circular interfaces in small devices

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-SUID

User Interface Project -I

Product Design Goals

It should use Circular Interfaces

- Circular Display
- Circular Controls

Is a handheld device

Solves some issues in small devices

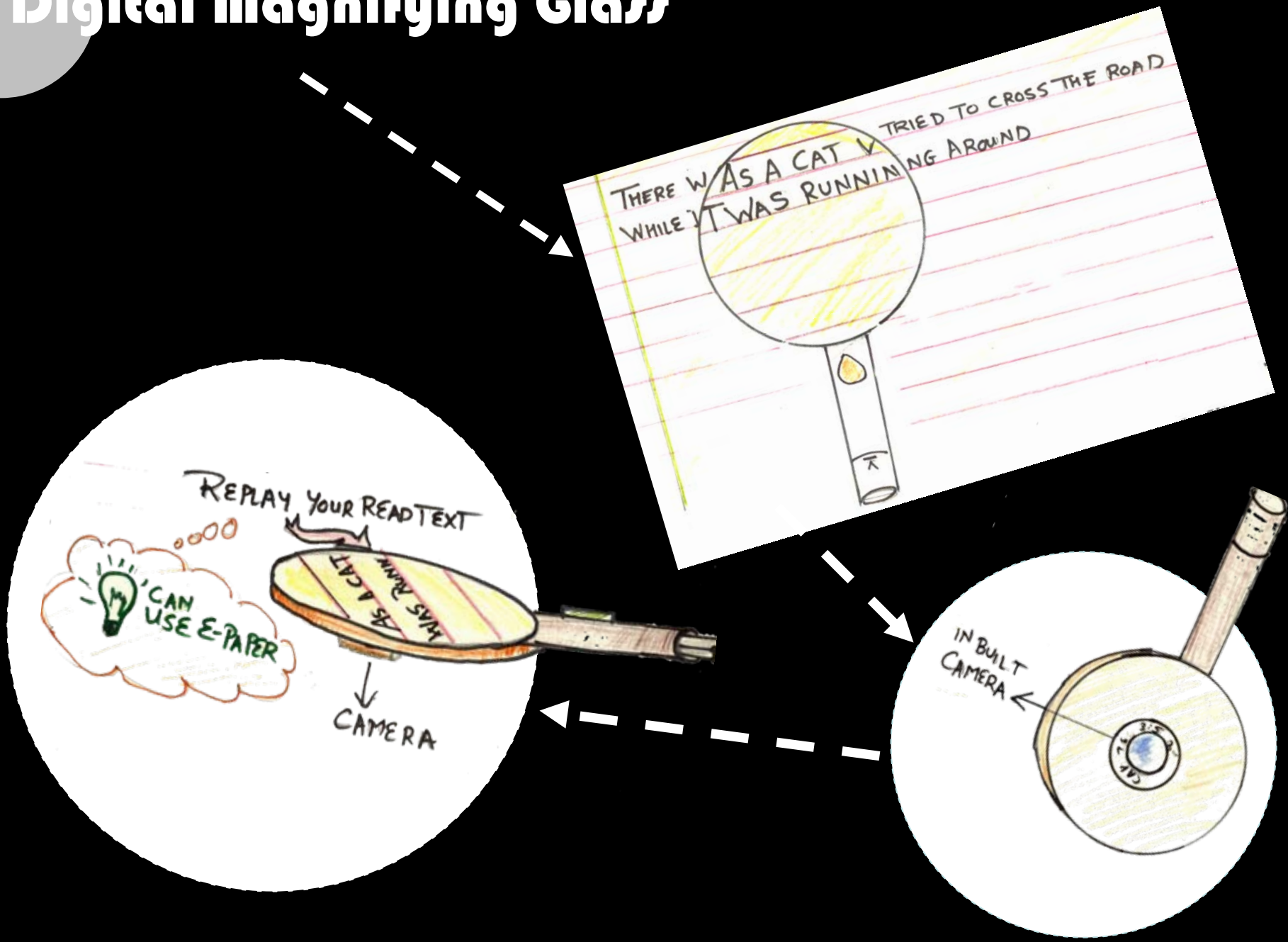
Possible application of upcoming technologies

