

ARTISTE POINTE

VENDING SYSTEM PRODUCT-SERVICE

TULEEN DAMIRI



PROLOGUE

This speculative project explores issues of material culture within the context of the UAE. It redefines the supply chain of a product and the upcycling of its material.

The project is positioned within a hypothetical product delivery system. Based on a 2018 U.S. patent developed by Christopher Mark Kaltenbach and his U.S. associates, this invented system of ephemeral e-commerce imagines a unique product-service that redefines the relationship with object ownership and disposal.

The title of the patent, Internet Enabled Apparatus, System and Method for Physically and Virtually Rendering Three- Dimensional Objects examines how products are purchased, made, distributed and disposed of through rethinking the function and material of the 3D printer. In particular, it proposes that print-on-demand technology is integrated with the vending machine. It also describes an unspecified biopolymer to be used to make products that would easily break down into its original state so as to be reconstituted into a new product within the same machine; the vending machine would provide an area in its housing for the return of the product.

As current 3D printing technology requires a great deal of time to produce an object, to present this hypothetical system, it must be established that this vending machine would take no more than three minutes to print any object.

Furthermore, the product-service in this project, in today's market, would be inexpensive to purchase due to having been produced in China. So, it is established that the general cost to produce the product-service, in the vending machine, would be in the range of what a similar product would cost (or cheaper).



US010486365B2

(12)

United States Patent
Kaltenbach et al.

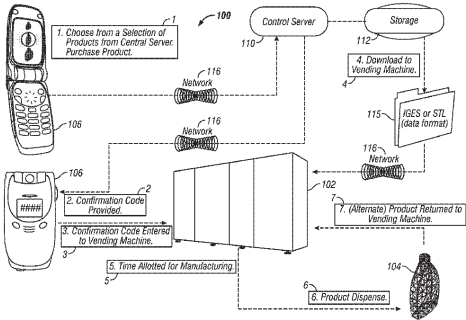
(10)

Patent No.: **US 10,486,365 B2**

(45)

Date of Patent: ***Nov. 26, 2019**

(54)	INTERNET-ENABLED APPARATUS, SYSTEM AND METHODS FOR PHYSICALLY AND VIRTUALLY RENDERING THREE-DIMENSIONAL OBJECTS	(58)	Field of Classification Search None See application file for complete search history.
(71)	Applicant: TRIPETALS, LLC , Albuquerque, NM (US)	(56)	References Cited U.S. PATENT DOCUMENTS 741,518 A 10/1903 Mackie 5,241,464 A 8/1993 Greulich et al. (Continued) FOREIGN PATENT DOCUMENTS EP 1 168 266 A2 1/2002 EP 1 168 266 A3 6/2002 (Continued) OTHER PUBLICATIONS Handyscan 3D Sneak Preview: Creaform Shills to 4D and Pre-Releases the VIUScan™ 3D Color Scanner; Aug. 12, 2008; www.creaform3d.com. (Continued)
(72)	Inventors: Christopher Kaltenbach , Tokyo (JP); Luke Nihlen , Albuquerque, NM (US); Luis M. Ortiz , Albuquerque, NM (US)		<i>Primary Examiner</i> — Sean Shechtman (74) <i>Attorney, Agent, or Firm</i> — Kermit D. Lopez; Luis M. Ortiz; Ortiz & Lopez, PLLC
(73)	Assignee: TRIPETALS, LLC , Albuquerque, NM (US)	(57)	ABSTRACT Three-dimensional object bridge between virtual and physical worlds. A method, system, apparatus and/or computer-usable medium includes steps of selecting a three-dimensional item in a first state for subsequent rendering into a second state and rendering the three-dimensional item in the second state via the three-dimensional rendering apparatus. An additional step of locating a three-dimensional rendering apparatus for rendering the three-dimensional item in a second state can be included. The three-dimensional rendering apparatus can be configured as a kiosk (manned or unmanned). Internet-enabled vending machine, and the like. The first state can comprise a virtual state and the second state can comprise a physical state. Likewise, the first state can comprise a physical state and the second state can comprise a virtual state. Additionally, the three-dimensional
(*)	Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 16 days. This patent is subject to a terminal disclaimer.		(Continued)
(21)	Appl. No.: 15/862,861		
(22)	Filed: Jan. 5, 2018		
(65)	Prior Publication Data US 2018/0194067 A1 Jul. 12, 2018		
	Related U.S. Application Data (60) Continuation of application No. 13/961,195, filed on Aug. 7, 2013, now Pat. No. 9,902,109, which is a (Continued)		
(51)	Int. Cl. B29C 64/386 (2017.01) B29C 64/357 (2017.01) (Continued)		
(52)	U.S. Cl. CPC B29C 64/386 (2017.08); B29C 64/00 (2017.08); B29C 64/357 (2017.08); B33Y 50/02 (2014.12)		



