

DECO 3200

Assessment 2 Presentation

ANTI-PROGRAMMING PROGRAMMING CLUB

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PROBLEM

Nowadays, “**phone zombie**” has become a common phenomenon.

Pedestrians who focus on their mobile phones cannot notice the **change** of traffic signals, especially when they are waiting for the traffic lights alone.

Therefore, we aim to **replace** the behaviors of playing mobile phone on traffic light waiting area and efficiently **remind** pedestrians of the change of traffic signals.

CONCEPTS

Initial three concepts to tackle the problem



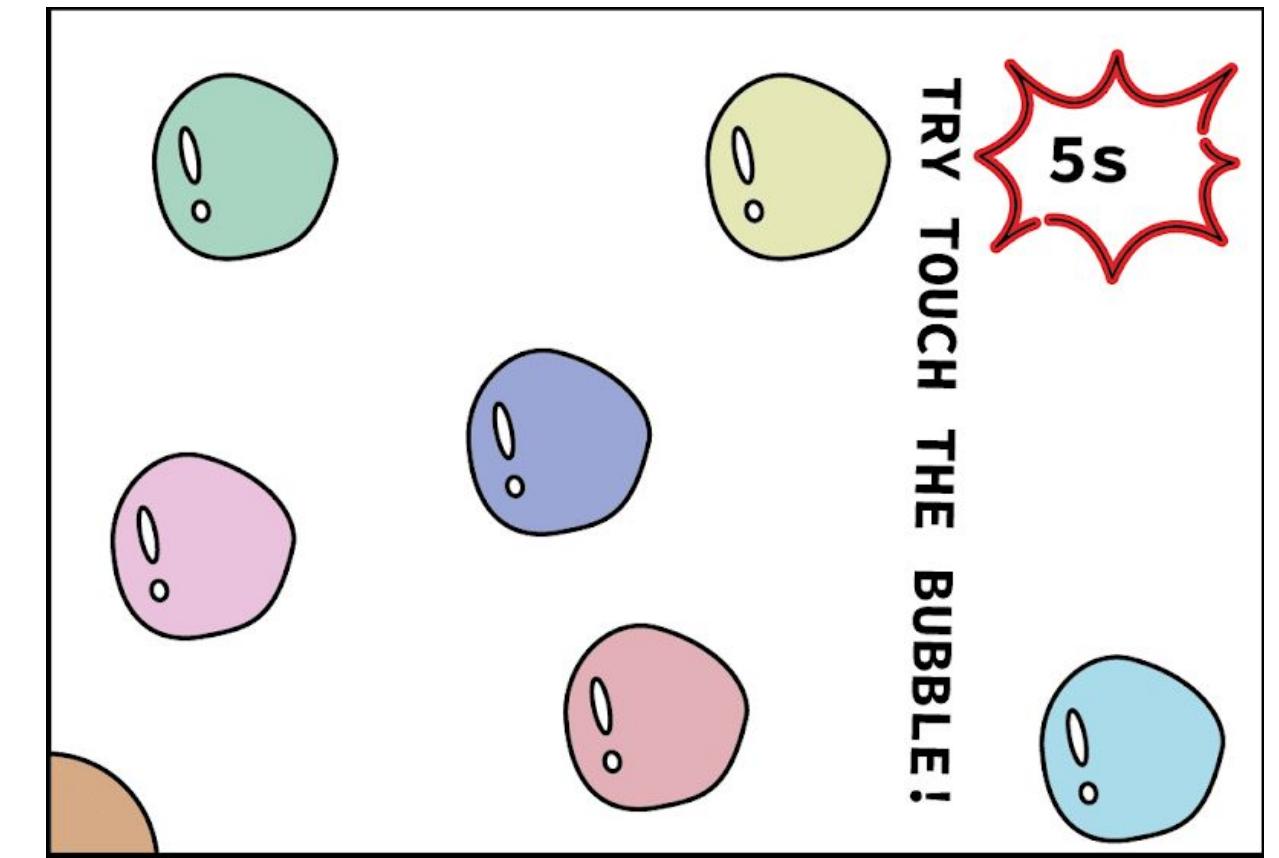
Scratch Ticket

Half transparent countdown timer until user scratch, with special effect of scratch trace.