Acts as an interface for human connectivity

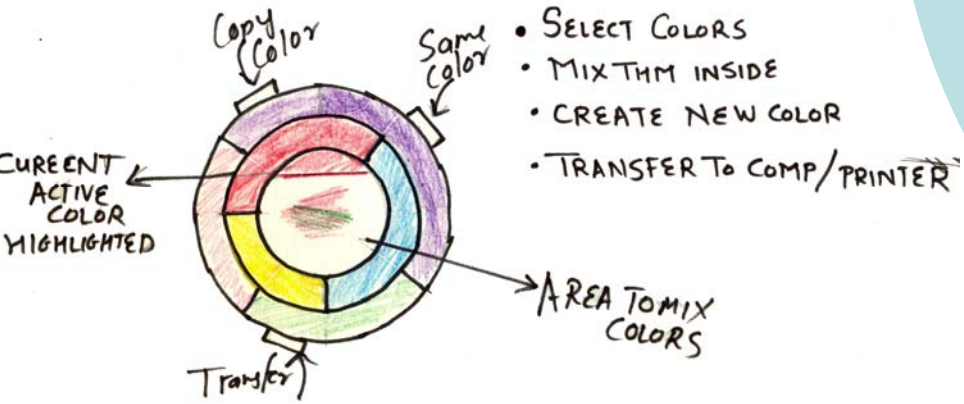
Explorations

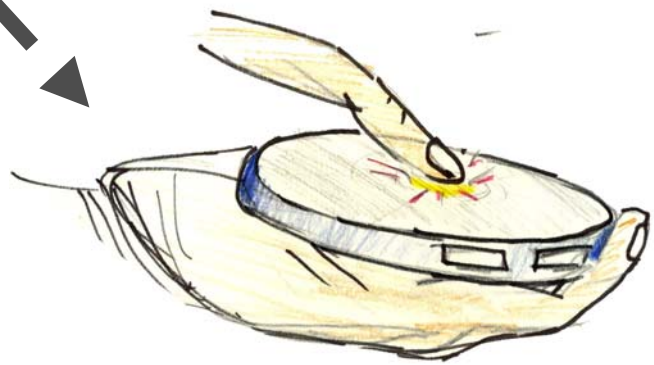
Some Concepts using circular interfaces

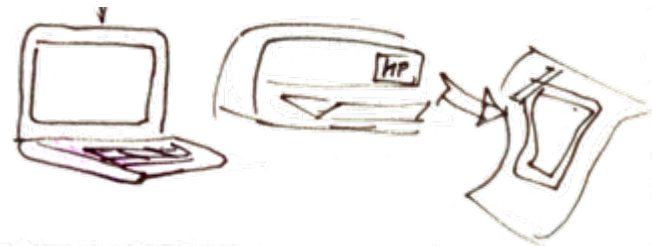
Digital Magnifying Glass



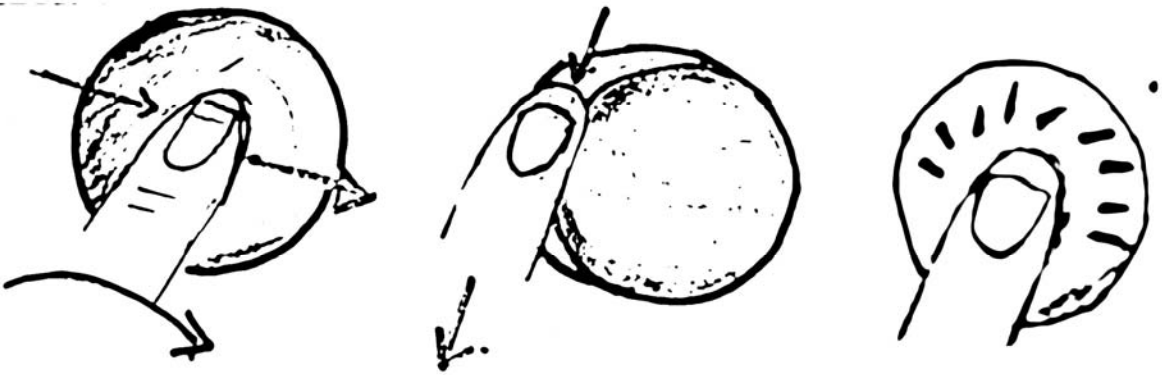
Digital Color wheel

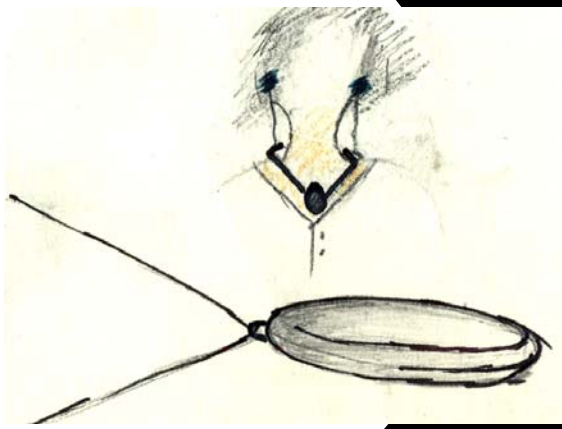


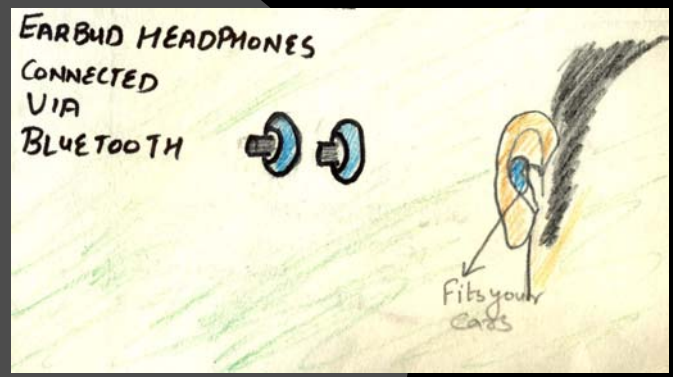


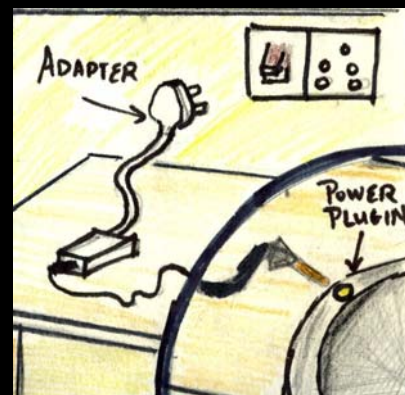


Gesture based wearable Music Player









the final concept

Handheld Music Player with Circular Interfaces

The Process

- Initial Brainstorming
- Online User Study
- Market Study
- Personas and goals
- Scenarios
- Feature listing
- Information Architecture
- Interaction patterns
- Interface Diagrams
- Graphic Design

Initial Brainstorming

Identify all possible areas and domains related to music players.

