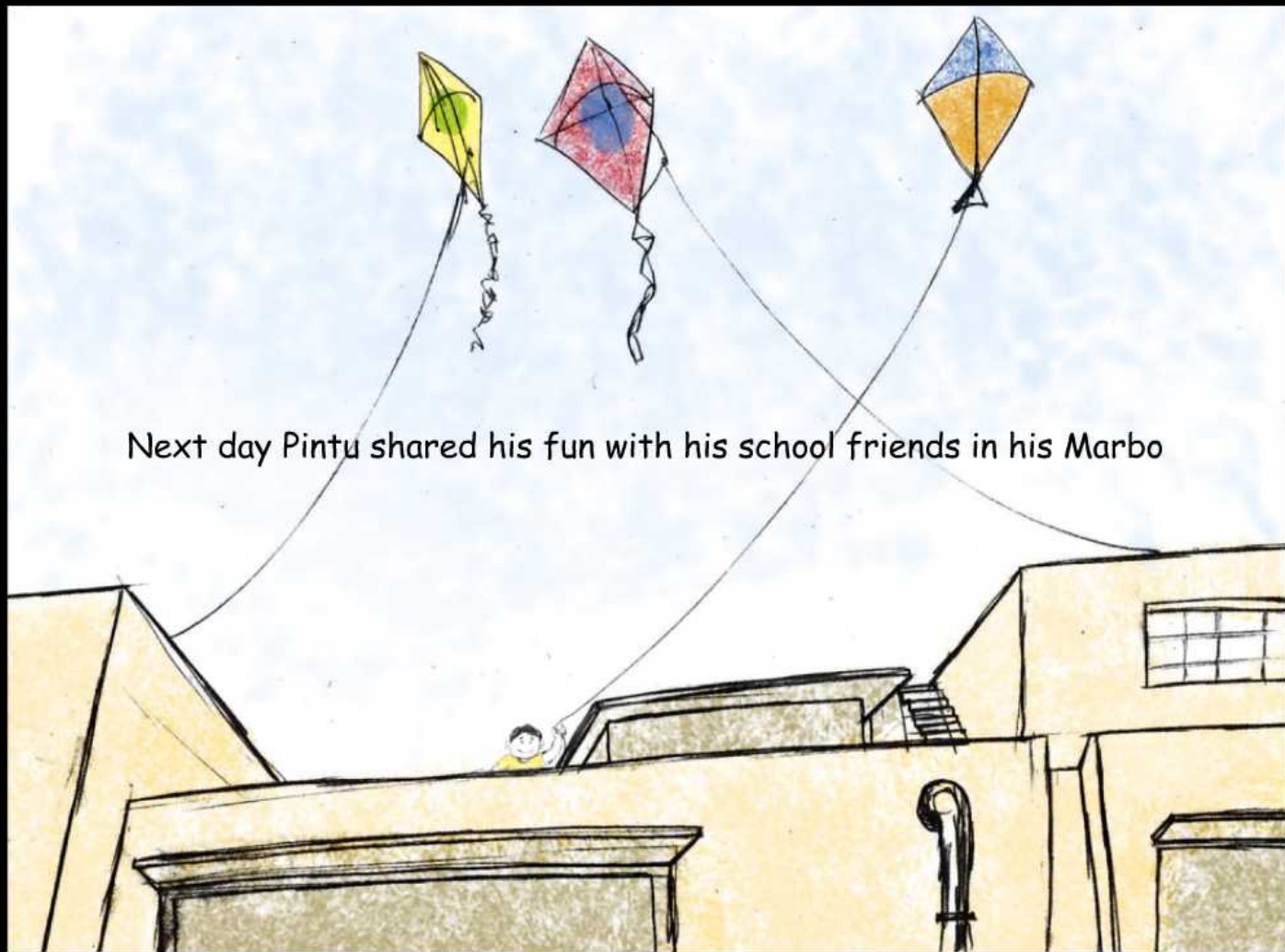
THINK!
DESIGN



THINK!
DESIGN

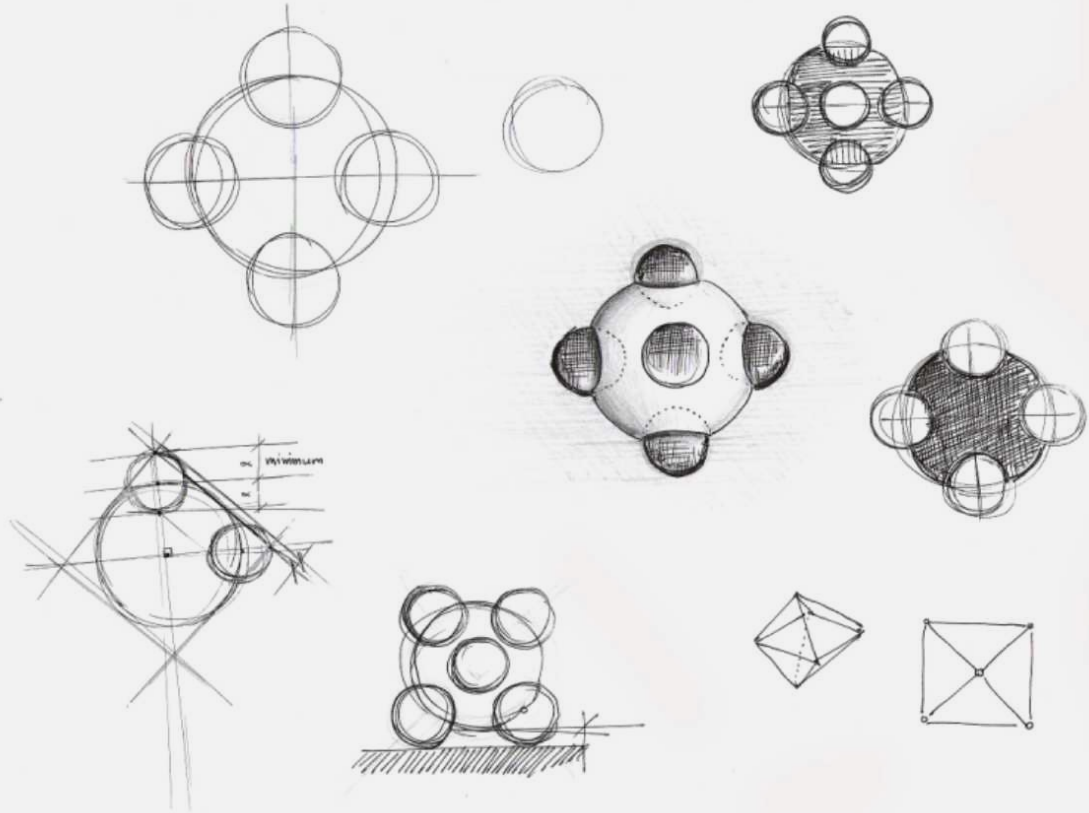


Next day Pintu shared his fun with his school friends in his Marbo





Initial Sketches:



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Inside Marbo:

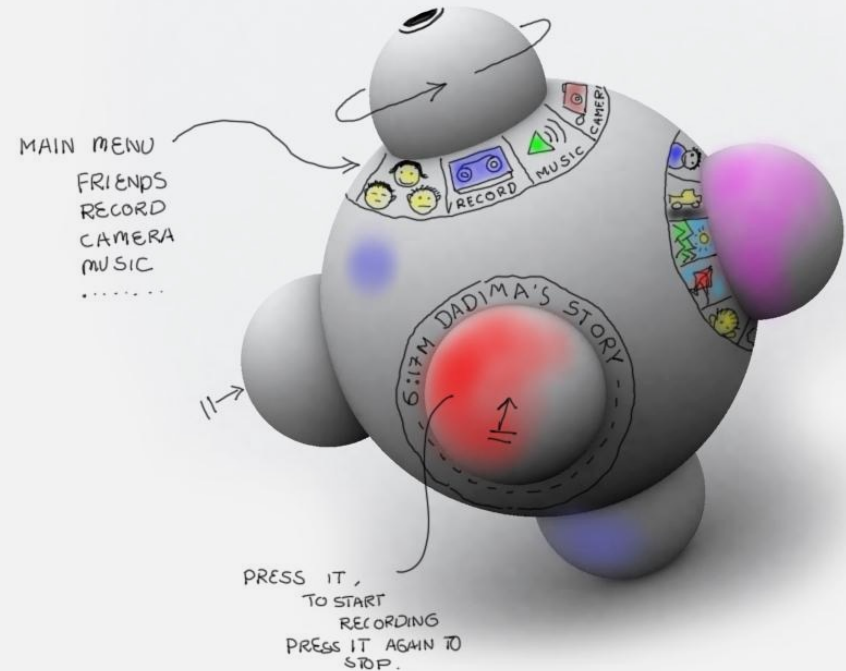




Interaction with Marbo:

MARBO has a main display screen, on which menus are displayed, child can doodle, draw,....

Each marble on the sides can be detachable and sharable to others. These marbles can contain stories, music, pictures,...



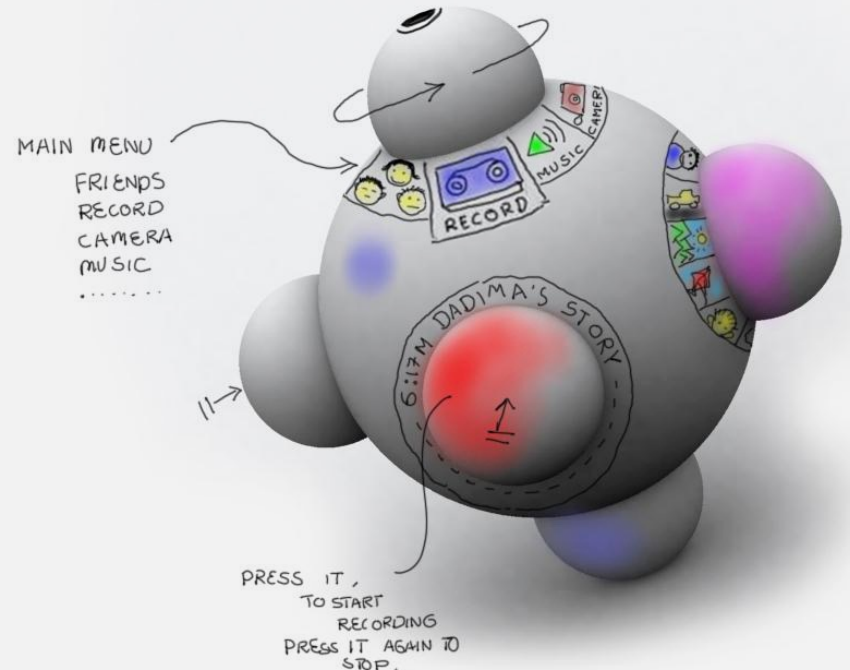


Marbo Interface:

MARBO has one main marble. The main marble represents the child. Main features of MARBO are around it, like Friends, Record, Music, Camera, Drawing

Children can select the feature by turning the main marble & pressing it, whatever they want to select.

Record is selected as in the MARBO beside. Now they can record Grandma's story in any other marble.