CONTENTS



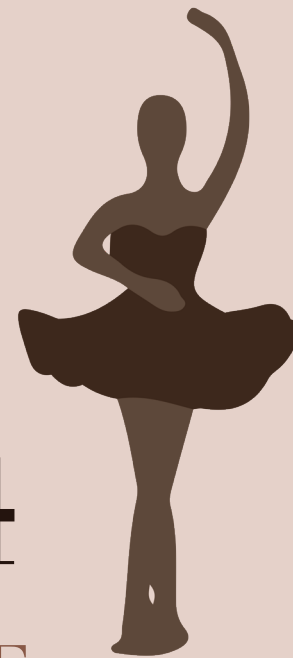
01 INTRODUCTION



02 THE APP



03 VENDING MACHINE



04 PRODUCT-SERVICE



05 PROJECT OVERVIEW

01

INTRODUCTION

CONTEXT

PRODUCT-SERVICE USE:

Artiste Pointe offers a modular, pre-broken-in pointe shoe designed to provide immediate comfort, flexibility, and support for ballet dancers. The shoe features a three-part system: a flexible toe box and sole component that mimics the feel of a perfectly broken-in shoe, a soft sock-like layer for added ankle support, and an adjustable ribbon that can be customized for a secure fit. The slits in the sole allow for natural foot articulation, reducing fatigue during long rehearsals, while the modular design enables easy replacement of worn parts, extending the shoe's life and reducing waste. This pre broken in shoe allows ballerinas to focus on the art of performing and their rehearsal time without the distraction of breaking in their shoes or wasting valuable time on a tedious and often painful process of breaking in traditional Pointe shoes.



<https://advocatechannel.com/ballerinas-of-color-pointe-shoes-dark-shades>



https://www.daily-choices.com/here-is-why-ballet-is-more-hard-core-than-you-know-part2/4?xcmg=1&_d=d

USER DEMOGRAPHIC:

This is Designed for women aged 18–30, including both amateur and professional ballet dancers, whose seek pointe shoes that combine comfort, performance, and style while minimizing foot pain and fatigue during rehearsals. The shoes also appeal to studios looking for sustainable, cost-effective solutions with replaceable components that extend their lifespan. With modular designs, these pointe shoes offer ballerinas the convenience of easy part replacements, reducing break-in time and maximizing their rehearsal time



https://x.com/vikakapitonova_



<https://stock.adobe.com>

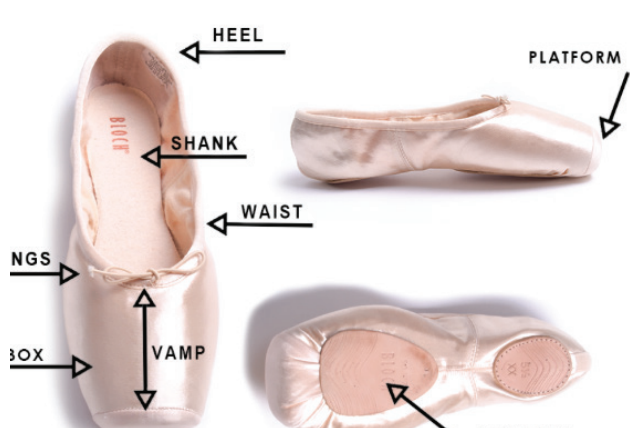


<https://www.alamy.com/stock-photo/holding-ballet-pointe-shoes.html>

CONTEXT

SCIENTIFIC RATIONALE

Pointe shoes are highly specialized footwear designed to enable ballet dancers to perform en pointe, where the dancer balances on the tips of their toes. Scientifically, pointe shoes must support the weight of the dancer while maintaining flexibility, balance, and durability. They are crafted with a stiff toe box made from layers of fabric and glue to provide the necessary strength for supporting the toes, and a shank to stabilize the arch of the foot. However, traditional pointe shoes present challenges such as discomfort, a high risk of injuries like blisters, bunions, and stress fractures, and a limited lifespan due to material breakdown from use. The break-in process—required to soften the materials for a better fit—can strain a dancer’s body and consume valuable rehearsal time. Furthermore, the lack of customization for individual foot shapes can lead to improper alignment and reduced performance. Pointe shoes combine biomechanics and material science to enable artistry, yet their traditional design has limitations in comfort, fit, and longevity, highlighting the need for further innovation.