Online User Study

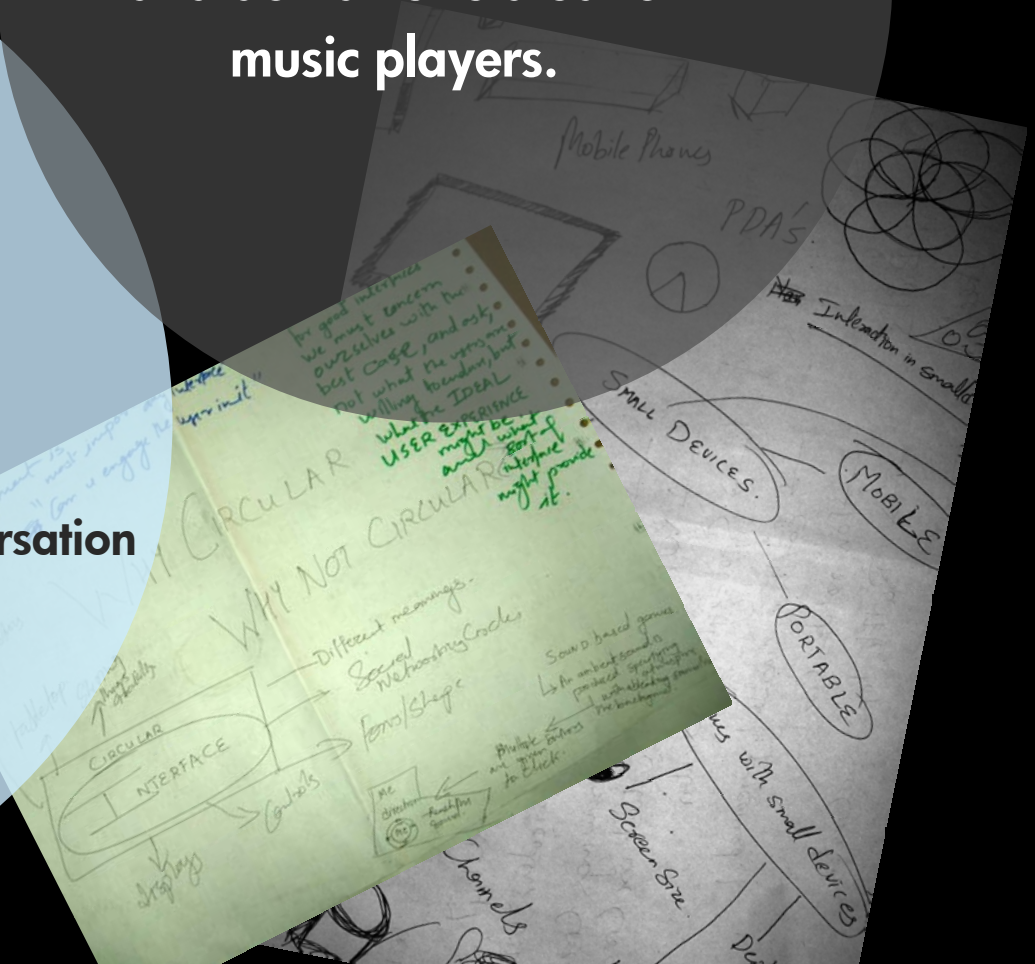
Using Chatting as a channel

for qualitative user study:

To get their response when they are listening to music

Completely informal manner of conversation

Catch them as they are multitasking



Market Study

The consumer market of MP3 players was researched upon.

Top 10 worldwide company listings

Features provided by current players

Displays and controls used

Insights

- Music is mostly heard as a simultaneous activity
- Videos are important but small screens are irritating. People still watch them mobile phone screens.
- Music is directly connected to the current emotional state of mind
- People seek radio in music players because:
  - that they don't have to make their own play list
  - can listen to latest songs which they don't have
- Touch based input devices are becoming popular with new devices

Product definition

"To design a handheld music device which uses circular displays with circular touch based controls and can be operated single handedly"

Which includes:

Physical product interface

The visual interface

The features provided

The Design Challenges

- Adjusting control elements on Small Screen
- One handed operation of small devices
- Feedbacks on the device or from the device.
- Touch screen control sizes on small screens
- Fitting functions to a given form. (Constraint 1)
- Fitting functions to a small circular screen (Constraint 2)

Alice

Primary

Neo

Secondary

Dennis

Tertiary

Three basic personas identified

Personas and Goals

Age: 18 years
Studies in Junior College
Travels by bus to college
Music Freak Listens to music 24x7
Mood Change by music
Extrovert
Gets Irritated Quickly
Carries minimum weight

Alice

Life Goal:

Live an independent life with a high social status

Experience Goal:

Enjoy quick& easy music; owns a lot of songs on home computer. Should look good socially while using the product

End Goal:

Easy to play songs on the go. Hassle free. Easy music transfer.

Age: 25 years
Works in an IT company
Tech Savvy company
Stays away from home
Has a girlfriend back home
Enjoys traveling once in a while.
Stays Alone
Watches latest videos

Neo

Life Goals:

Better working life at higher post

Experience Goal:

Should not take much of his time in operating. Easy to carry. Non visual operation should be easy.

End Goal:

Play Songs in whatever format. Control on the go with easy to carry.

Age: 14 years
Studies in High School
Loves to show off to friends
Easily gets influenced by others
Downloads lots of videos
Scores average in school

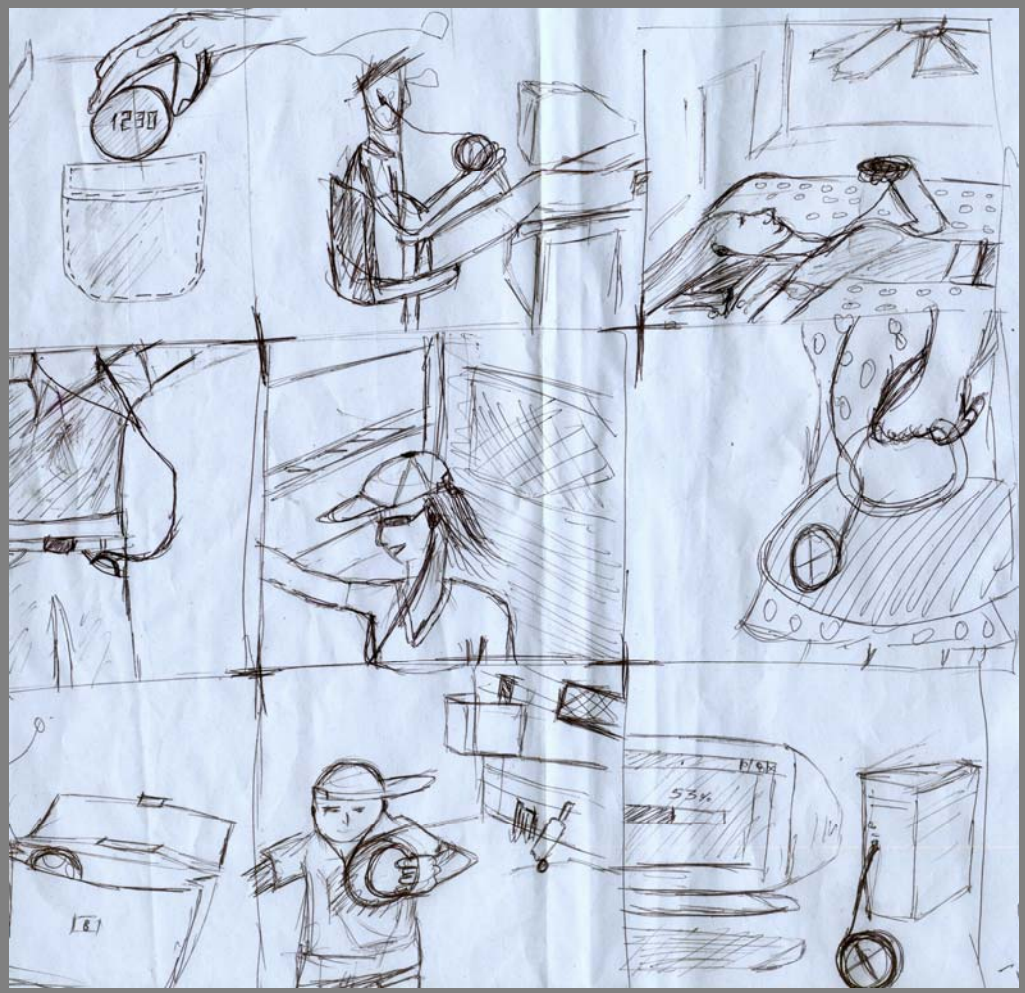
Dennis

Life Goal: A wannabie techie.

