



Re**v**olt

Recharging the Earth

Team **AAA**

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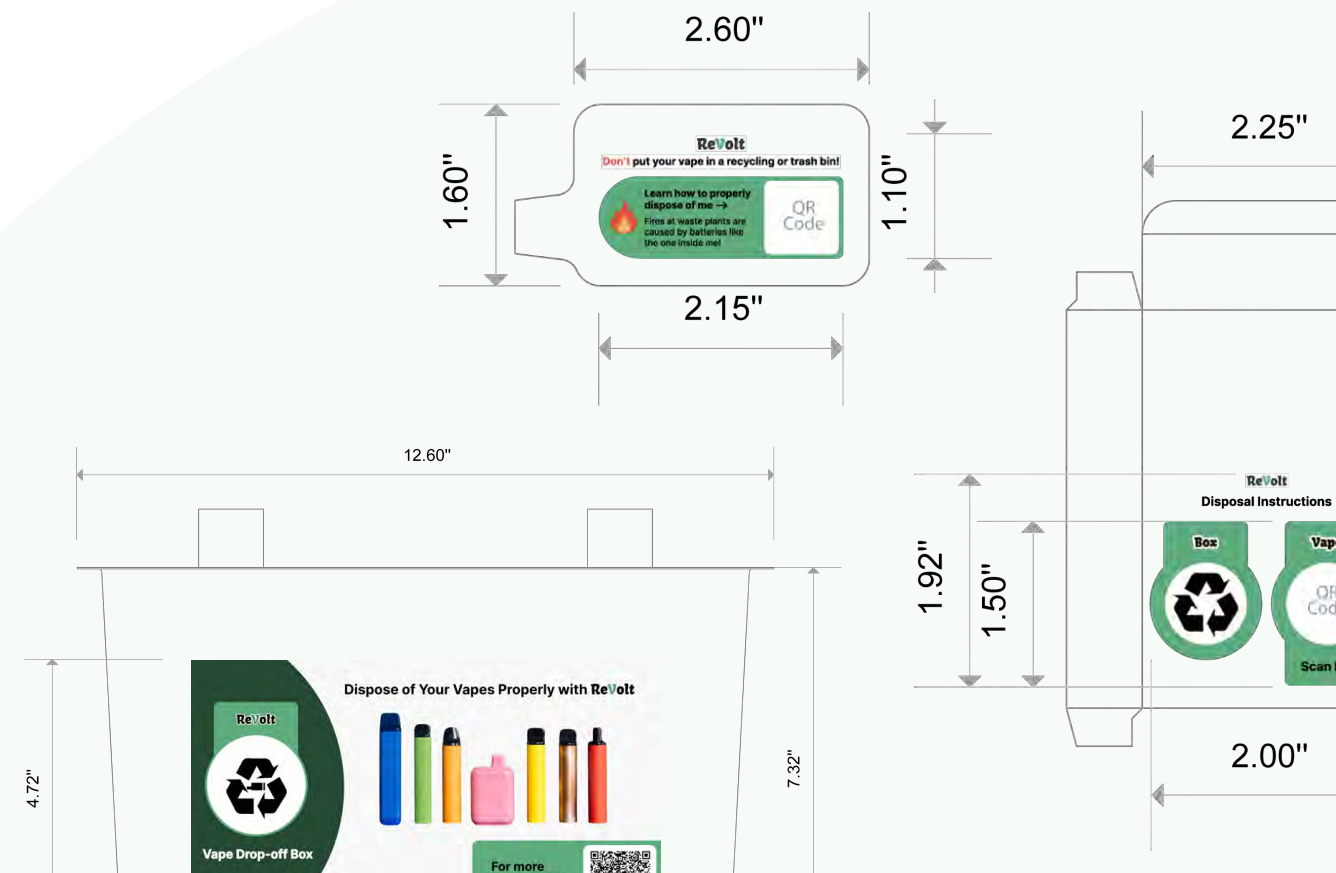
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01 Introduction

Did you know that **vapes** are **not** supposed to be thrown in **waste or recycling bins**? Disposable vapes contain lithium-ion batteries, which can be hard to detect in sorting processes and **cause fires at recycling plants** when improperly disposed of. One of the **main instigators** of this problem is **disposable vapes and their improper disposal**.

ReVolt is a service designed to address the growing environmental threat posed by improper vape disposal. Our service includes **clear vape disposal information** on the packaging, **convenient and accessible drop-off boxes**, and a website featuring an **interactive drop-off box locator** as well as **environmental statistics** that encourage user participation. Our design solution focuses on increasing the **convenience** and **awareness** of proper vape disposal processes and techniques.



02 Background

The lifecycle of disposable vapes is not complete



Gaining Popularity

12 million disposable vapes are sold per month in the US.

- Disposable vapes are popular among young newcomers or those looking to quit smoking due to the fact that they are more convenient, inexpensive, and come in various flavors.
- In early 2020, the U.S. Food and Drug Administration (FDA) announced a ban on the sale of many flavored vaping products—but disposable e-cigarettes were not part of the policy, making them an **appealing option** for people who wanted to continue to use flavors.

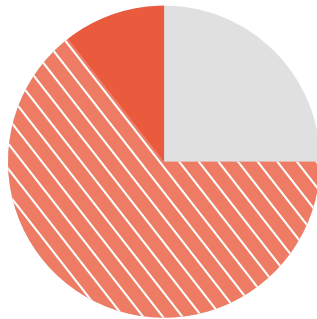
Lack of Regulations

- **4.5** disposable vapes are thrown in the trash per second.
- **40%** of fires at waste management facilities are triggered by lithium ion batteries like the one inside a disposable vape.

03 Design Solution Overview

Problem / Research Findings?

How might we increase the **convenience** and **awareness** of proper vape disposal processes and techniques?



- 75% of the interview participants put used vapes in a waste bin.
- 86% of the participants that put their vapes in a waste bin were also **not aware** of proper vape disposal methods or any environmental damages that are caused by lithium-ion batteries.
- A vape store owner who was aware that lithium-ion batteries are bad for the environment but continued to improperly dispose of their vapes. Based off of their interview responses, we've concluded that **convenience** is another contributing factor as to why consumers don't recycle their vapes properly.

Solution

ReVolt is a vape disposal solution that provides educational resources and convenient drop-off locations.

- Consistent disposal information and visual language throughout the user journey: from vape packaging to drop-off of used vapes.
- Convenient and accessible drop-off boxes and online location finder.

Intended Document Audience

Building the Service and Enforcing Regulations

- Organizations such as FDA

Implementing the Service and Design

- Vape manufacturers
- Packaging designers
- Vape stores

In Scope



Service and Design Intervention

- A vape-specific disposal symbol design that serves as a standardized reference of iconography
- A standardized instruction printed on the vape and its package
- A drop-off box designated for disposable vapes with symbols and instructions labeled
- A companion website that provides educational resources for vape disposal and an interactive map to find drop-off box locations



Service and Enforcing Regulations

- An initiative that brings manufacturers, policy-makers, retailers, and consumers together to take urgent actions on vape disposal
- A system that can be implemented at multiple scales from federal regulations to industrial standards to consumer education



Auto-detection at
waste management
facilities

Future Scope



Incentives or vape
deposit to increase
motivation

04 Design Decision

Design Goals

1.