Talking Minion

A toy which has audio features to remind pedestrians cross the road

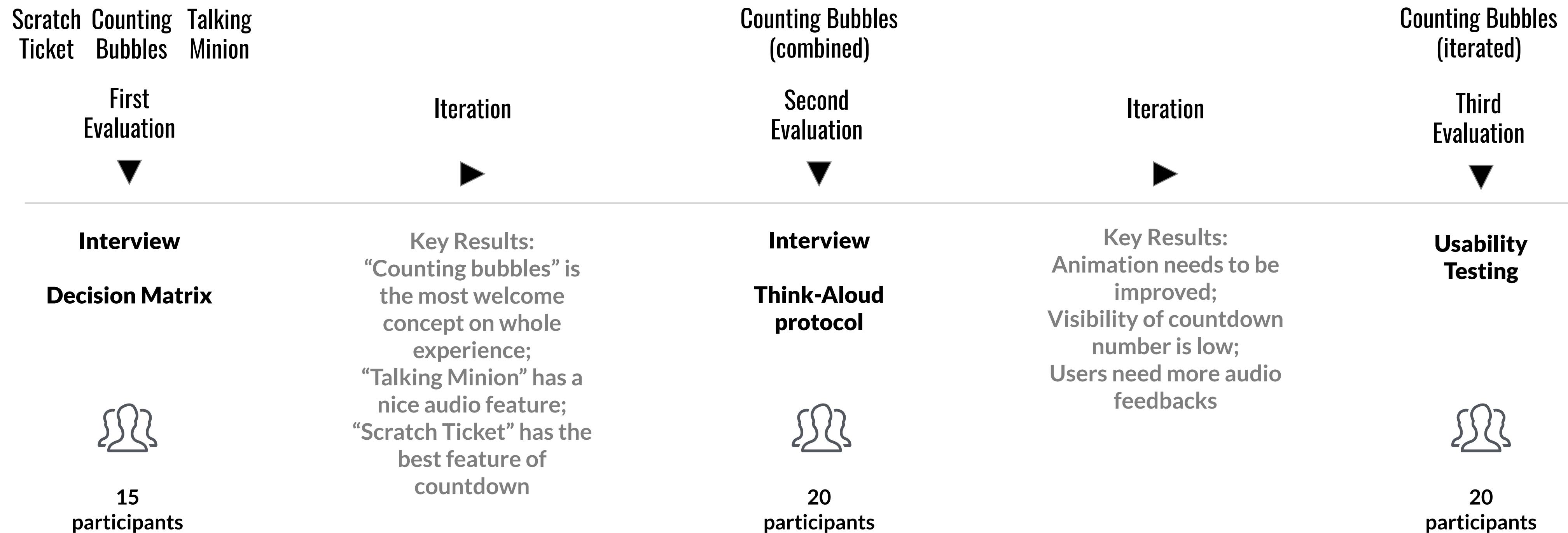


Counting Bubbles

A bubble game with a countdown number system

APPROACH

We have three rounds of user evaluation to determine final concept and iterate it



PROTOTYPES

For evaluation 1

Scratch Ticket

- Screen recording from Adobe illustrator
- Paper screen



Talking Minion

- A model of toy
- Simulated sound feedbacks



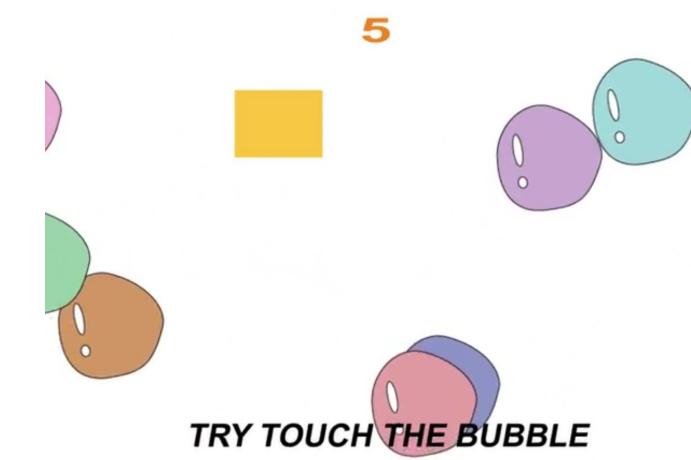
Counting Bubbles

- Paper screen
- Storyboard



For evaluation 2

Counting Bubbles (combined)