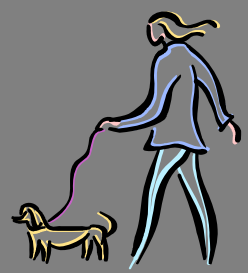
Experience Goal: Things should be easy to learn so that he can instruct others

End Goal: Play music or videos without any problems

Scenarios



Contextual Scenarios to consider personas in different places

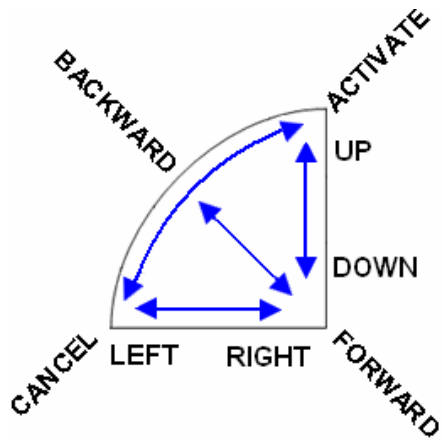


- Thumb based single handed Touch input
- Listening to stored music
- Watching videos
- Image display
- Listening to Radio
- Music Share: Listening to Shared radio
- Extended Projection display
- Pie Menu for the projection display
- Basic Functions: Battery, ON/OFF button

Feature listing

The Thumb actions

- Most single hand operation devices are accessed using the opposable thumb.
- Thumb actions are generally very friendly in a circular pattern on small devices



User Study

thumb actions on circular patterns

The interactions of the human thumb over a circle

Possible flexible reach of the thumb

The size of disc that fits human hand

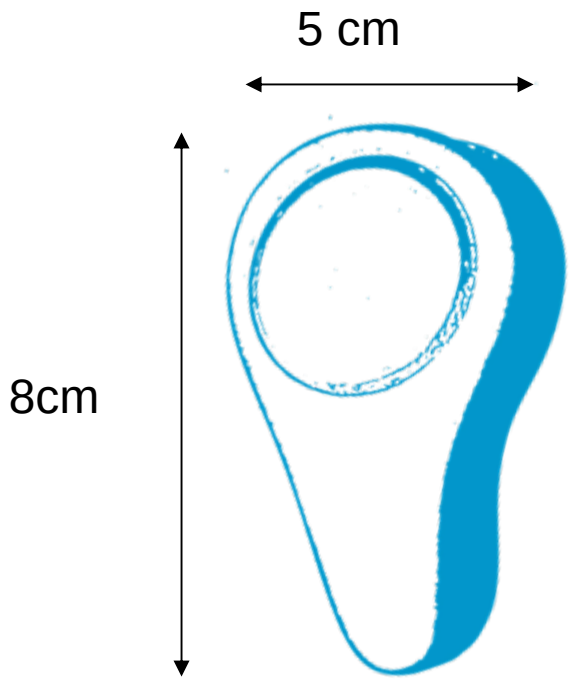
Different grips on the disc

The observations

- The form decides the interactions
- The thumb sizes vary but the actions or interactions are more or less the same
- The disc as a form is not an ideal shape for a perfect grip
- Smaller the disc the more the thumb reachability on both sides

- The UI prototyping form was for handheld interaction.
- A circular display area
- The grip was also tested with many iterations

Hence the final form is …



The final form

Challenges:

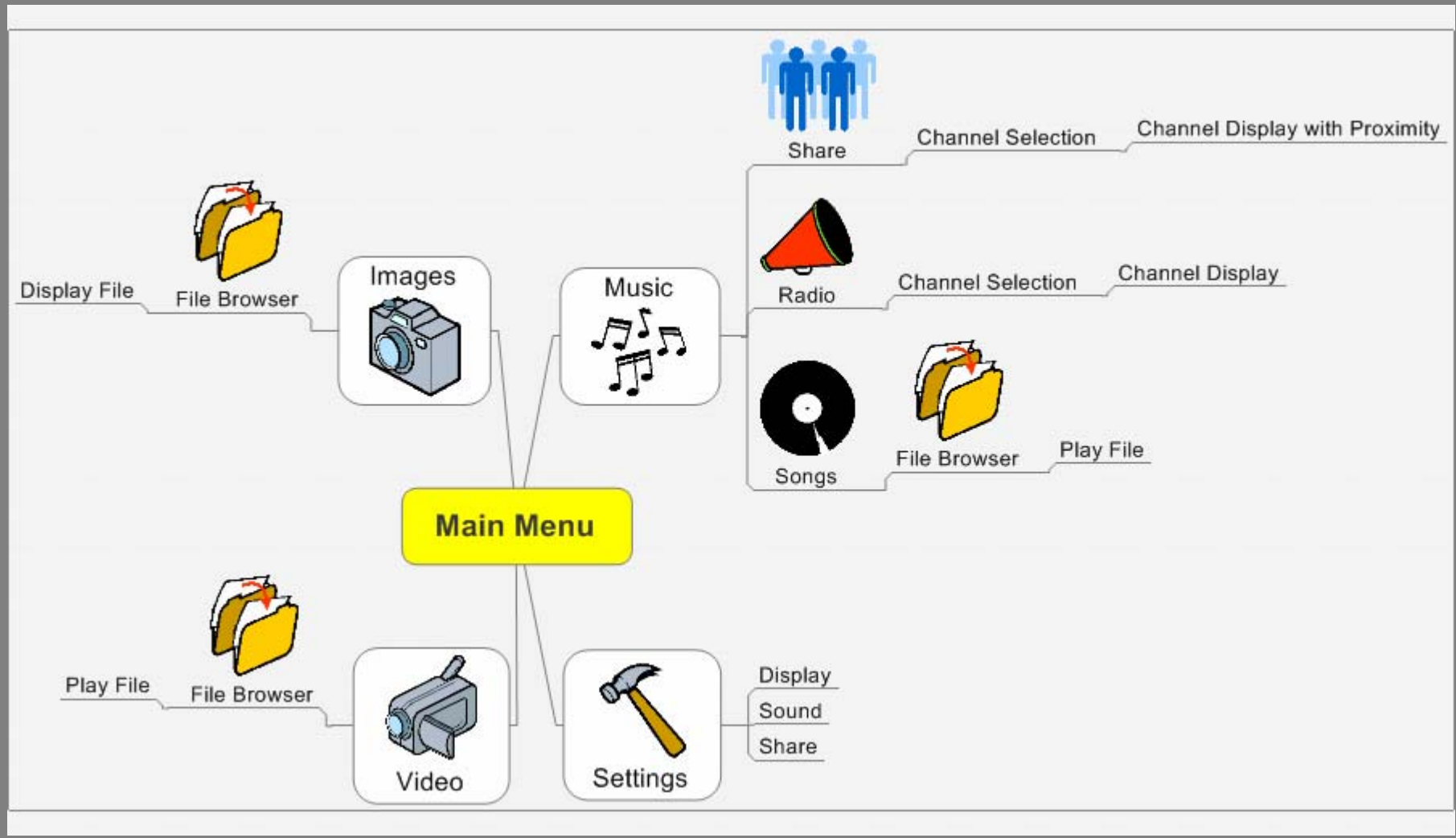
To fit the features in this form

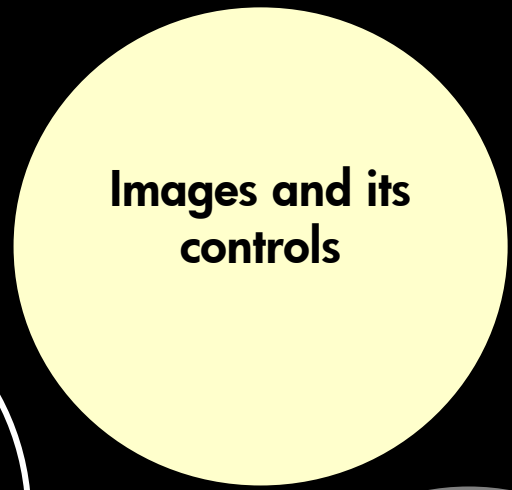
To design the graphical user interface accordingly

final Input Interaction

- Circular touch screen display with dynamic controls
- Separate button for extended projection display
- Sharing music button will be external
- The volume control on the rim of the disc

Information Architecture



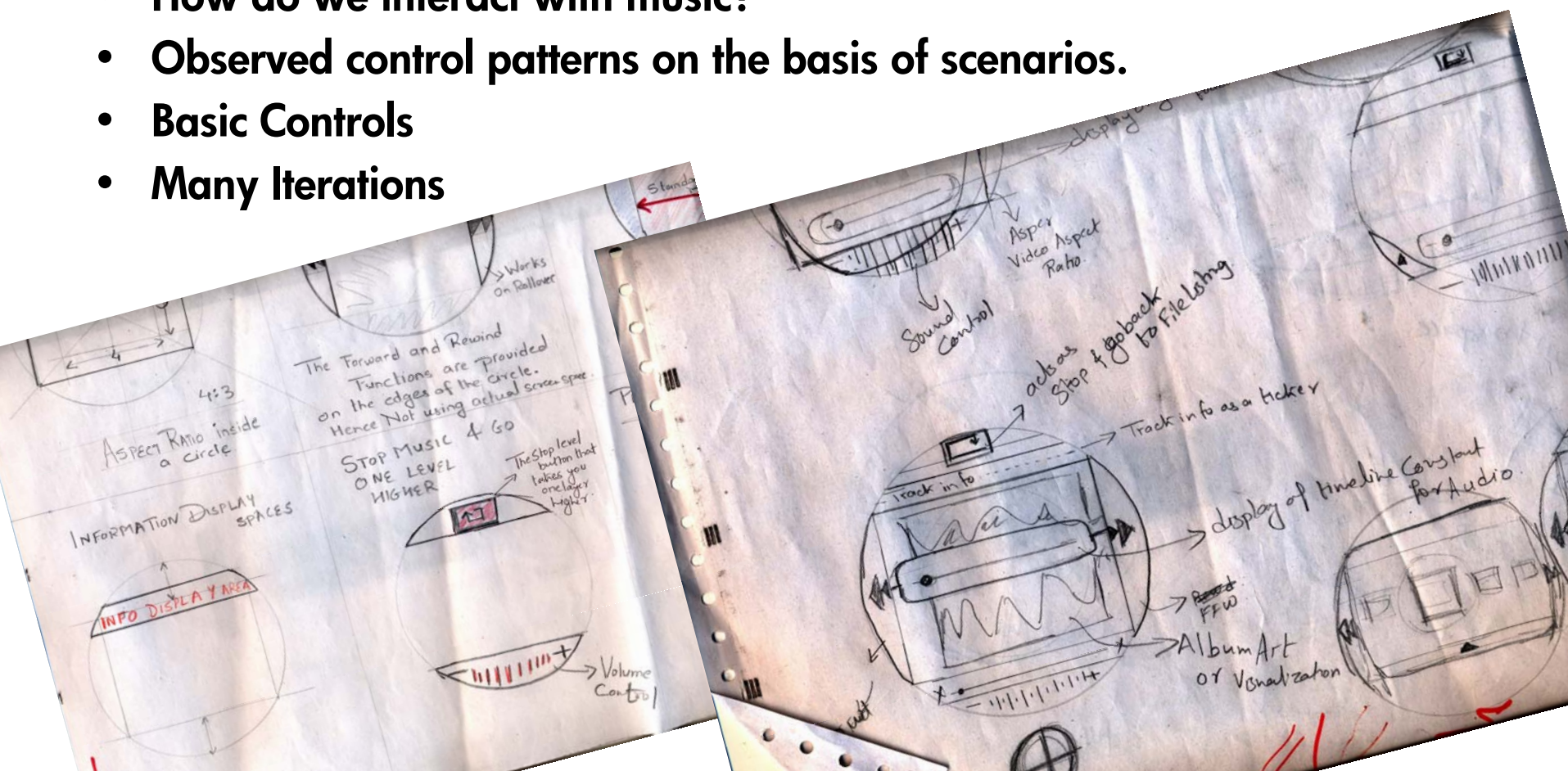


The Graphical User Interface

Media to be displayed

Music and its controls

- How do we interact with music?
- Observed control patterns on the basis of scenarios.
- Basic Controls
- Many Iterations



Video in a circle!!!