The design should provide the user with **clear instructions** for the correct methods to dispose of and recycle vapes.

2.

The design should support the user with **educational resources** in broader contexts such as the lifecycle of vapes and its **social and environmental impacts**.

3.

The design should allow the user to **access** vape disposal and **recycling locations with low friction**.

4.

The design should provide retailers with information and **tools to assist** their customers with recycling.

5.

The design should **minimize** any **unintended consequences** such as promoting smoking.

Rationale

Iconography

Since the packaging is supposed to be recycled, unlike the vape, a **recycling symbol is still required** to be on the box. During user testing, we found that users had trouble identifying what a QR code placed on a normal vape box was supposed to be for. We decided that adding specific labels “**Disposal Instructions**” “**Vape**” and “**Scan Me**” were important to helping users identify the purpose of this QR code.



Current disposal symbols on vape boxes are unclear about whether the vape itself should be recycled or not.

Rationale

Putting the QR code directly on the box was a design decision made to **reduce the chances of a customer missing the information placed on the box**. We also included additional information about the harm of improper disposal of the vape design to give the users a better of idea of the information our QR code will provide them.

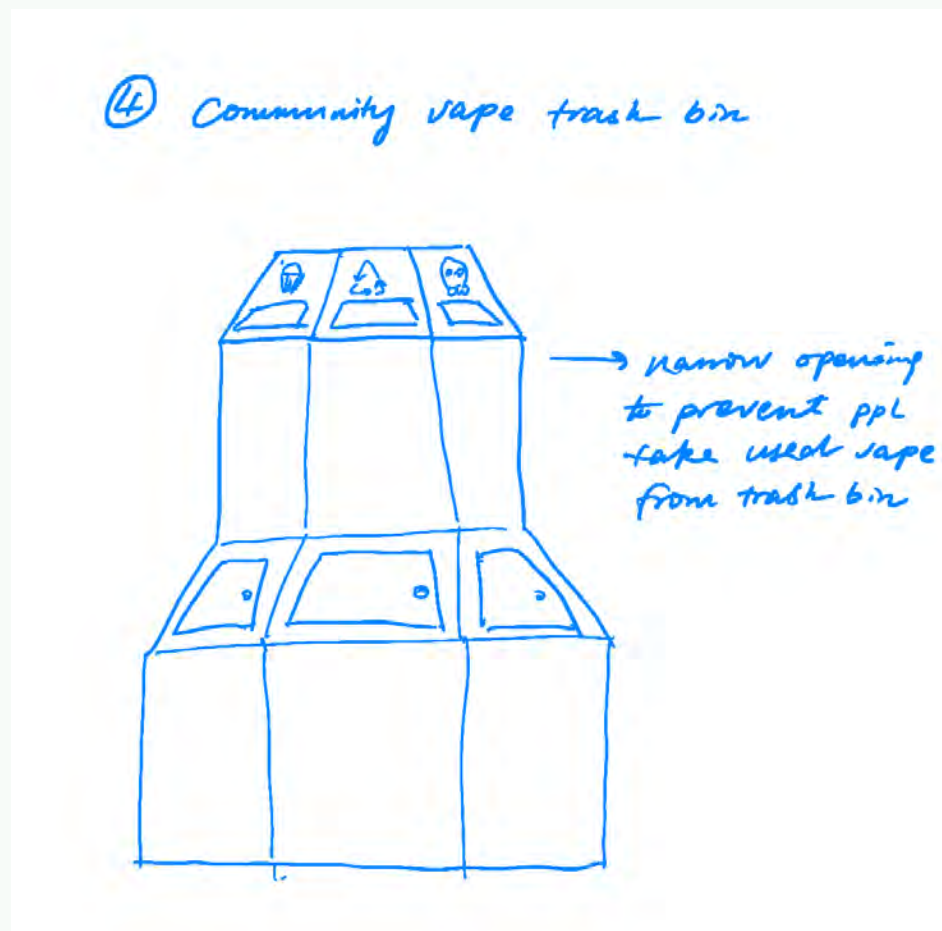
We decided to include a picture of vapes to help **reduce the chances of passersby putting incorrect waste into our bins**. Additionally, putting our QR code on the bin will help those passersby who are unfamiliar with our service become informed about what the bin does, the damage of incorrect disposal, and our services.



Rationale

Transparency

Since our disposal box can be confused with normal waste bins, we decided to make the bin transparent so users can see what is being put in the bin, reducing user error of putting non-vape items in the disposal bin. We took this a step further by including images of vapes and information referring to the website on the bin itself.



Rationale

Responsibility

- 100% of participants who were asked directly about who they think **should be held responsible for informing the public** about proper disposal techniques responded with **vape manufacturers**.
- This combined with 86% of the consumers who put their vapes in a waste bin were also not aware that they were supposed to recycle their vape left us to conclude that the **best course of action would be to focus on informing users in a way that manufacturers would be able to handle**.