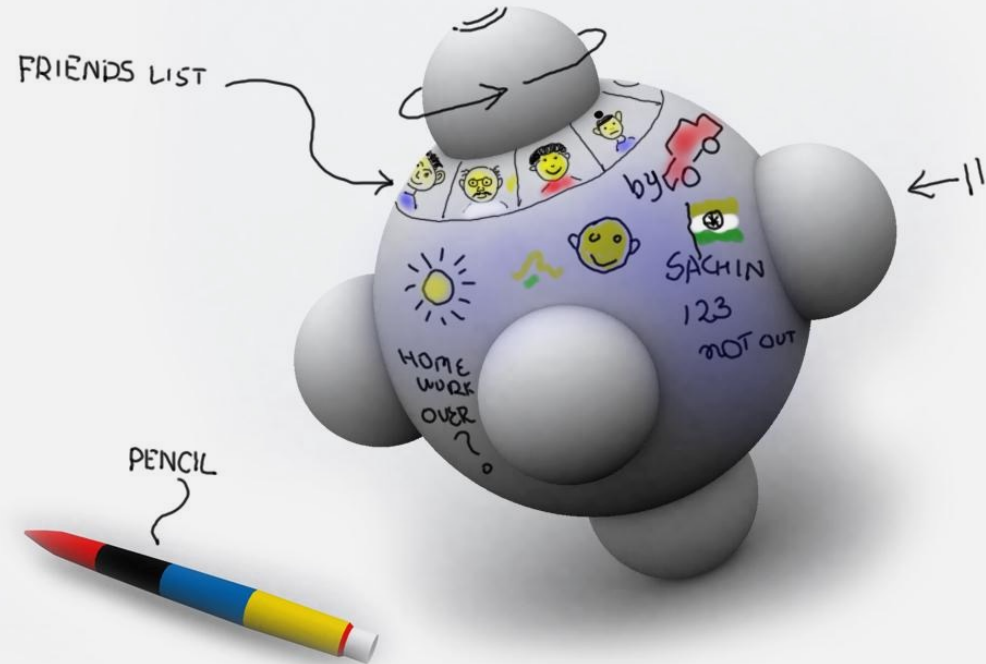
THINK!
DESIGN



Marbo Interface:

Child can contact to friends, parents, teachers, relatives with his MARBO. He can doodle on the screen & share his feelings with sound, pictures, doodling. They together can plan, play, learn,have fun.

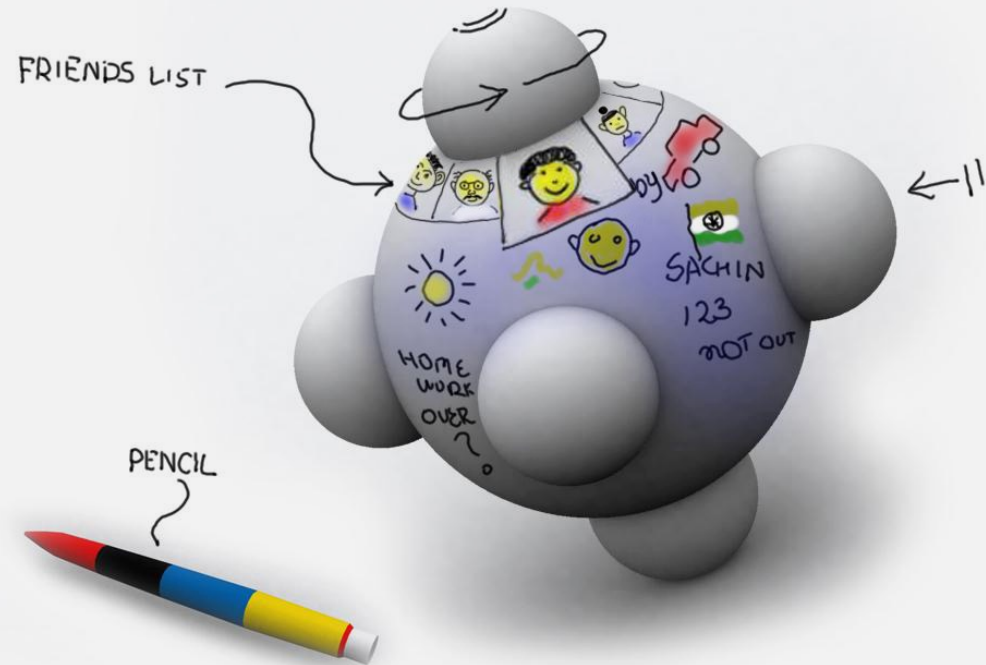
MARBO has a pencil also in it, contained in main marble. Child can use it to doodle, draw and even select features from menus.





Marbo Interface:

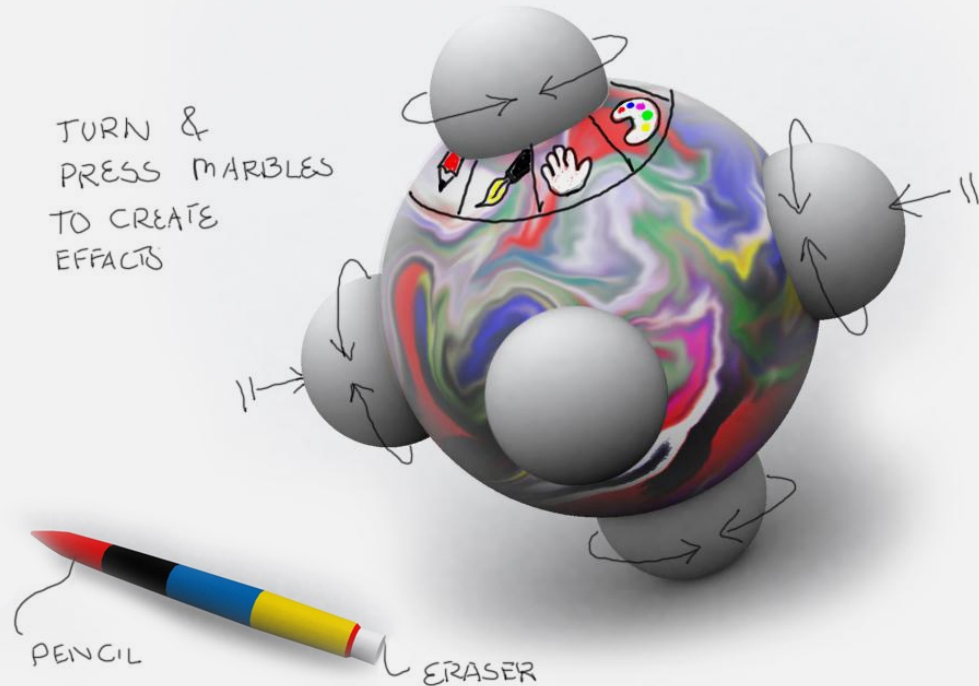
With MARBO, child can have group learning, fun, planning session with friends. They can paint together on one canvas, can have a group music building, can play together, exchange their ideas.





Marbo Interface:

MARBO has a very good property of customizing the look & feel. Child can paint his MARBO according to his choice. He can have picture of Pokemon or Spiderman on it.



THINK!
DESIGN



Feedback

Feedback from children:

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I can detach
this marble and
give it to my
friend!!



We want it!!



Oh we can
scribble on it!

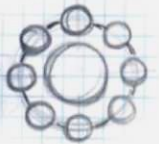
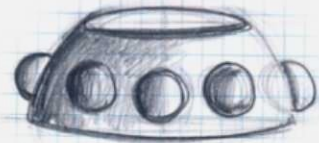
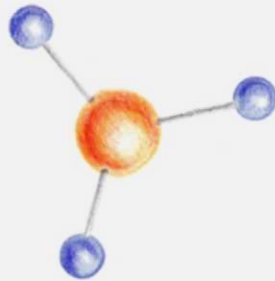
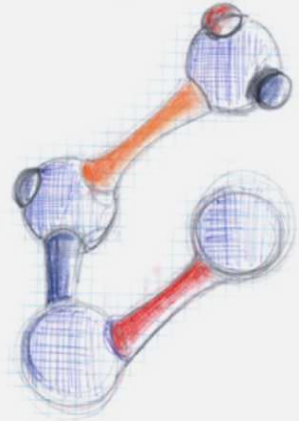
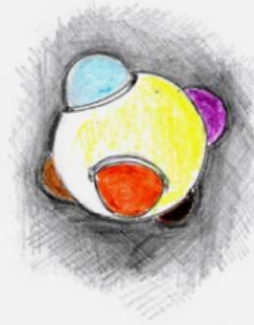
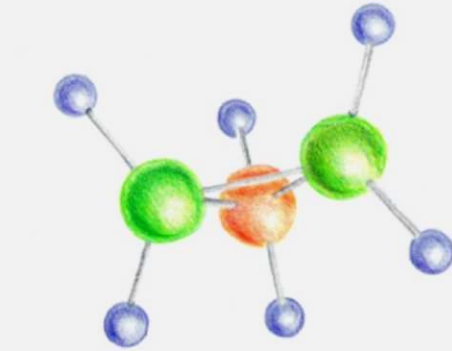
Can I change
the way it
looks?