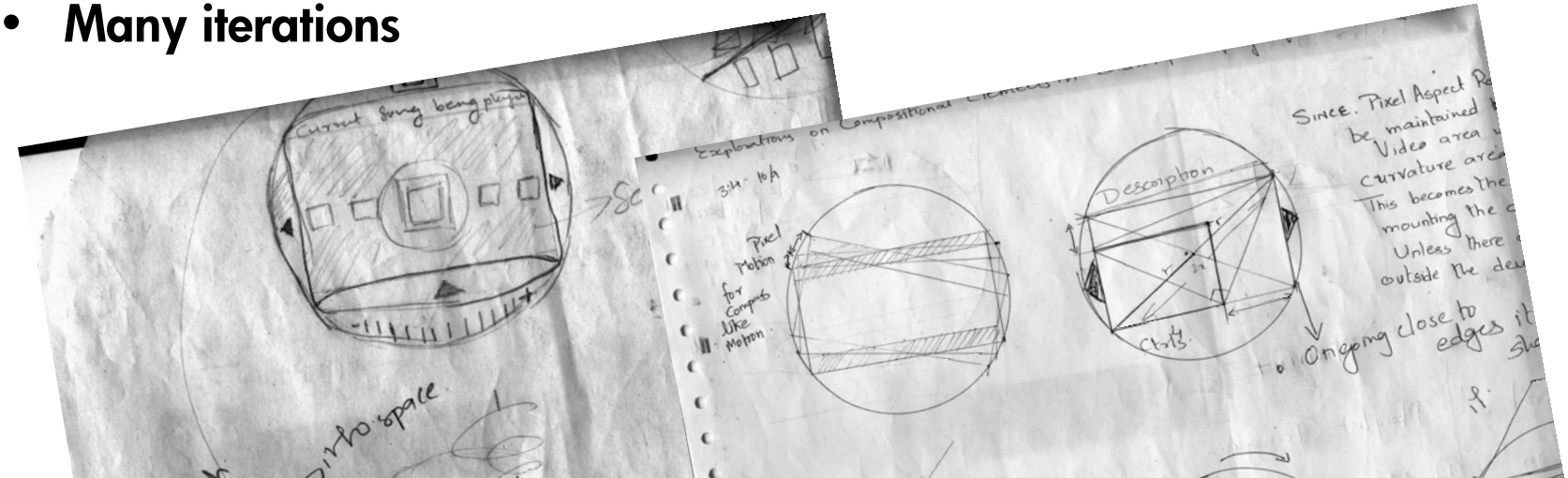
- Cant we have circular videos???
- No!!!!

Videos have an aspect ratio where standards are 4:3 or 16:9 to help video to be seen perfectly. So all the available video in the world is in one or the other aspect ratio

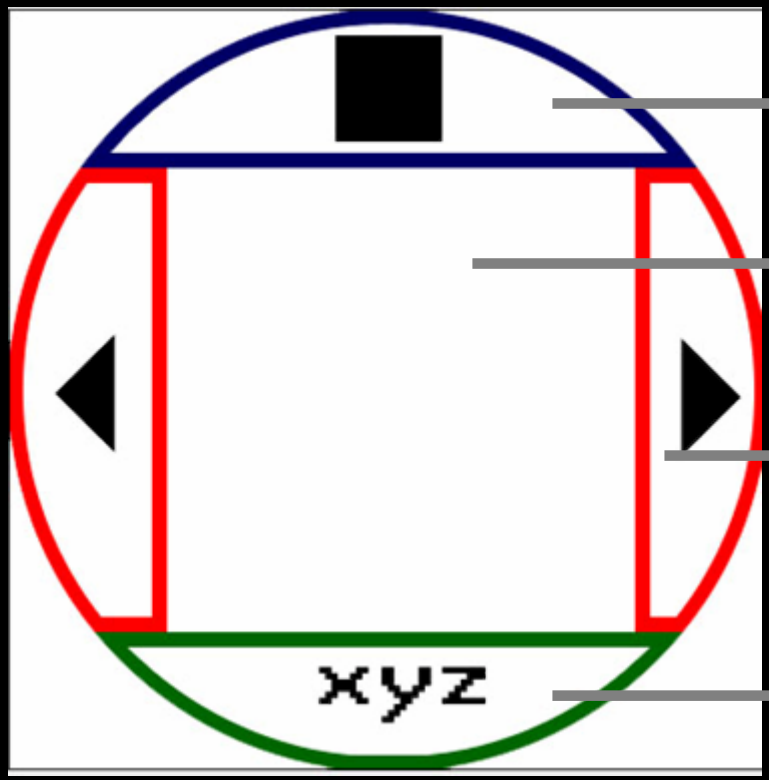
Using basic Mathematics one can calculate that for a circle with radius R a rectangle of 4:3 ratio will have its sides as 8R/5 and 6R/5.