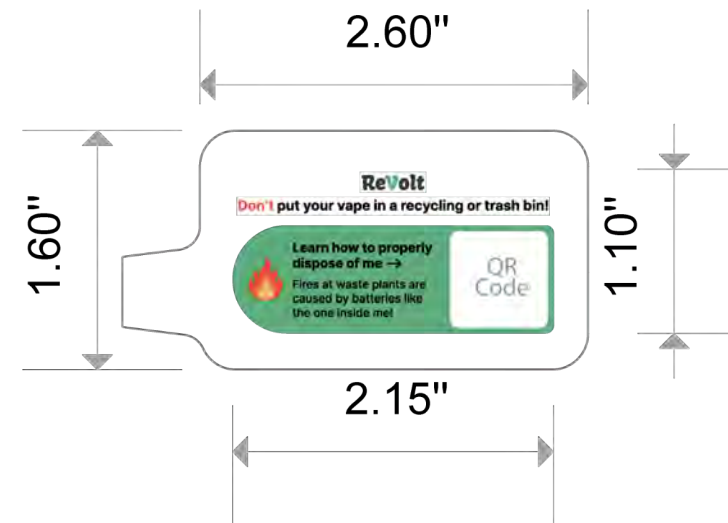


05 Design Specifications

Vape

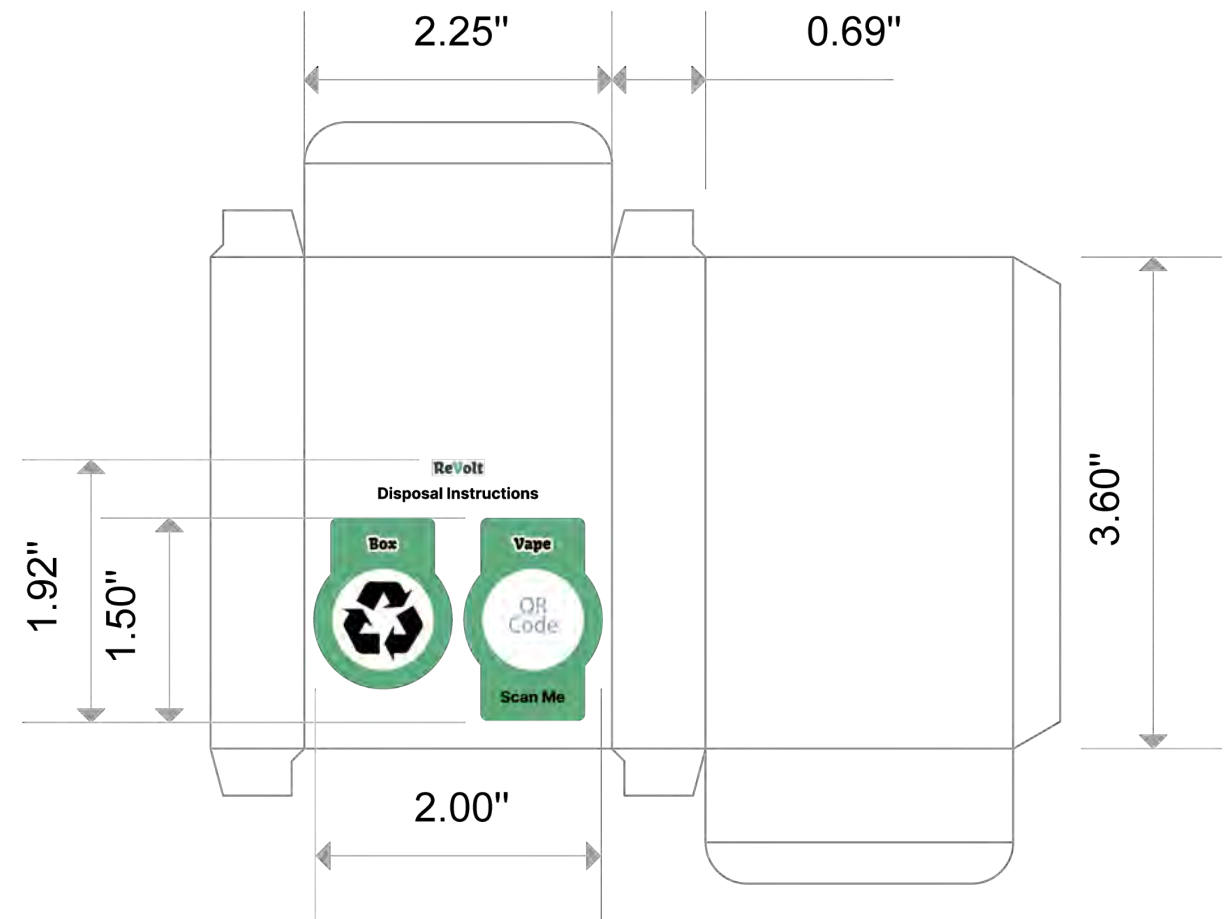
The instruction printed on the vape itself should take min. 2.15" * 1.10" for text readability.

**The vape shown is an example for displaying the print.*



Packaging

The instruction printed on the package should take min. 1.92" * 2.00" for text readability.

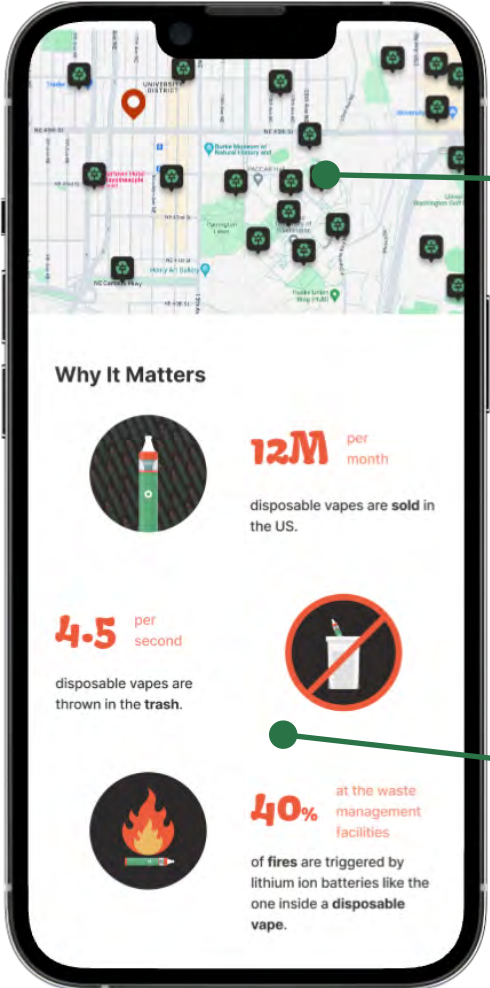
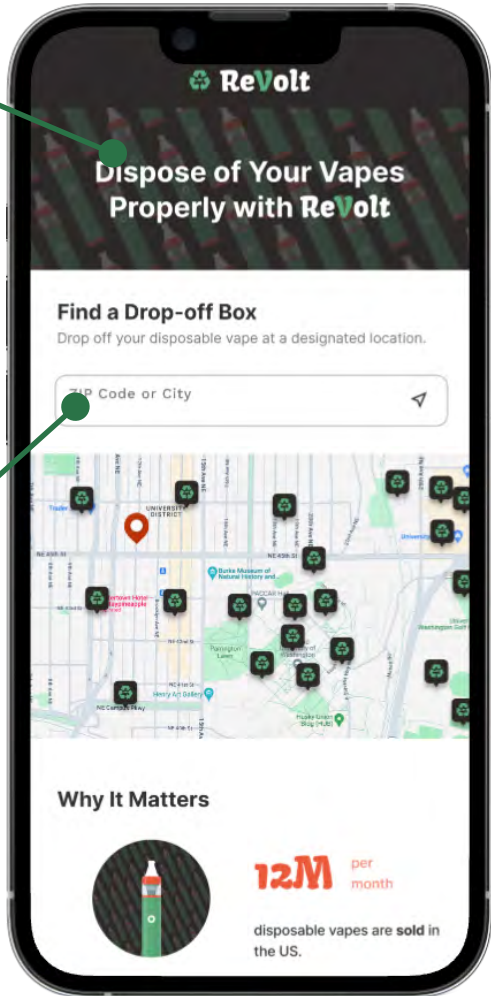


Website

[Link to website prototype](#)

Introduction to instruct users that this service is for proper vape disposal.

Users are greeted with location tracking to help them find the nearest drop-off box to them.