- Digital screens with animation of interactive points and audio features
- Outer shell

For evaluation 3

Counting Bubbles (iterated)



- Digital screens with animation of iterated interactive points and audio features
- Outer shell



METHODS

INTERVIEW

Interviews give insights into what users think about a site, an application, a product, or a process. (Kara Pernice, 2018)

DECISION MATRIX

A decision matrix can help you not only make complex decisions but also prioritize tasks, solve problems, and craft arguments to defend a decision. (Skype Schooley, 2019)

USABILITY TESTING

Usability testing is the practice of testing how easy a design is to use on a group of representative users. (Interaction Design Foundation)

THINK ALOUD PROTOCOL

Thinking out loud — that is, simply verbalizing their thoughts as they move through the user interface. (Jakob Nielsen, 2012)

Criteria	Weight (1-5)	Scratch Ticket (score)	Scratch Ticket (total)	Talking Minions (score)	Talking Minions (total)	Counting Bubble (score)	Counting Bubble (total)
Pre-judgment	2	3	6	2	4	4	8
Visual Remind er	4	3	12	0	0	4	16
Audio Remind er	4	0	0	4	16	2	8
Level of attraction	5	3	15	5	25	4	20
Multiple users	2	2	4	3	6	2	4
Environment adaption	2	2	4	3	6	2	4
level of interaction	4	3	12	2	8	4	16
Affordance	4	2	8	3	12	2	8
Usability	5	3	15	3	15	4	20
Time counting	3	4	12	1	3	4	12
Duration	4	2	8	1	4	2	8
			Total: 96		Total: 99		Total: 124

(0-5)

Criteria	Weight (1-5)	Scratch Ticket (score)	Scratch Ticket (total)	Talking Minions (score)	Talking Minions (total)	Counting Bubble (score)	Counting Bubble (total)
Cost - Time	2	3	6	2	4	3	6
Cost - Money	3	3	9	1	9	3	9
Difficulty of implementation	4	4	16	1	16	3	12
Lack of practicality	4	1	4	3	12	1	4
Technical difficulty	5	4	20	2	10	4	20
Difficulty with Material	5	4	20	3	15	4	20
* Total (expected around the average of 72)			Total: 75		Total: 66		Total: 71

DECISION MATRIX

(Evaluation 1)

Reasoning for choosing decision matrix

The decision matrix can help us **prioritize concepts**. (Lucidchart Content Team, 2019)

Reason for choosing a criteria

Criteria that are often used fall under the general categories of **effectiveness, cost, time required, and support** (of team and of others). (PRATYUSH SEN, 2007)

- **Resource aspect:**

Time, Money, Material

- **Technical aspects:**

Technical difficulty

- **Product Features:**

Visual, Audio, Time Counting...

- **Psychology and feeling:**

Interaction, Affordance, Usability...



INTERVIEW

(Evaluation 1 & Evaluation 2)

The interview especially suitable for **creating insights in design projects**—they aim to **find solutions to specific problems or challenges**. (Ditte Mortensen, 2019)

Our Interview Questions

1. Which concept you like the most? Why?
2. If I don't explain to you, can you understand how these three concepts work in real situation? Why?
3. Do you think this concept can prevent you playing on your mobile phone while you are waiting for the traffic light? Why?
4. If the concept is implemented, will you utilize it often? Why?

The purpose of our problem

To learn about the **knowledge and experience** of the users, and they will inform their **actions and opinions** as they interact with our product. (Hotjar, 2019)

FINDINGS

Finding from interview

All

- the scale of design **limit number of users** at same time;

Talking Minion

- when pedestrian with mobile device on the hand, **sound effect** work more efficiently to attract their attention;
- audio feedback could be **annoying**, but worked well in terms of attracting user attention;

Counting Bubble

- the design of interface **did not attract** majority of users;
- majority of user **enjoy** the experience more than the other concepts;
- experience was **monotonous**;

Scratch Tickets

- digital countdown timer give user more sense of control;
- the sound feedback make user feel mentally uncomfortable;
- the design does not provide clear instruction, or design lack of affordance.