<https://www.dancemaster.net/blog/the-anatomy-of-ballet-shoes>



<https://pbt.org/community/resources-audience-members/ballet-101/pointe-pointe-shoes>

HISTORICAL CONTEXT

Pointe shoes have a rich history rooted in ballet’s pursuit of ethereal beauty and weightlessness. The concept of pointe work began in 1795 with Charles Didelot’s “flying machine,” which lifted dancers off the ground, creating the illusion of floating. This inspired the development of pointe technique, which became widely popular in the 19th century with ballerinas like Marie Taglioni, who performed en pointe using soft slippers to emphasize grace and delicacy. Initially designed to enhance the otherworldly appearance of female dancers, pointe work became a defining aspect of ballet. Over time, the design of pointe shoes evolved—from soft slippers to the reinforced toe boxes introduced by Italian dancers in the late 1800s, which allowed for greater strength and balance. Today, pointe shoes remain an essential tool in ballet, symbolizing the art form’s blend of athleticism and artistry, and their design continues to support the demanding technical and aesthetic requirements of modern dancers.



<https://pointemagazine.com/history-of-pointe-shoes/#gsc.tab=0>



<https://www.timetoast.com/timelines/the-evolution-of-the-ballet-pointe-shoe>



SITE:

***PERFORMING
ART
SCHOOLS***

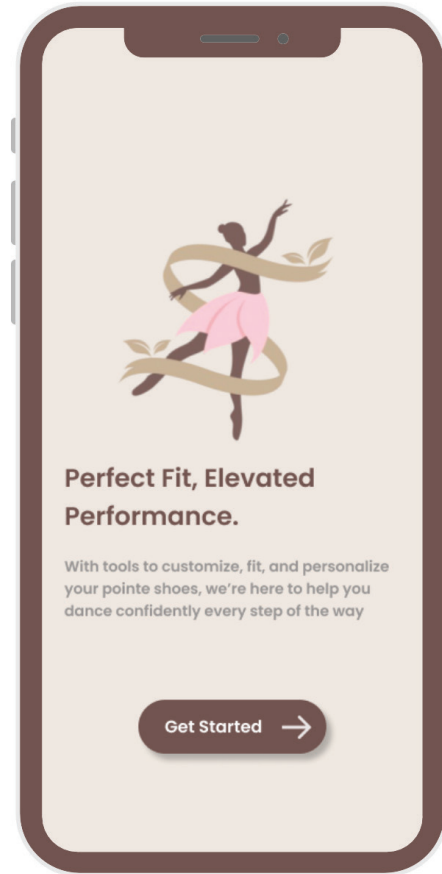