An interactive map allows users to see other drop-off box locations aside from the one that they are currently closest to.

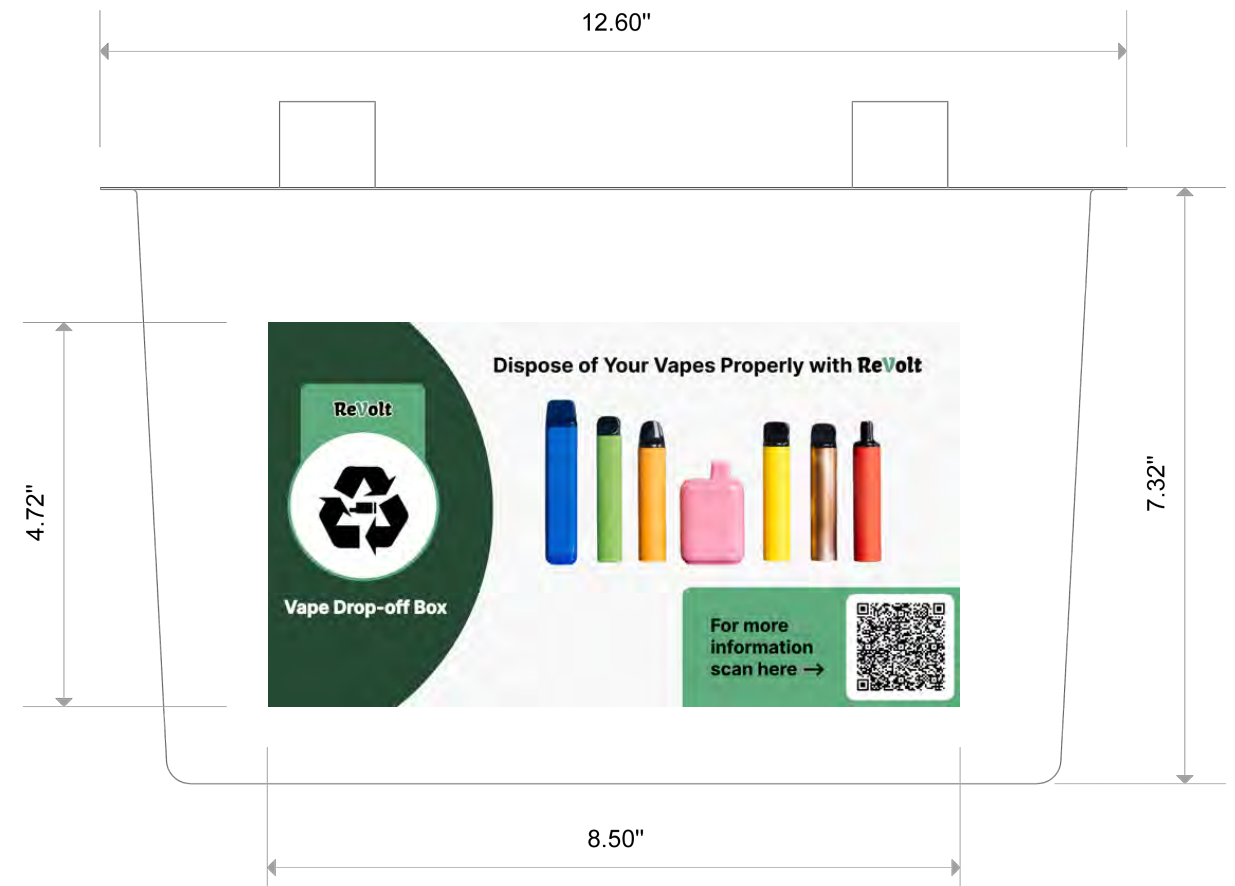
Users can scroll down on the website to find more information about the damage of improper vape recycling.

Vape Drop-off Box



**The lidless box shown is an example of displaying the print.*

The instruction printed on the drop-off bin should take min. 8.50" * 4.72" for text readability.



Style Guide

Logo

Light Background



Dark Background



Green Background



Symbols

Curbside Recycling Symbol



Use this recycling symbol only for curbside pickup items such as **cardboard box packaging**.

Vape Recycling Symbol



This symbol is reserved for ReVolt branding purposes such as **logo**.

In most cases, these two symbols **should not** be used together. When necessary, clearly label the two symbols to prevent confusion.

Colors

Primary Colors



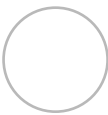
ReVolt Green
#5FAB7D



Dark Green
#2A7347



Dark Gray
#2D2A2A



White
#FFFFFF

Accent Colors



Blood Orange
#EA5B3E



Amber Yellow
#ECB765

Style Guide

Type Faces (Digital and Print)

Callout - Use sparingly

Kavoon

Headings and Body

Inter

Website Type Scale

H1

Inter Bold 24

H2

Inter Bold 18

Body

Inter Regular 12

Website UI Components

Text Input Field - Inactive

ZIP Code or City

Text Input Field - Active

ZIP Code or City

Text Input Field - Has Input

ZIP Code or City

Seattle

Map Marker - Drop-off Location



Map Marker - User Location



Appendix

01 Research Methods and Findings

02 User Personas

03 User Flows

04 Lo-Fi Prototype

05 User Testing Results

06 Storyboards and User Flows

Research Methods



Survey

Age range of 21-29 years old



Interview

8 user interviews with all participants being consumers of disposable vaping products

Findings

- **75%** of the participants interviewed put their vapes in waste bins when they were done with it, with 86% of non-store workers disposing of their vapes in waste bins.
- **86%** of the consumers that put their vapes in a waste bin were also not aware that they were supposed to recycle their vape, or aware of any environmental damages that are caused by lithium ion batteries.
- **100%** of participants who were asked directly about who they think should be held responsible for informing the public about proper disposal techniques responded with vape manufacturers.
- One interesting takeaway from an interview we conducted was a store owner who was aware that lithium ion batteries are bad for the environment but continued to improperly dispose of their vapes. Based off of their interview responses, we've concluded that convenience is another contributing factor as to why consumers don't recycle their vapes properly.



Personas

ReVolt Primary User

Recycler

Alex



- 27
- Lives in Fremont, WA
- Active UW Sustainability group member

Alex is a university student who is environmentally conscious. With a busy schedule, they find it difficult to recycle regularly since the nearest waste collection point is quite far away. Alex fears that somewhere along the line they will lose motivation to participate in such initiatives.

"The stores do not do that job [recycling disposable vapes]. All they want is to sell vapes."