THINK!
DESIGN



Marbo Variations:





Extended Scope for Marbo:

- . Education
- . Construction
- . Parent child relationship
- . Teacher child relationship
- . School and MARBO
- . Learning
-





Acknowledgement:

Prof. Ravi Poovaiah

Dr. Ajanta Sen

Shounak

Sachin Dutt

Smita Gupta

Prof. M. Malshe

Principal, Kendriya Vidyalaya, IIT Bombay

Principal, New Era School

NAVNIRMITI

To all the kids

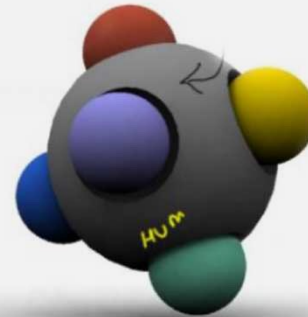
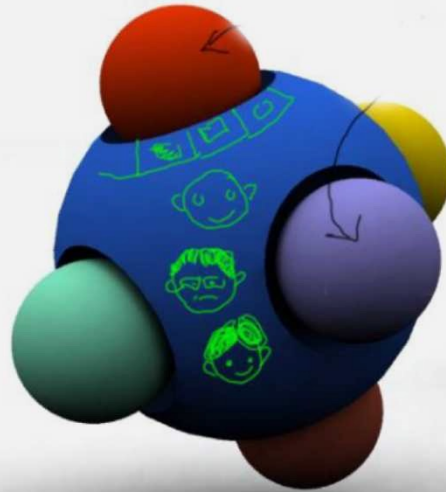


THINK!
DESIGN



Thanks

THANK YOU
VERY MUCH
MUCH
MUCH



-
Amisha
Muthukumar
Pranav

A dark grey circle containing the text "THINK! DESIGN" in yellow, uppercase, sans-serif font.

THINK!
DESIGN

A large black circle that serves as a background for the text "Thanks for Listening".

**Thanks for
Listening**

DT&I Case Study
Section: C11
Week 11

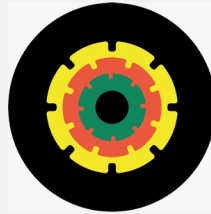
THINK!
DESIGN

DT&I Course – Week 11:



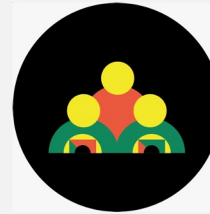
DT&I
Process
(20%)

- > Soft Prototyping,
- > Paper Prototype
- > Scenarios/
storyboarding



DT&I
Tools
(20%)

- > Paper Prototype
- > Soft Prototyping,
- > Scenarios and
Storyboarding, -
- > MVP



DT&I
Project
(50%)

- Demonstrate
Concepts through
- > Paper Prototype
 - > Soft Prototyping,
 - > Scenarios /
Storyboarding



DT&I
Cast Study
(10%)

- > Case Study
Project:
Prototyping
Details with
'Marbo'

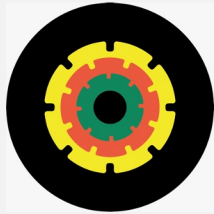
THINK!
DESIGN

DT&I Course – Week 12:



DT&I
Process
(20%)

- > Hard Prototyping,
- > High-fidelity Property
- > Human Factors and Ergonomics



DT&I
Tools
(20%)

- > Hard Prototyping,
- > High-fidelity Property
- > Human Factors and Ergonomics



DT&I
Project
(50%)

- > Hard Prototyping,
- > High-fidelity Property
- > Human Factors and Ergonomics



DT&I
Cast Study
(10%)

- > Case Study Project:
Prototyping details



Supporting Organizations:



D'source Project



Open Design School



MoE's Innovation Cell



Credits:

Designers for Marbo Case Study:

Amisha Bankar

Muthukumar

Pranav Mistry

Mentors for Marbo Case Study:

Prof. Ravi Poovaiah

Dr. Ajanta Sen



D'source Project



Open Design School



MoE's Innovation Cell



Credits:

Presented by:
Prof. Ravi Poovaiah



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Credits:

Camera & Editing:
Santosh Sonawane



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Credits:

Think Design Animation:
Rajiv Sarkar



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Credits:

End Title Music:
C P Narayan



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MoE's Innovation Cell



Credits:

Produced by:
IDC School of Design
IIT Bombay



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