Finding from decision matrix

- **Counting Bubble** performed the best (gain highest score in user experience, and it is relative close to expected level of technical difficulty).
- **Talking Minion** scored the highest in level of attraction;
- **Scratch Tickets** display remaining time more direct.



Summary

At the end of stage one, we decide to pick the design of Counting Bubble for further development, combine with audio feature of Talking Minion, and time displaying on Scratch Tickets.



THINK ALOUD PROTOCOL

(Evaluation 2)

Reasoning for choosing Think Aloud

We need to understand the **real thoughts** of users, and sometimes the **reflective thoughts** are not necessarily useful for our design. Users may misunderstand the **correct steps** and **correct usage** of our products, but we have no way of knowing. The think aloud protocol can help us understand the **user's perspective**.

FINDINGS



Finding from interview and think-aloud protocol

According to interview and think-aloud protocol methods, there are some key findings from data collected

- Users need **more audio feedbacks** and **higher volume** of audio features
- Users need **bigger size of visual number** of time counting function
- Animation and screen graphic design needs to be **more aesthetic**
- The concept has **limit of number of users** at the same time
- **Visibility and audibility** might be affected in **crowded conditions**
- Users are **confused about scratch animation**
- Appearance of minion is **childish**, may not suit younger generation



Summary & Iteration

Based on the findings, we **enhanced the size of visual numbers** of time counting function and the volume of audio feedbacks. Few more **audio feedbacks** were added to the concept, scratch animation of clicking bubbles was replaced by **burst animation**. And a new low-fidelity prototype is created for third round of user evaluation.



USABILITY TESTING

(Evaluation 3)

Usability testing can help us understand in advance the user's **preferences** and their **dissatisfaction** with our products. It's convenient for us to decide which features we need to expand and to see where they are confused.

Reasoning for choosing usability testing

We want to **gain insights** from our users and to check if we get user's **expectations** and our products are **related** to the **problem statement** and the problem can be solved.

FINDINGS



Finding from usability testing

According to usability testing, there are some key findings from data collected

- It's confused that **visual number** of time counting is for pedestrian crossing or something else
- **limited elements and features**
- Usability is high , easy to follow and use
- Audio feature is valuable