Behaviors

- Purchases disposable vapes from local vape stores
- Collects vapes in large quantities and bring them to their local vape stores for recycling

Goals

- Recycling disposable vapes properly
- Getting easier access to vape recycling
- Having packaging information that includes how to dispose of individual vapes

Frustrations

- Inefficient, inconsistent, and inconvenient recycling method
- Lacking designated place to bring vapes to
- Feeling discouraged from recycling after having to put so much effort into getting their vapes properly disposed of and not seeing the impact of their work

Personas

ReVolt Primary User

Trasher

Ryan



- 21
- Lives in U-District, WA
- New to recycling process

Ryan is a university student that has moved to Seattle from Mississippi. Ryan recently started using disposable vapes to quit smoking. Because disposable vapes come with different flavors and are inexpensive, they have become an ideal choice for Ryan.

"I dispose of it in the trash bin. Actually I've tried recycling the vape once or twice, but I believe you aren't supposed to."

Behaviors

- Purchases disposable vapes online
- Once done using a disposable vape, they put it in the trash can

Goals

- Convenient and easy access to proper recycling
- Getting more information on proper disposal techniques
- Information on how improper disposal affects the environment

Frustrations

- Not having recycling experience and knowledge
- Lack of information on proper disposal techniques and how improper disposal affects the environment
- No access to proper vape recycling at their apartment and school

Personas

ReVolt Secondary User

Vape Store Worker

Dylan



- 36
- Lives in Rainier Valley, WA

Dylan works at the local vape store in U-District, Seattle. Outside of work, Dylan is an eco-conscious individual who enjoys outdoor activities like hiking. Dylan wants to find a sustainable vape disposal solution that will align with the large number of customers. Dylan has tried to properly dispose of vapes before, but found the process confusing and wasn't sure if they were doing it correctly.

"I know it's [putting disposable vapes in trash] harmful, but I don't think anyone makes such efforts, and not many are aware. ... I wish there were better ways, but we just tell them to throw it away."

Behaviors

- Aware that disposable vapes shouldn't be put in the trash can but not informing customers

Goals

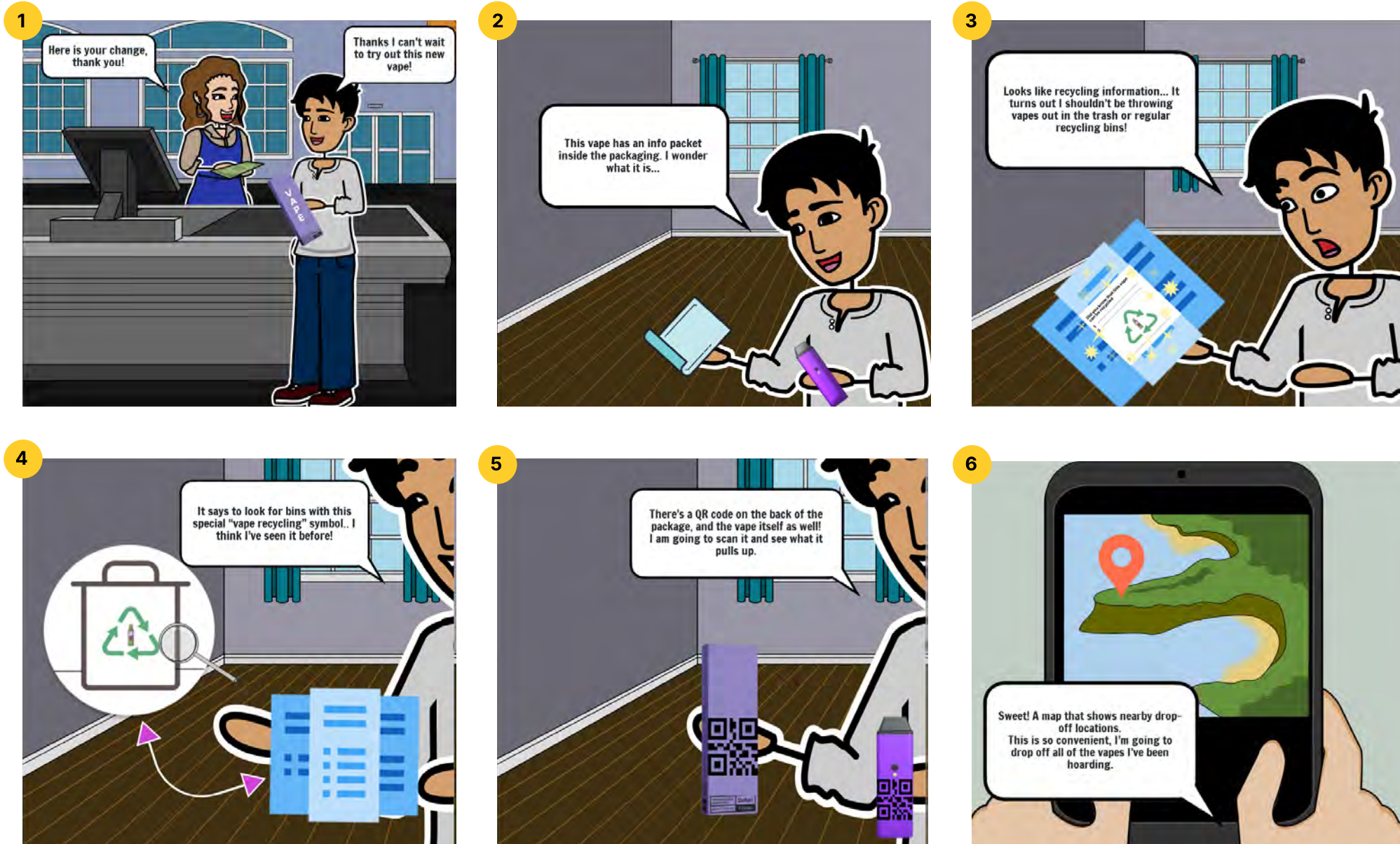
- Help customers properly dispose of vapes
- Provide access to resources and information for eco-friendly vaping disposal practices
- Provide accurate information to customers

Frustrations

- Unable to provide customers with a better way to dispose of vapes
- Competing business priorities
 - Not having time for customer education
 - Recycling vapes won't increase sales
- Vape packaging should have more information about recycling
- Unsure if they are giving the right guidance to customers