*BALLET
STUDIOS*

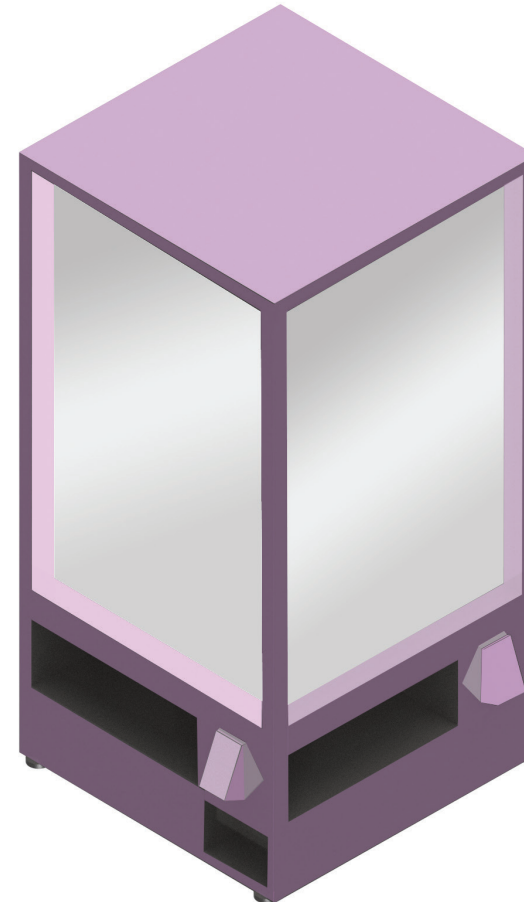


*RECEPTION
BALLET
STUDIOS*

EPHERMAL E-COMMERCE VENDING SYSTEM



THE APP



VENDING MACHINE



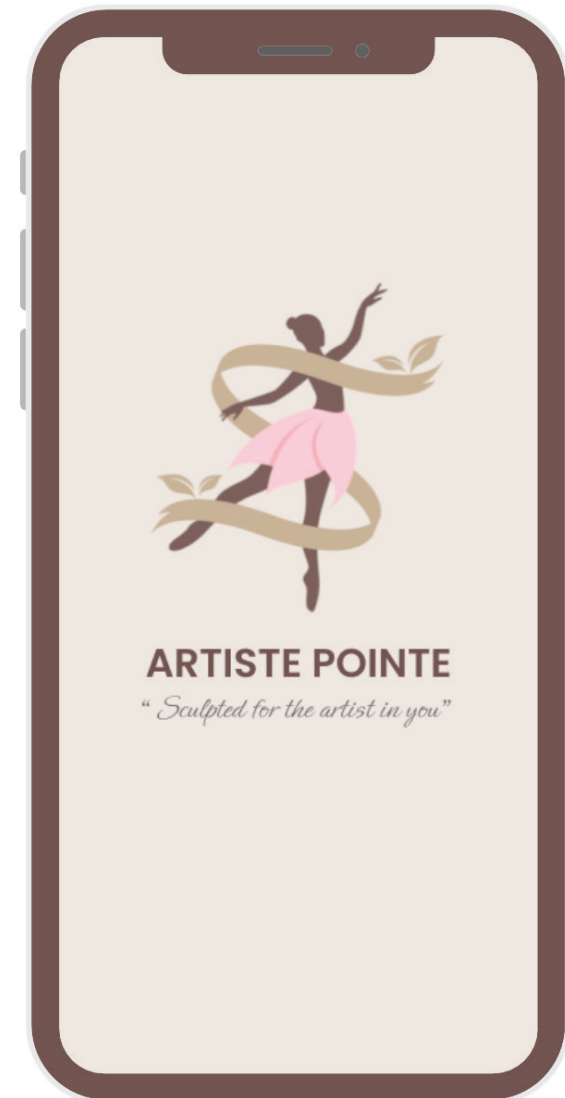
PRODUCT-SERVICE

02

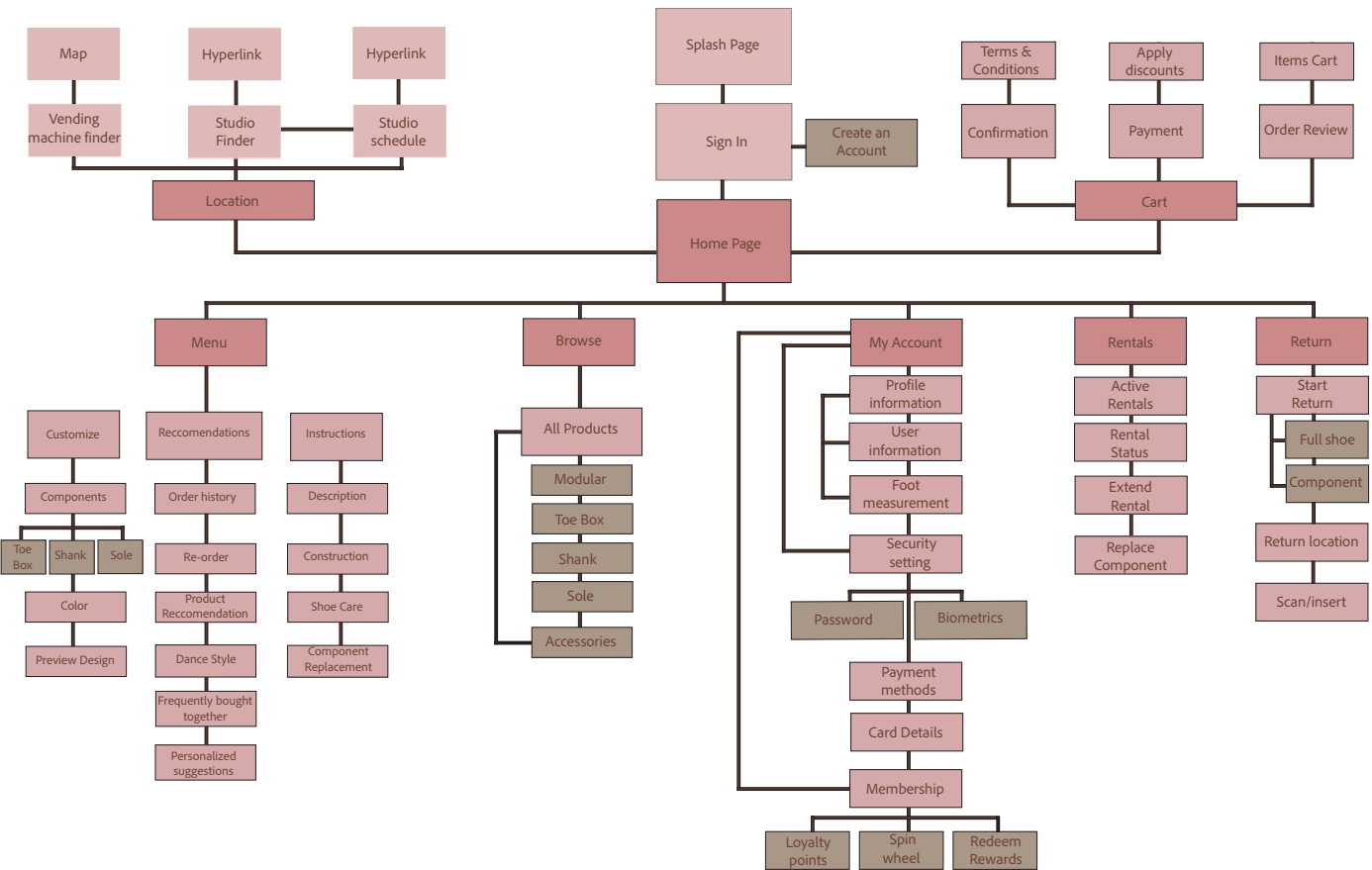
The APP

ARTISTE POINTE

THE APP



APP DESIGN SITEMAP



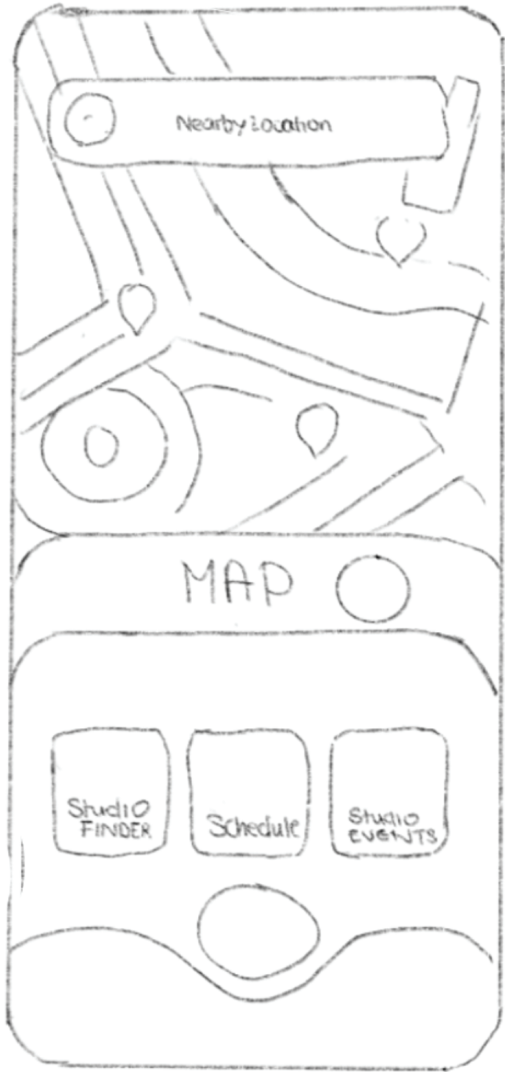
LOFI WIREFRAMES



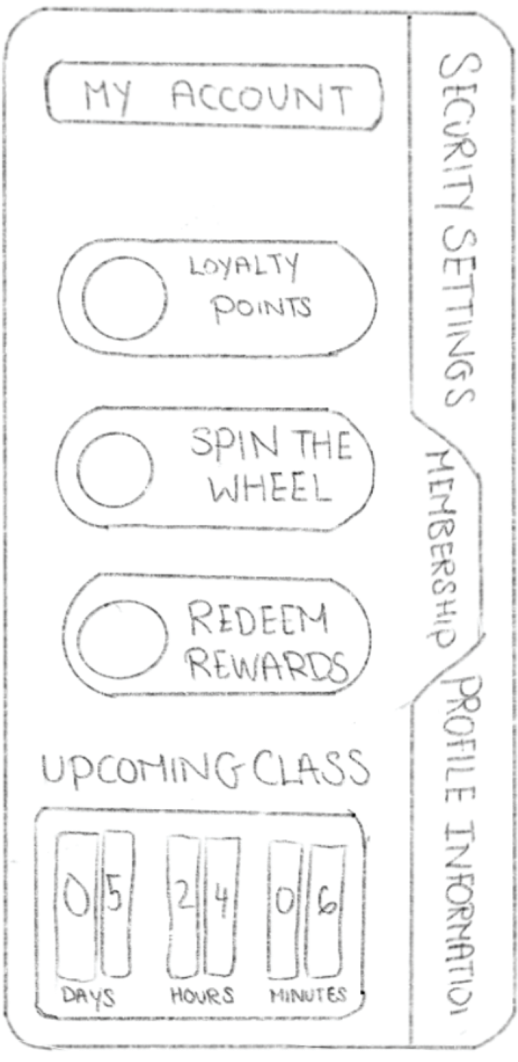
MENU PAGE



CUSTOMIZE PAGE