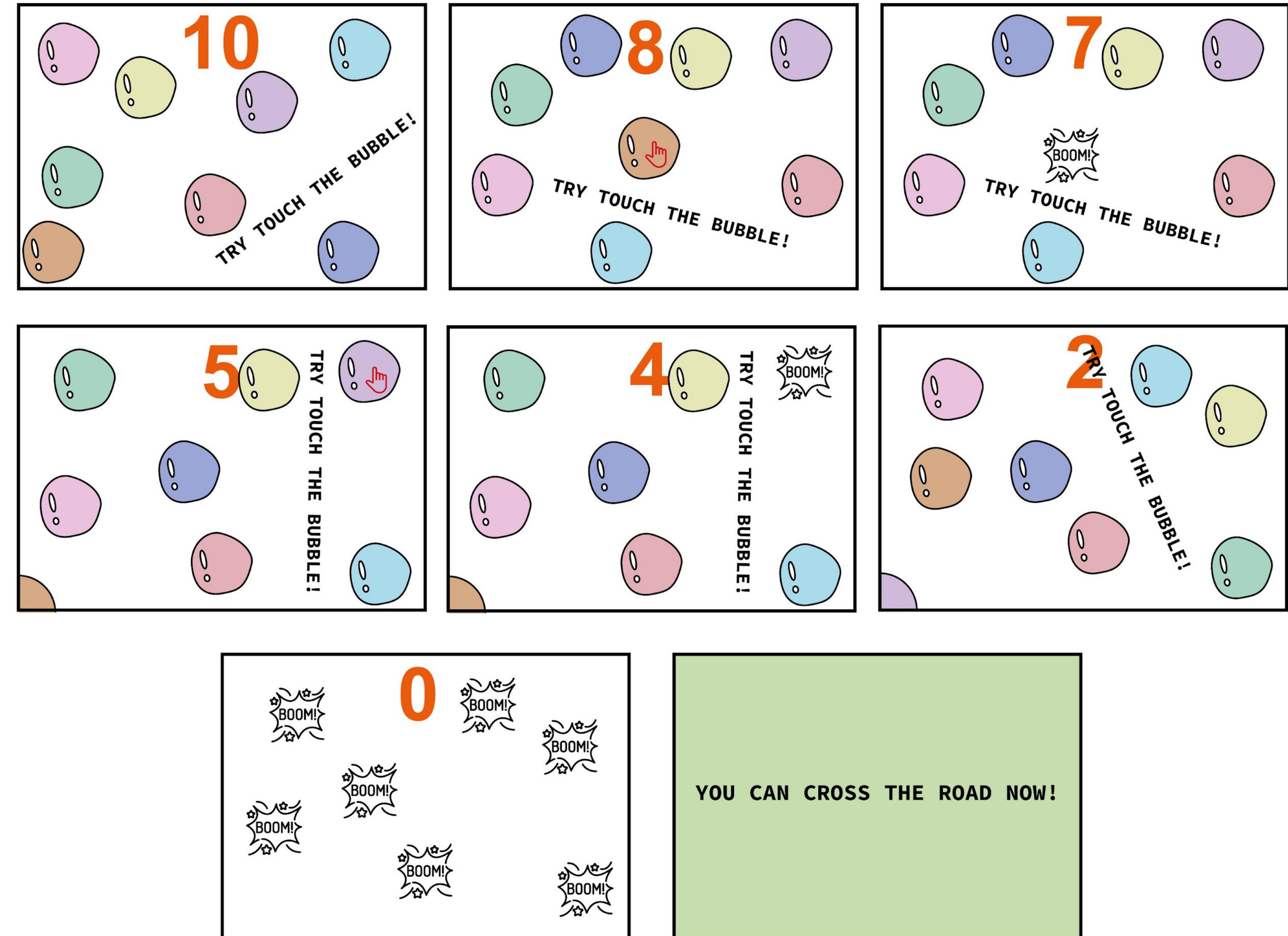


Summary & Iteration

Based on the findings, the concept is easy to understand and users have smooth experience on it with audio instruction. On the other hand, the whole experience is kind of monotonous, the concept has **limited elements and features** to interact with. One more problem is that pedestrians may be confused about the **visual number's function**. Therefore, we are going to add a **signifier** of the visual number to indicate it's function of countdown of traffic signal.

CHOSEN CONCEPT - Counting Bubble

- The screen will be **activated** when the traffic button was being pushed.
- There is a **sound feedback** after pushing the button, “Come to touch my bubbles!” to **attract** people join the game.
- The system starts to countdown and shows the countdown number on the top of the screen.
- Text **Hint** “Try touch the bubble~!”
- When people touch the bubble, the bubble will be broken and show an **exploded** animation effects.
- The broken bubble will explode with a **sound effect** as soon as it being touched by users.
- When the countdown number change to zero, all the bubbles will be broken at the same time.
- Each broken bubble will show an exploded **animation effects**.
- After half a second, the screen will change to green, and shows a **hint** “you can cross the road now!” with **audio**, to **remind** pedestrians cross the road.