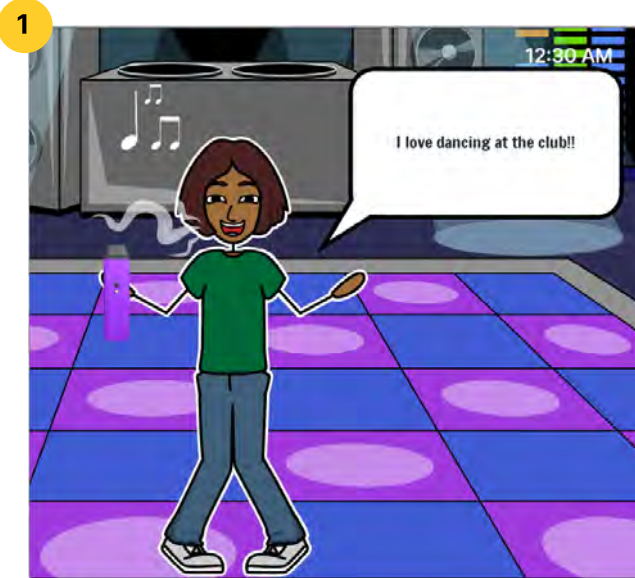
Storyboard

Storyboard 1: Easy access to disposal instructions on packaging



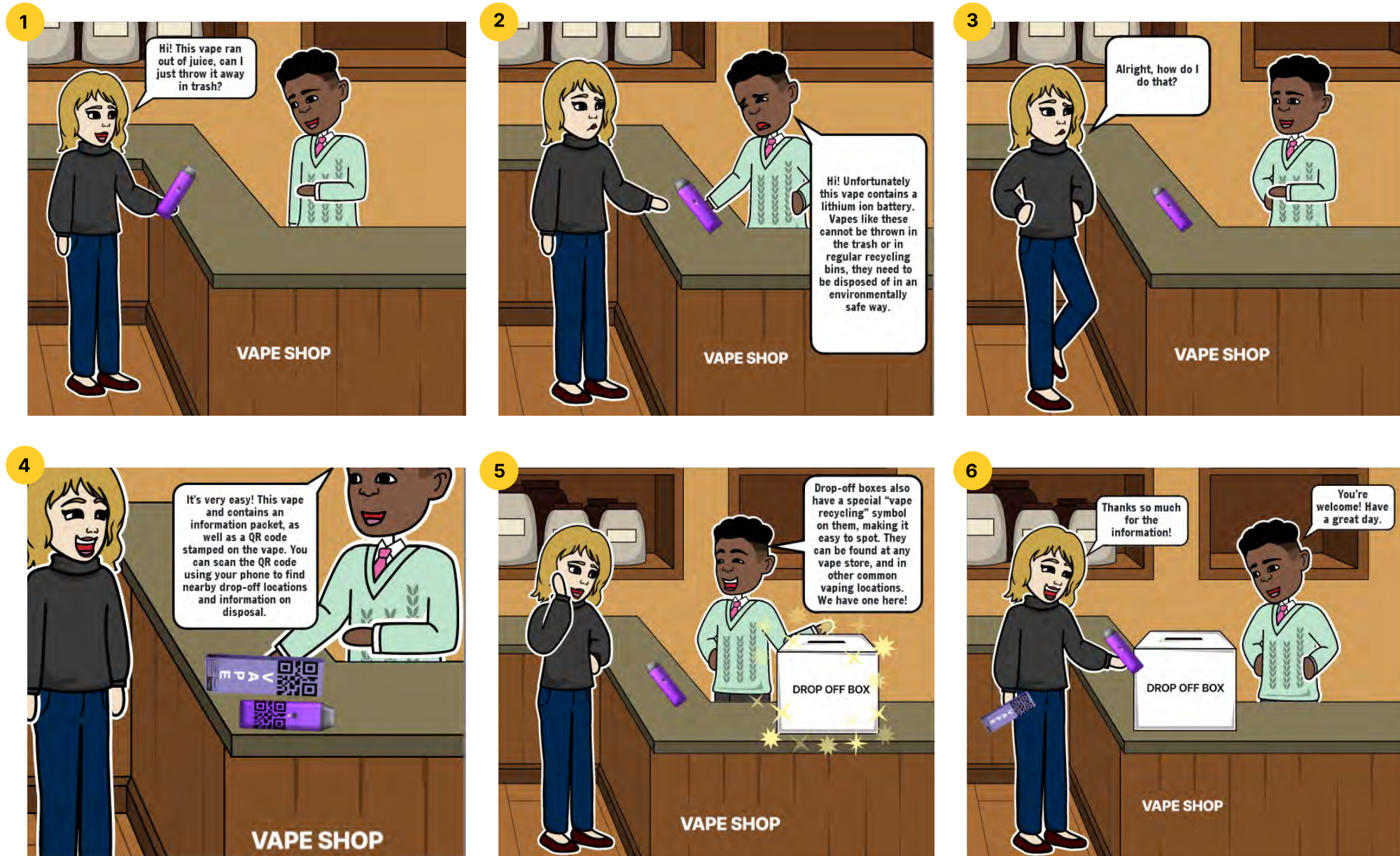
Storyboard

Storyboard 2: Safe vape disposal without travel and time constraints



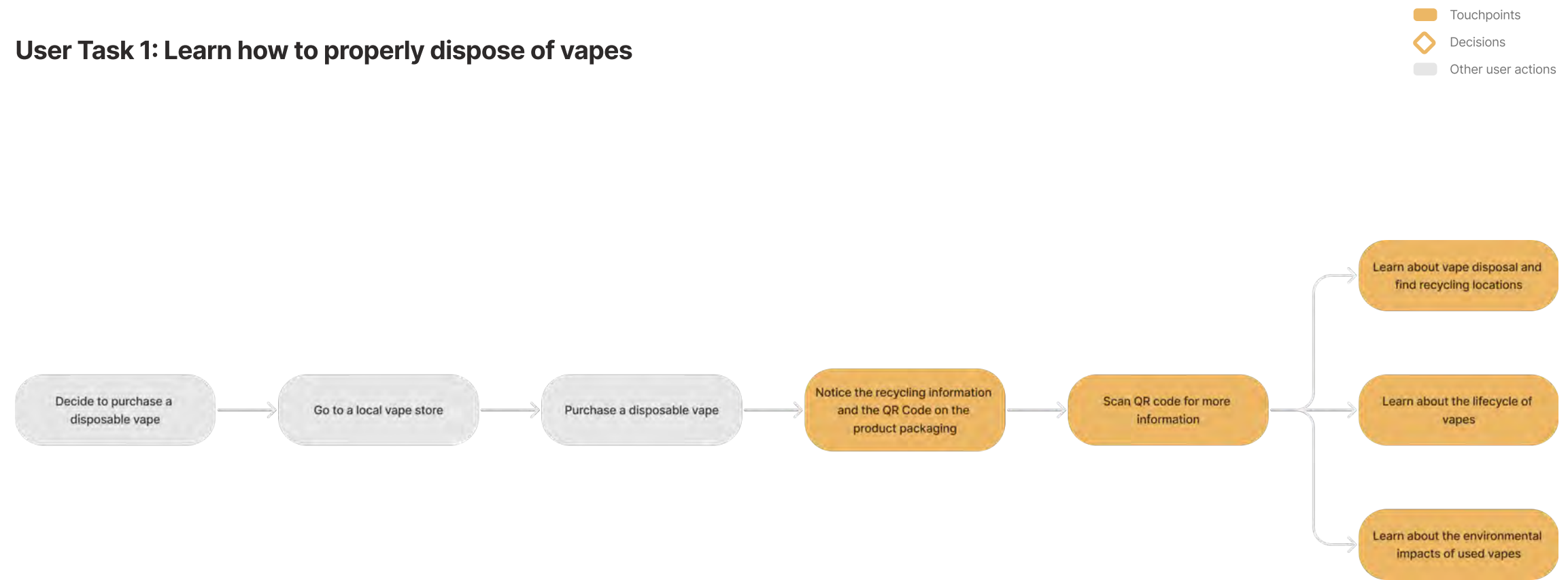
Storyboard

Storyboard 3: Educating users on proper vape disposal techniques



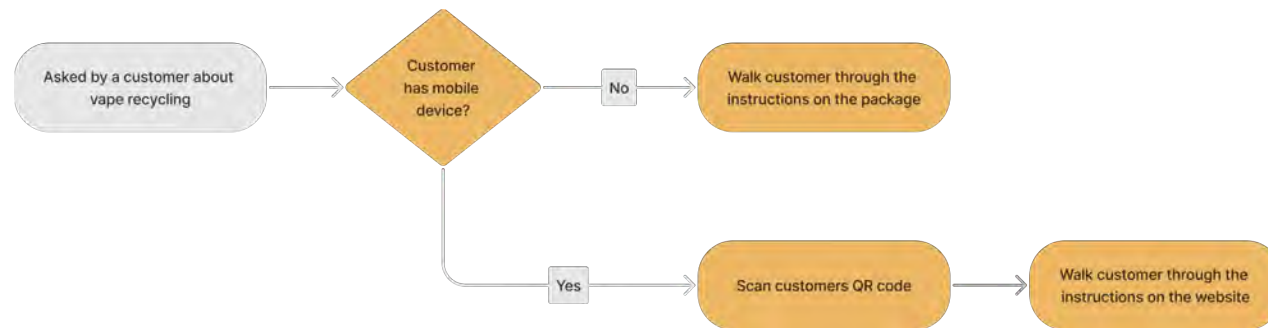
User Flows

User Task 1: Learn how to properly dispose of vapes



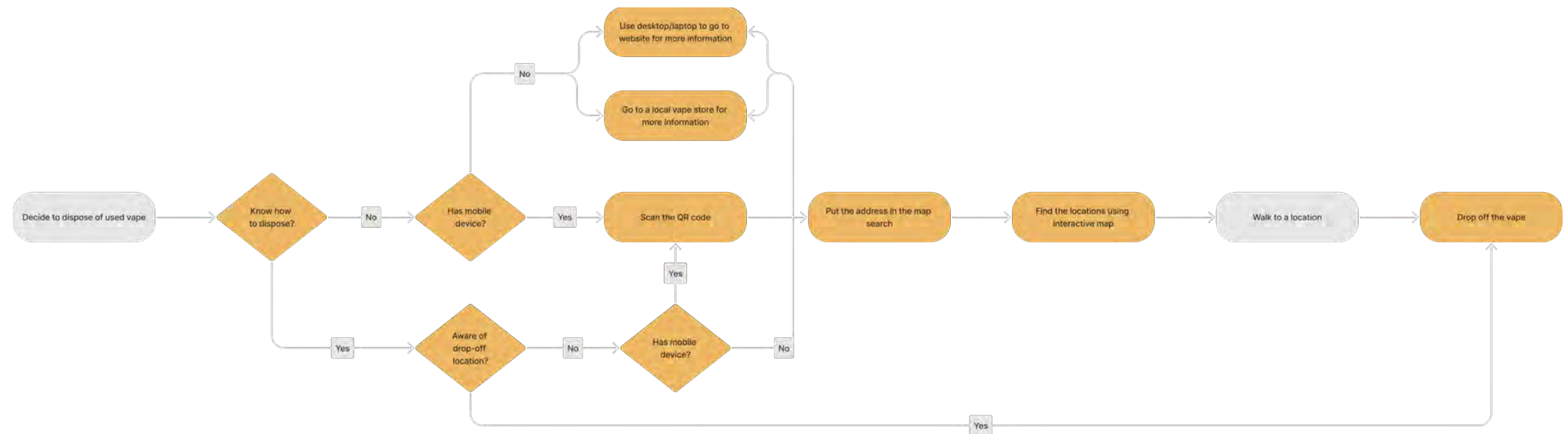