Hence the space left on the sides are R/5 and 2R/5 respectively

- Many iterations



Final UI Pattern
for Data



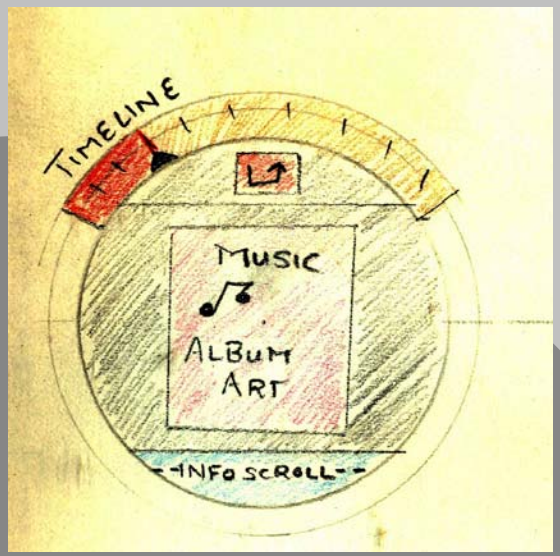
Top Control

Data Area

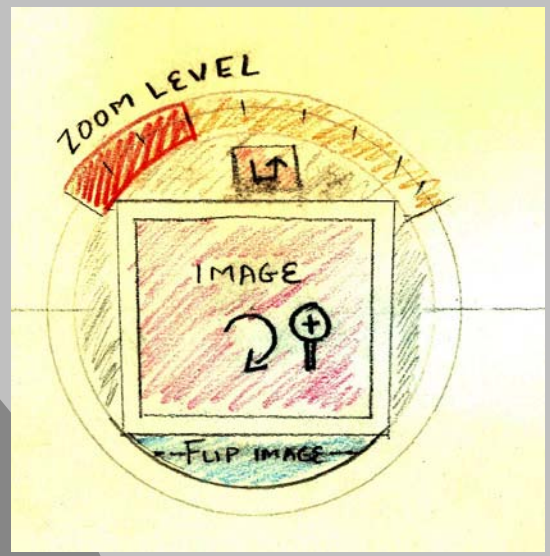
Side Controls

Info Display

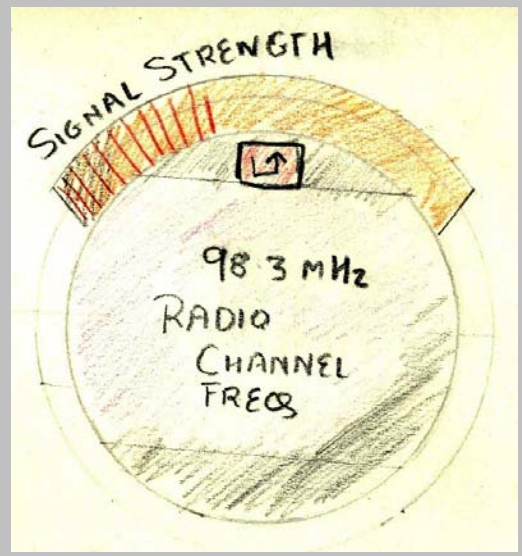
Screens for different media



Music



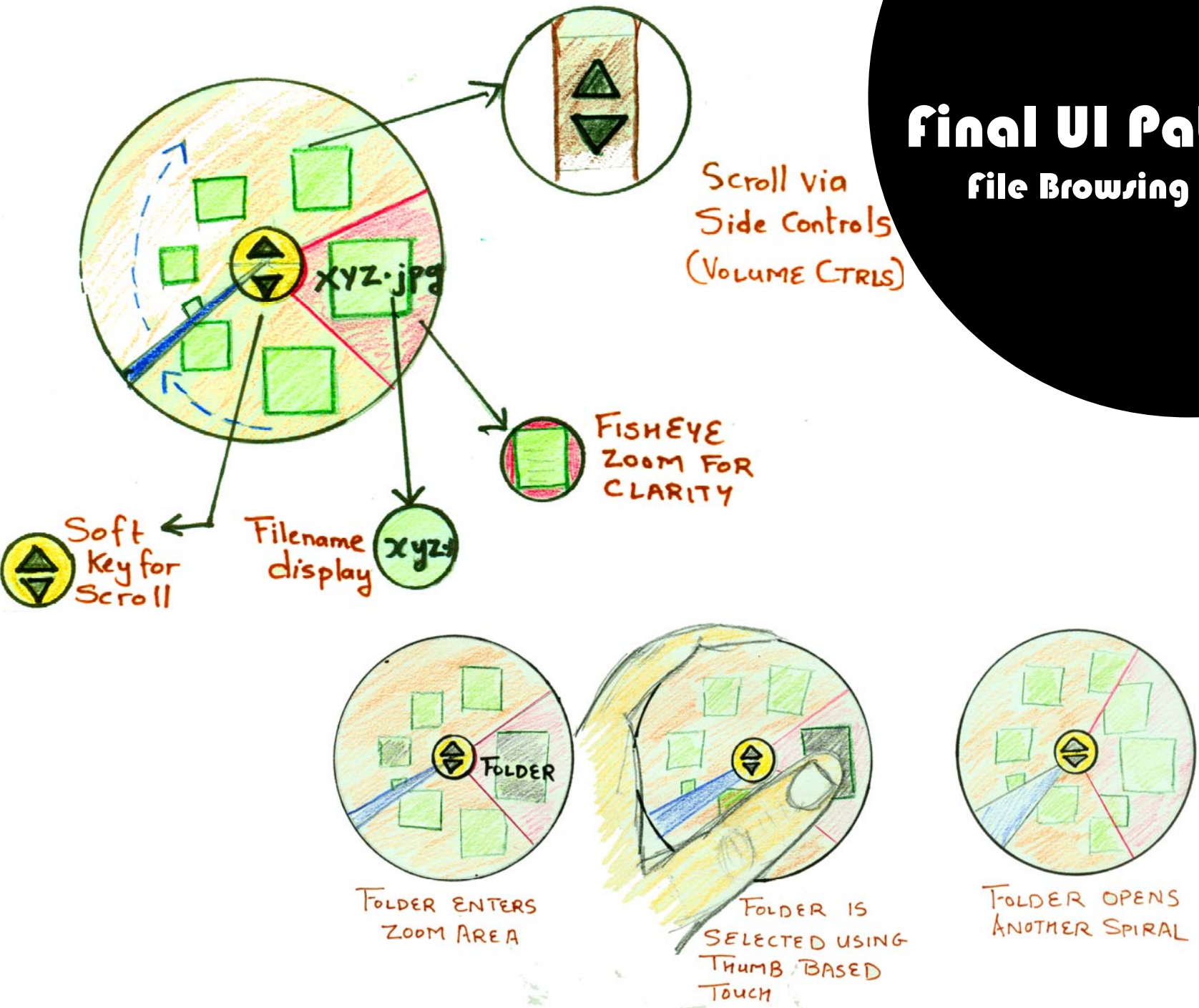
Image



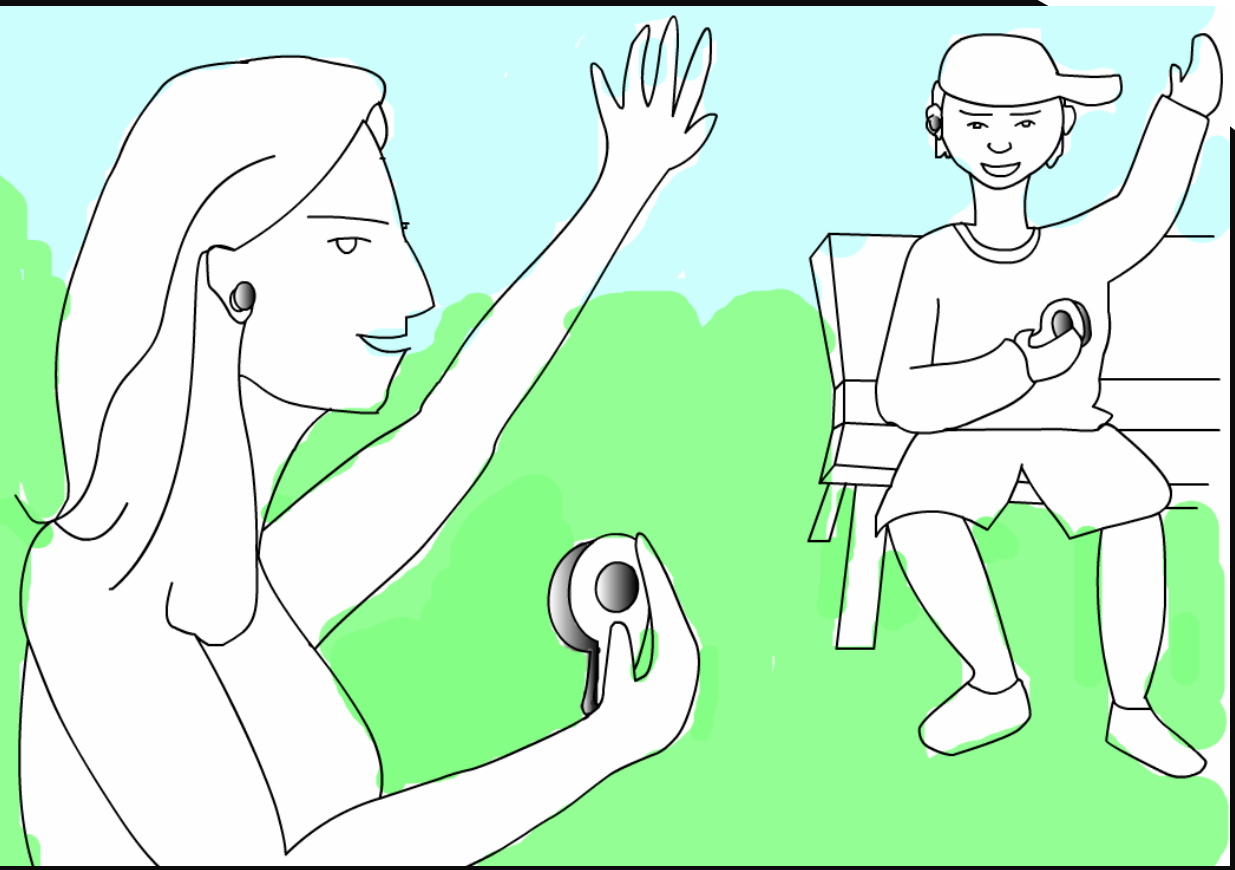
Radio

Final UI Pattern

File Browsing pattern

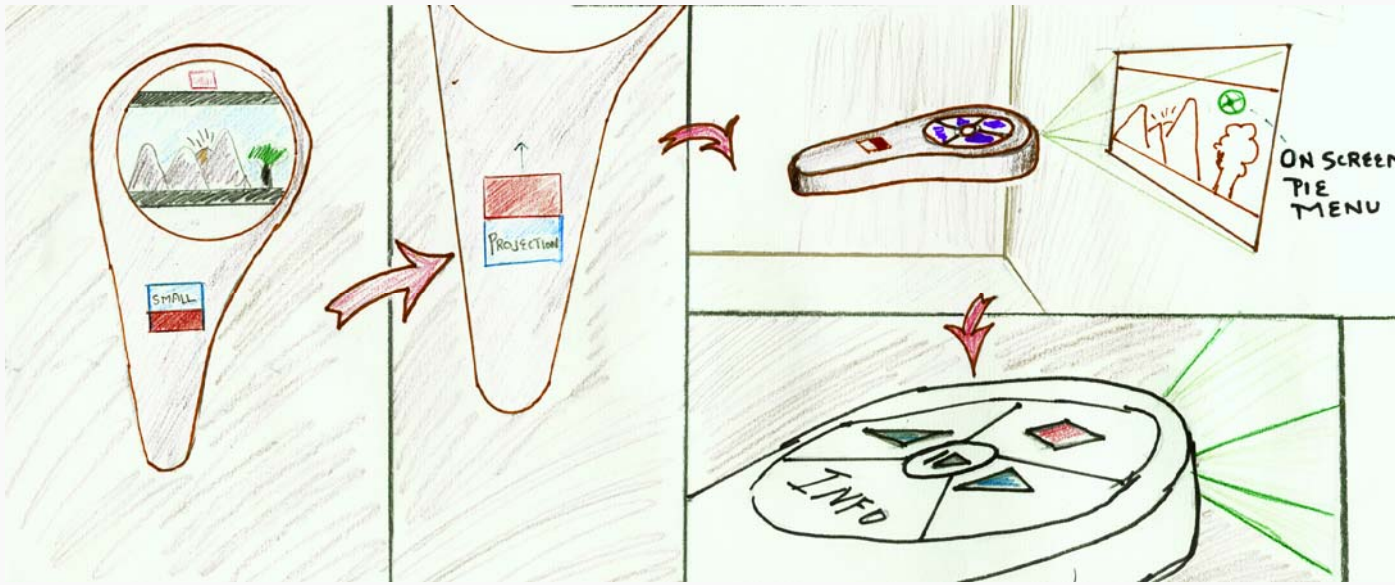


The Concept of Proximity Share



Listen to play list of people within close proximity

Concept of Projection Display



Display converts to menu when onscreen presentation starts

Use of Pie Menus in controls

learning's

From the Project

Form drives the interface in Small Devices

Circular controls are much better than circular displays

From the Process

Quick Design Decisions are critical to any design project

Design is not research

"design utilizes a process of composition which pulls a variety of elements into relationship with one another, forming a functional assembly that can serve the purposes, and intentions of diverse populations of human beings. "

-Harold Nelson "The Design Way"

End of Project