Chosen concept

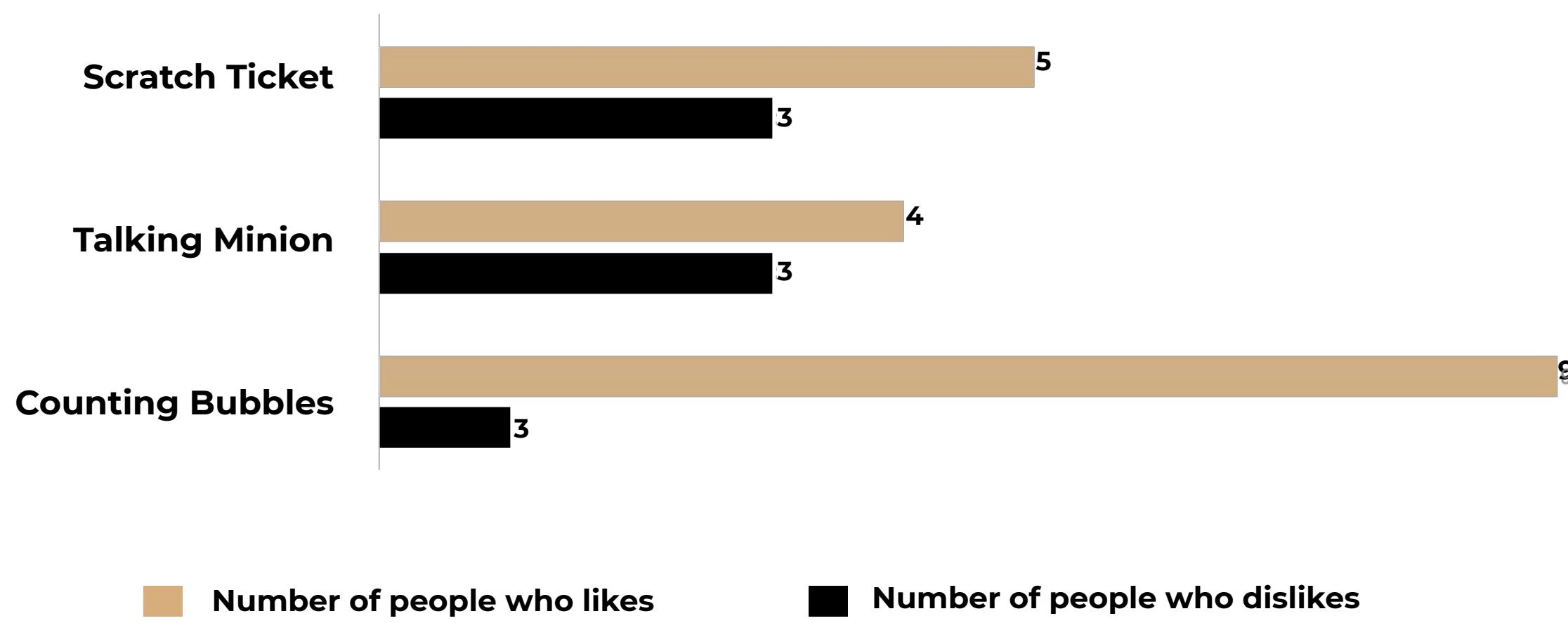
Counting Bubble [Advanced Version]

A bubble game on the touch screen with a counting number system and sound effects.



MOTIVATION

From the first evaluation, the counting bubbles get more good reviews. However, the Scratch Ticket and Talking Minion still have a few supporters, so we decided to **combine** the advantages of these two concepts to the Counting Bubble.



Problem:

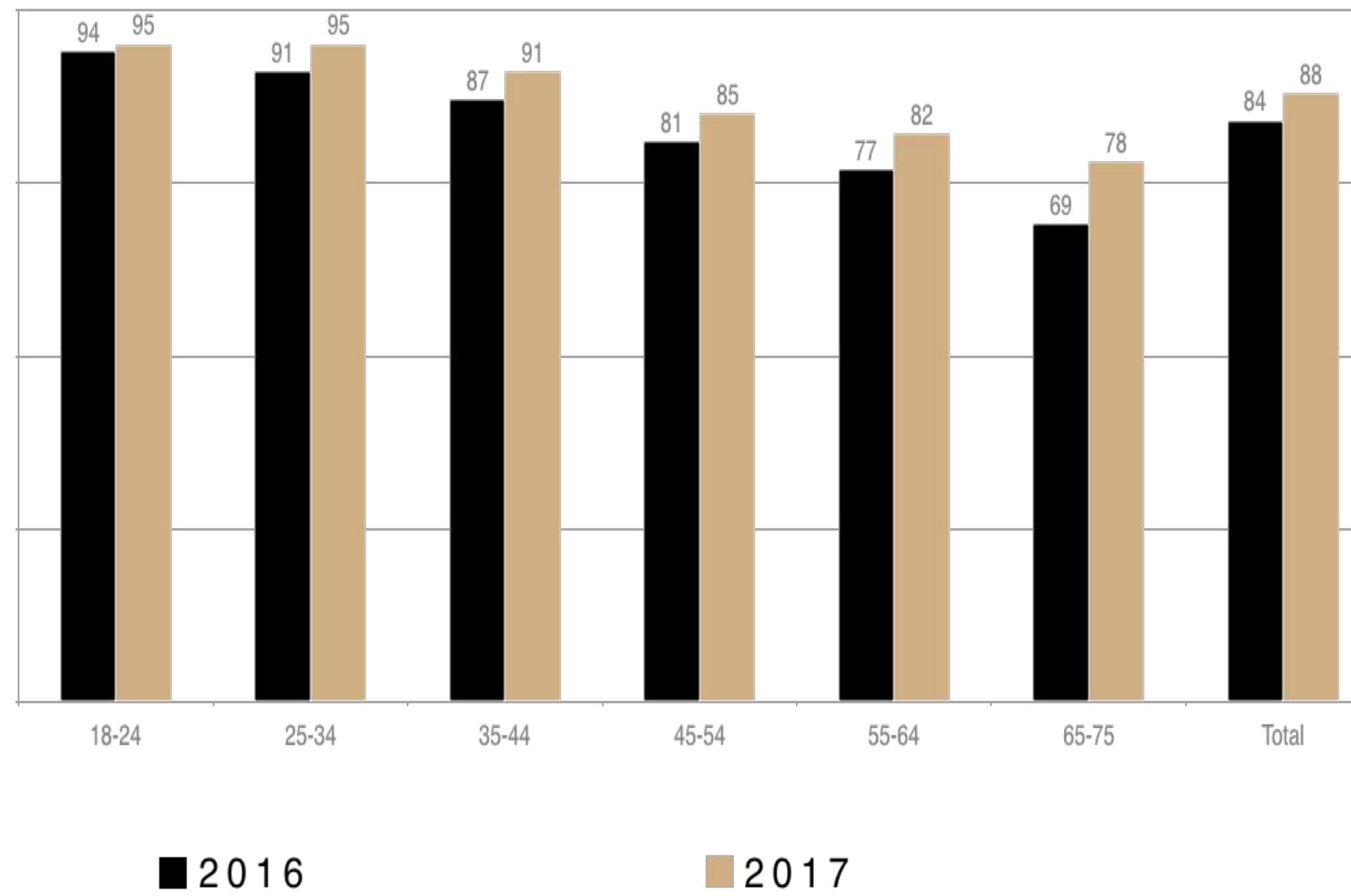
- **Replace** the behaviour of playing phones while they are waiting for the traffic lights.
- **Remind** the pedestrians to cross the road when traffic lights have changed.

Tackling:

- Touching Bubbles game - Decompression game to **replace** the interactive behaviour of playing mobile phones.
- Audio effects - **remind** pedestrians it is time to cross the road.
- Countdown numbers - For telling pedestrians when will the traffic lights change.

Chosen concept

TARGET USER GROUP



Australian findings are

based on a nationally representative sample
of over 2000 consumers aged 18-75.

From our research, the users of 18-24 age group use mobile phones times most. So our target audience is **younger generation** because they are very likely to play phones while they waiting for the traffic lights.

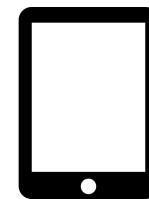
Suitable:

- people between 18-24 age group

Not suitable

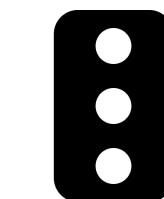
- handicapped people (operation)
- children (heights)

HARDWARE AND SOFTWARE REQUIREMENT



Terminal

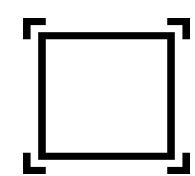
Tablet computer/touch screen with **Windows** system.



Placement

Device placed above the pedestrian crossing button approximately 165.5 cm above the ground:

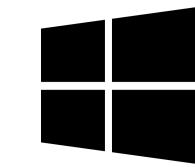
the number got from divide the number of average height for Australian people between age 18 - 24, 178 cm and 163 cm for male and female respectively, and subtract by 5 cm. (*Australian Bureau of Statistics, 2012*)



Frame

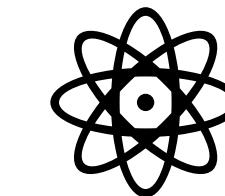
- Size of the frame over **12 inches**;
- Outer Acrylic Board Frame has to be waterproof, sun-proof, with higher level of hardness and durability;
- It is supposed to cover the device with shape of triangle (cover from top to bottom).