User Flows

User Task 2: Educate customers

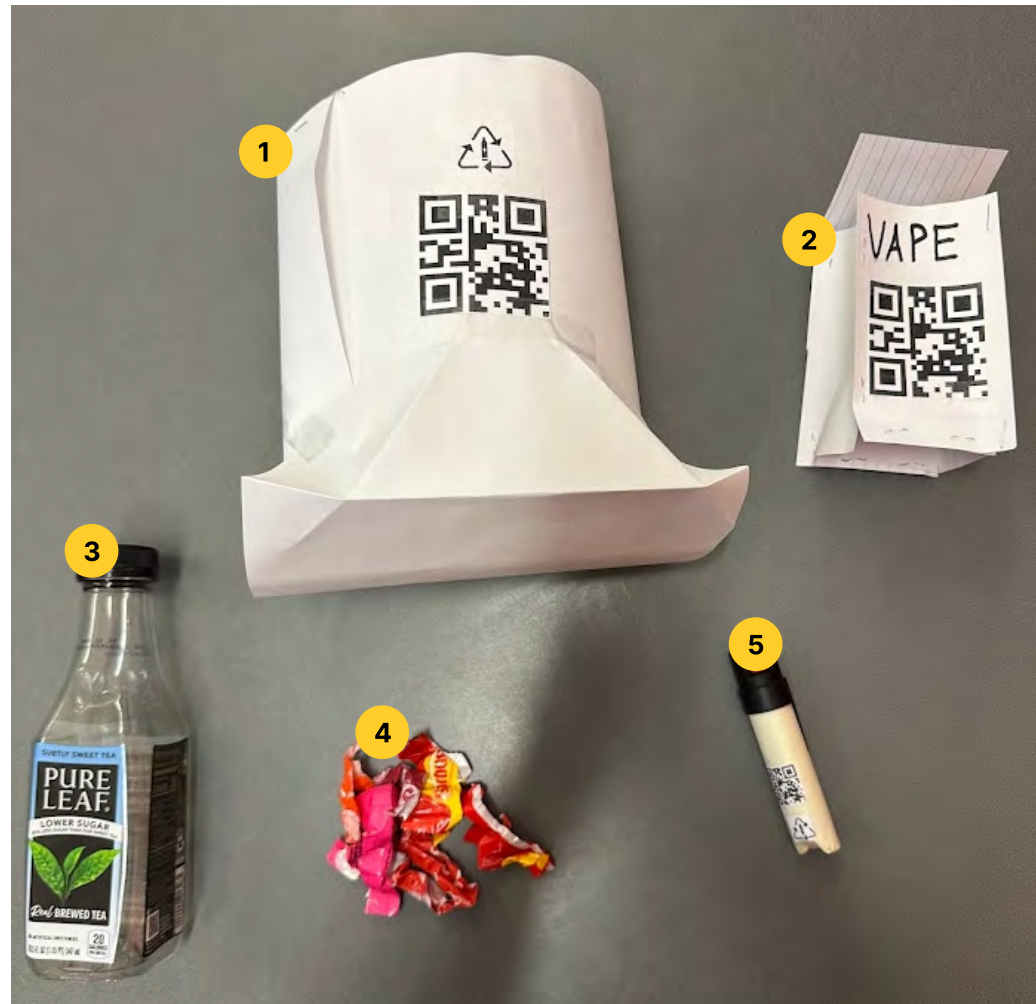


User Flows

User Task 3: Properly dispose of vapes



Low-fi Prototype



- 1 Vape Recycling Bin with QR code and symbols
- 2 Vape Package with QR code and symbols
- 3 Item to be placed in standard recycling bin
- 4 Item to be placed in standard waste bin
- 5 Vape with QR code and symbols



- 1 Website Interface

User Testing Results

What worked well

POSITIVE

Recycling symbols and QR code are discoverable.