LOCATION PAGE

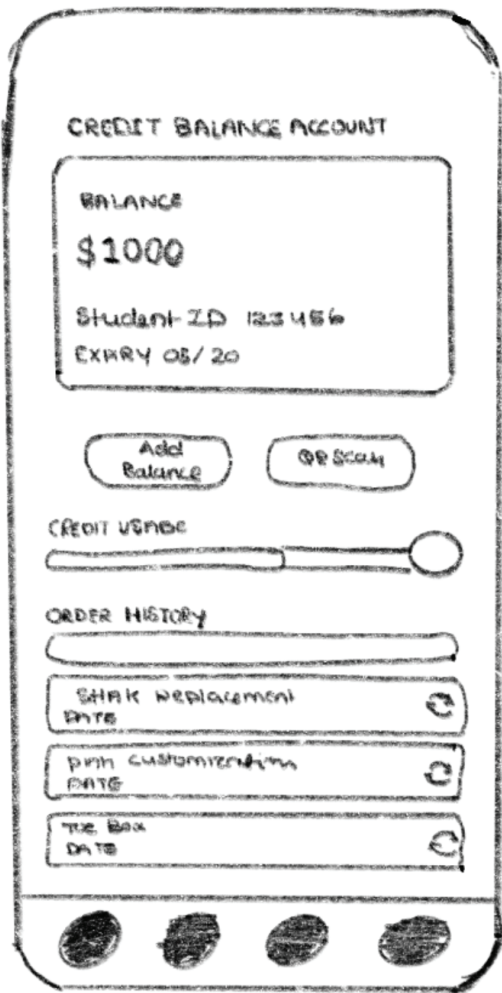


ACCOUNTS PAGE

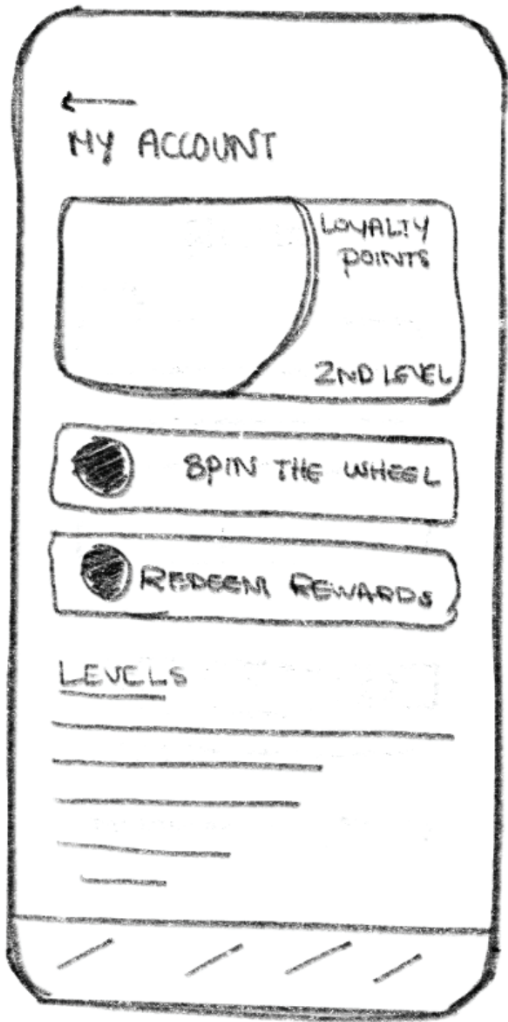
LOFI WIREFRAMES



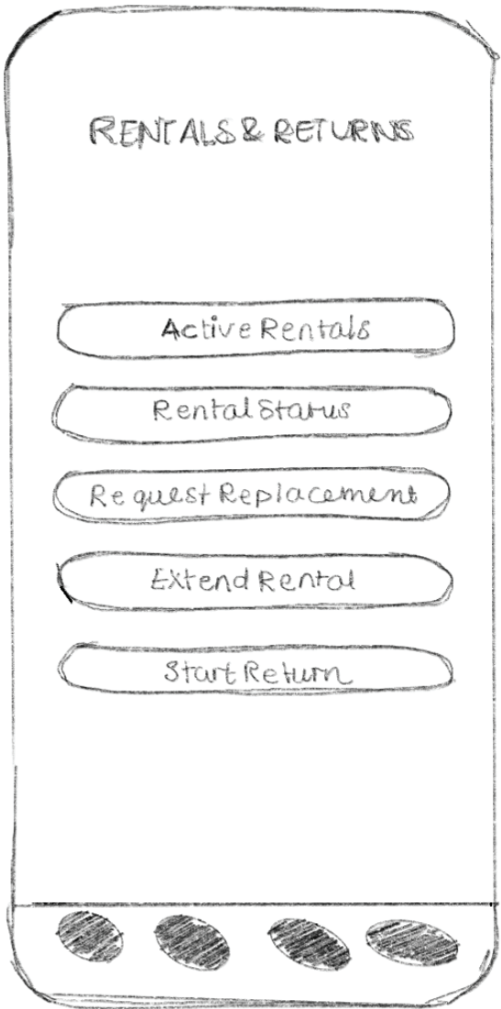
LANDING PAGE



HOMEPAGE

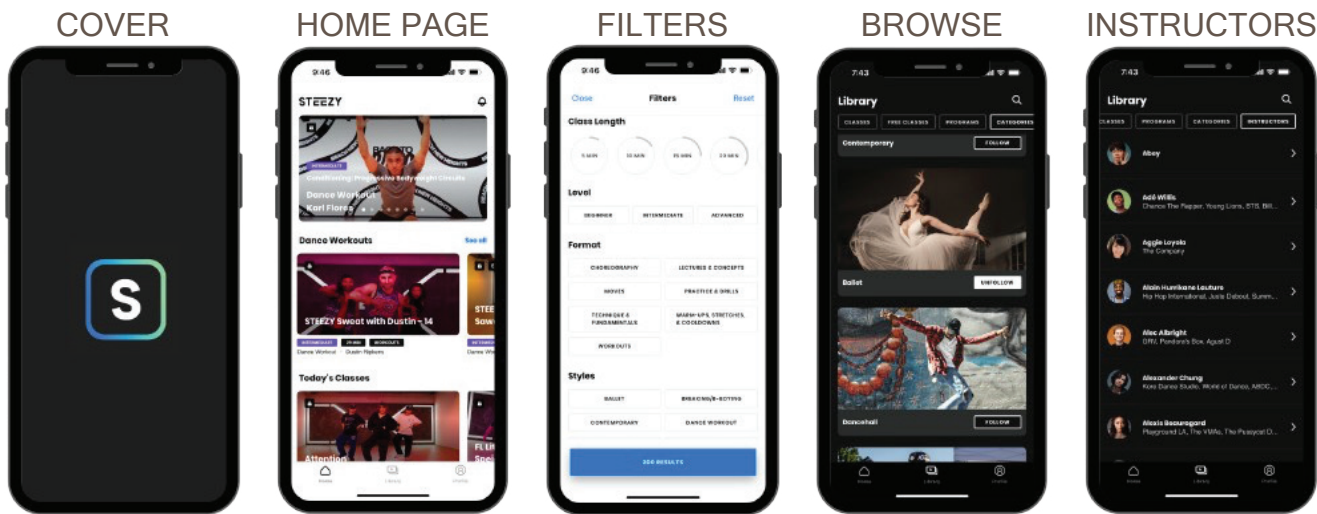


PROFILE PAGE



RENTALS PAGE

APP DESIGN INSPIRATION



STEEZY

BACKGROUND INFORMATION

Industry: Dance and Fitness
Region: Based in Los Angeles, California
Target Audience: Dance enthusiasts, beginners-advanced.