<https://www.microsoft.com>



System

OS: Windows 7 SP1+
Processor: 1.2 Ghz
Memory: 512 MB RAM
Graphics: Graphics card with DX10 support
DirectX: Version 9.0
Storage: 71 MB available space



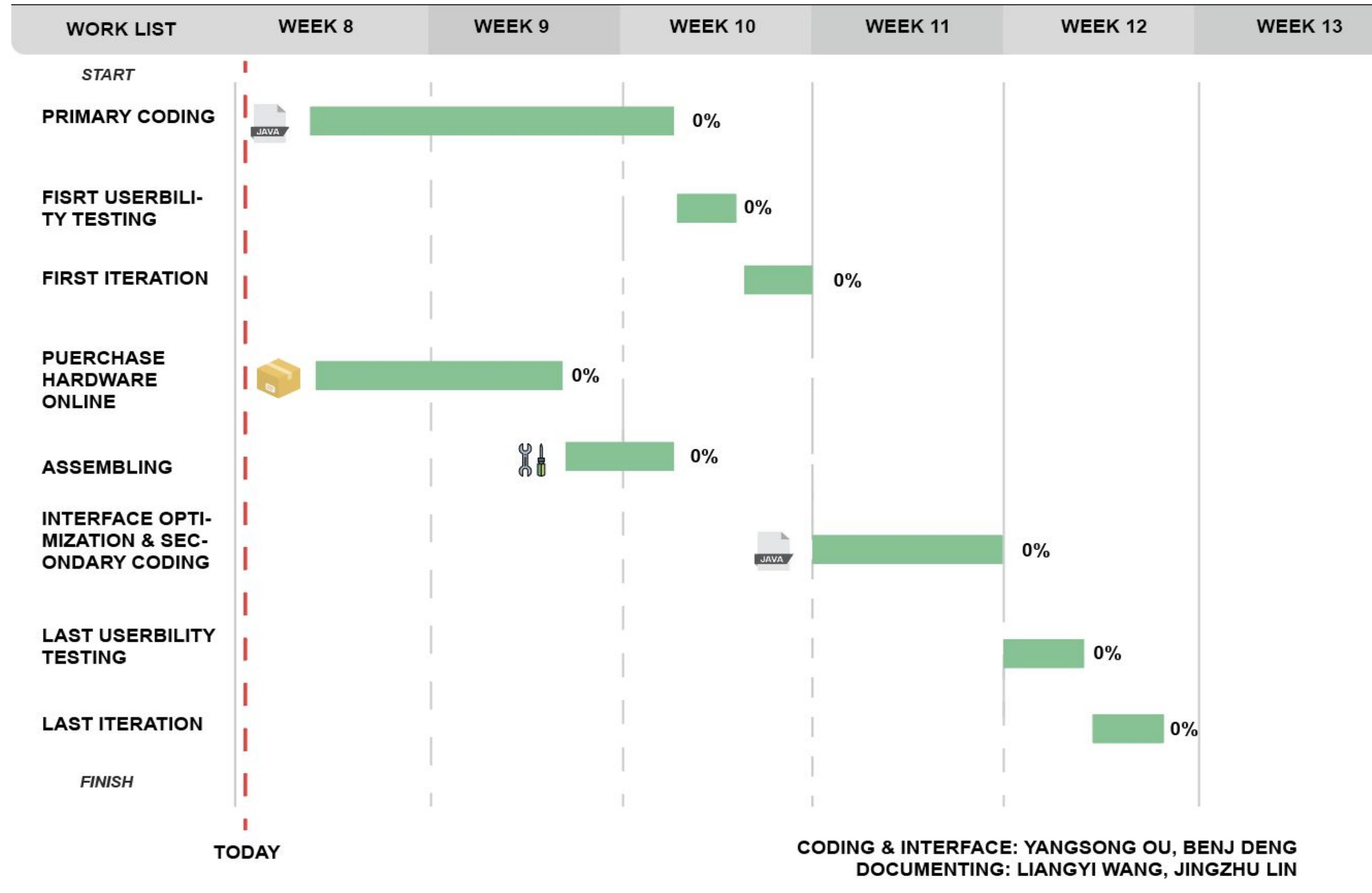
Software

Currently decide to use **Unity** as developing engine, second choice is Openprocessing.

Chosen concept

IMPLEMENTATION PLAN

TOUCHING BUBBLES



Purchase Hardware from

primary choice:

online - Ebay

secondary choice:

local wood shop/wilkinson dmaf (if expected day of shipping exceed 100%)

*usability test run together of full group