- Most participants noticed these two elements on the package, the vape itself, and the vape recycling bin.

POSITIVE

Positive reaction to the consistent usage of symbols.

- The consistent usage of symbols across all mediums helped participants easily recognize the system.

POSITIVE

Finding a recycling location using the map and understanding information on the website.

Key

Usability Problem Frequency

ALL

4 of 4 participants

2-3

2-3 of 4 participants

1

1 of 4 participants

Usability Problem Severity

CATASTROPHIC

Prevents user from completing their task

SERIOUS

Delays user significantly but eventually allows them to complete the task

MINOR

Delays user briefly

Other

POSITIVE

Positive reactions or comments

SUGGESTION

Suggestions

Opportunities for Improvement

“The recycling information should be more obvious on the packaging and vape, prior to going on the website.”

ALL

CATASTROPHIC



Participants misunderstood the recycling symbols.

- Three mentioned the vape is to be disposed of in a normal recycling bin.
- Two understood it as a recharging symbol.
- One was confused about the recyclability of items: both package and vape or just the vape.
- One did not notice the recycling symbol on the bin and thus put the vape into the wrong bin.
- One successfully disposed of vape into the right bin but reported difficulty identifying the recycling symbol.

Next Steps

- Create a symbol which will more clearly distinct vape recycling from typical recycling.
- Don't limit ourselves purely to visual communication. Include labels.

ALL

SERIOUS



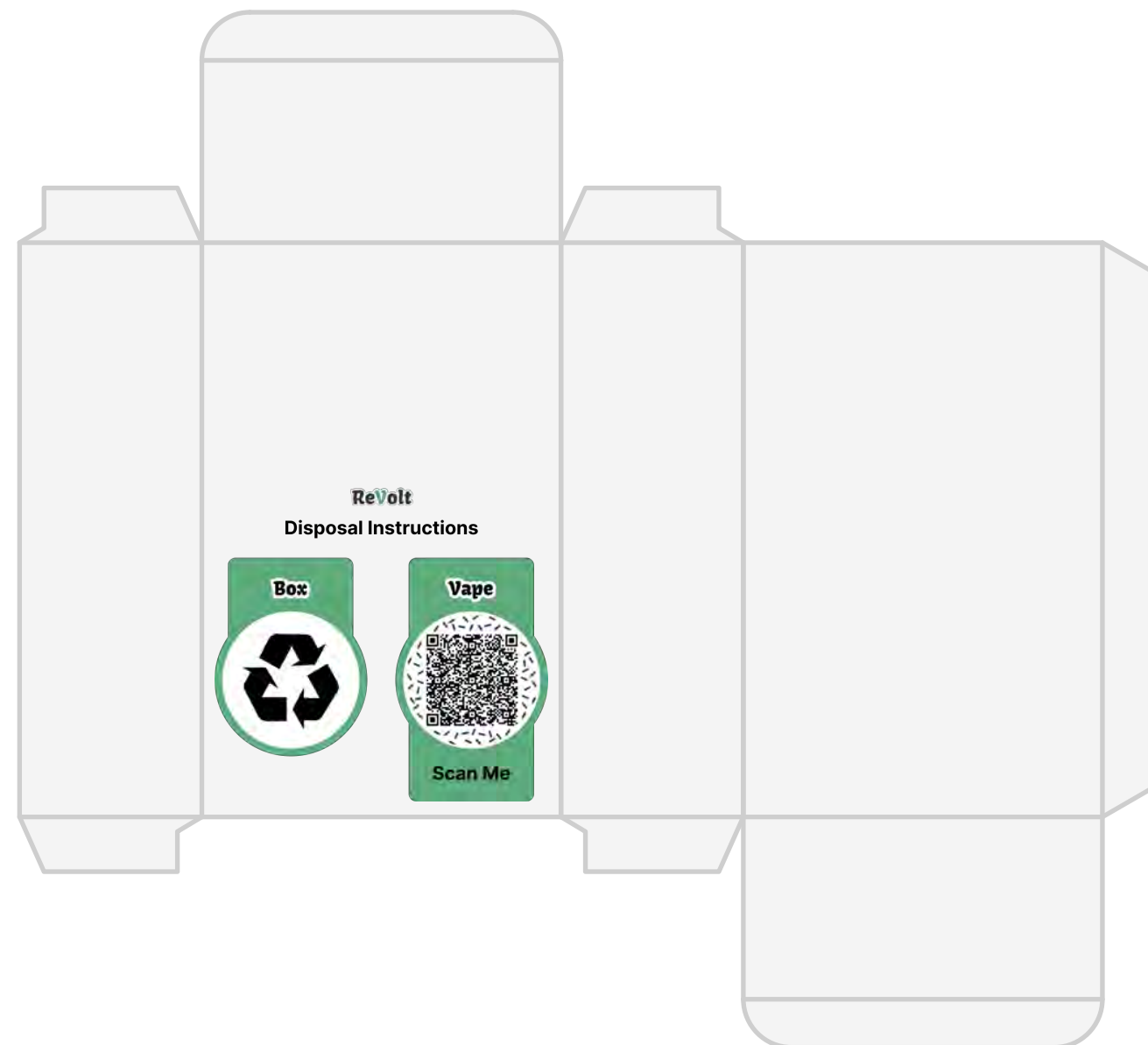
Different expectations about the QR codes.

- Three mentioned the QR codes would be related to more information about the vape or the manufacturer.
- Two mentioned the QR codes are for ordering more vapes.
- Two said they would scan the QR code if there was more information about it.
- One expected to see different information from each QR code (vape, vape package, and the drop-off box).
- One said the QR code and symbols would not be related.

Next Steps

- Provide more information about what information the QR code actually does (text explicitly stating that the QR code is related to recycling information).
- Make the QR code size and design consistent so there is no confusion as to whether different QR codes do different things.

Mid-fi Prototype



Mid-fi Prototype