Product Selection: STEEZY offers a wide selection of pre-recorded dance classes, covering a variety of styles including hip-hop, contemporary, and K-pop. Users can select classes based on skill level, style, or instructor.

product customization: Users can also track their progress and create personal playlists of their favorite classes.

Payment methods: monthly/annual plans via apple/google pay, credit/debit.

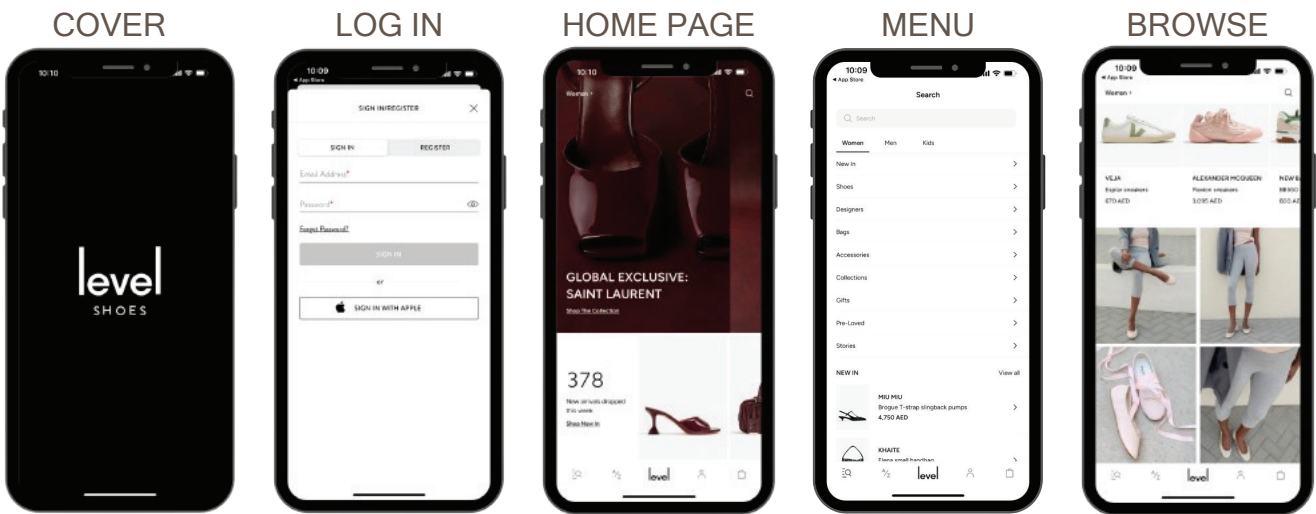
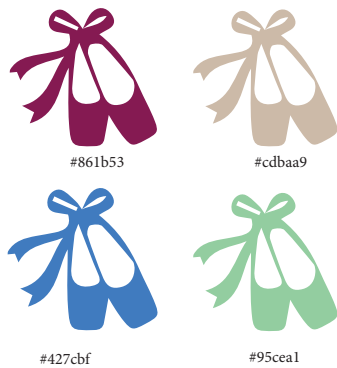
Notifications: STEEZY users receive notifications via app and email, including new class releases, personalized recommendations, progress reminders, motivational messages, event announcements, offers.

FONT NAME

Microsoft sans Serif



COLOR PALETTE



LEVEL SHOES

BACKGROUND INFORMATION

Industry: Luxury Retail, specializing in designer shoes and accessories
Region: Dubai, UAE, global online presence and shipping worldwide.
Target Audience: ages 25-50, upper class

Product Selection: Level Shoes offers a curated selection of high-end footwear and accessories,

product customization: Level Shoes provides luxury customization services like monogramming and engraving for footwear and accessories, enhancing exclusivity for high-end clients.

Payment methods: apple pay, visa, Tabby, credit/debit card.

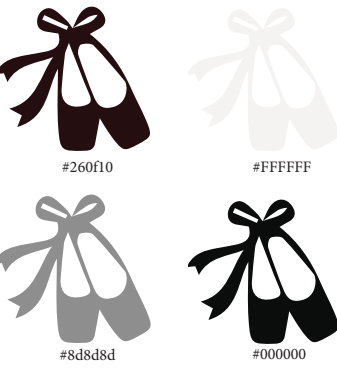
Notifications: Level Shoes offers customers various notifications via their app or website, including order confirmations, tracking updates, promotions, exclusive discounts.

FONT NAME

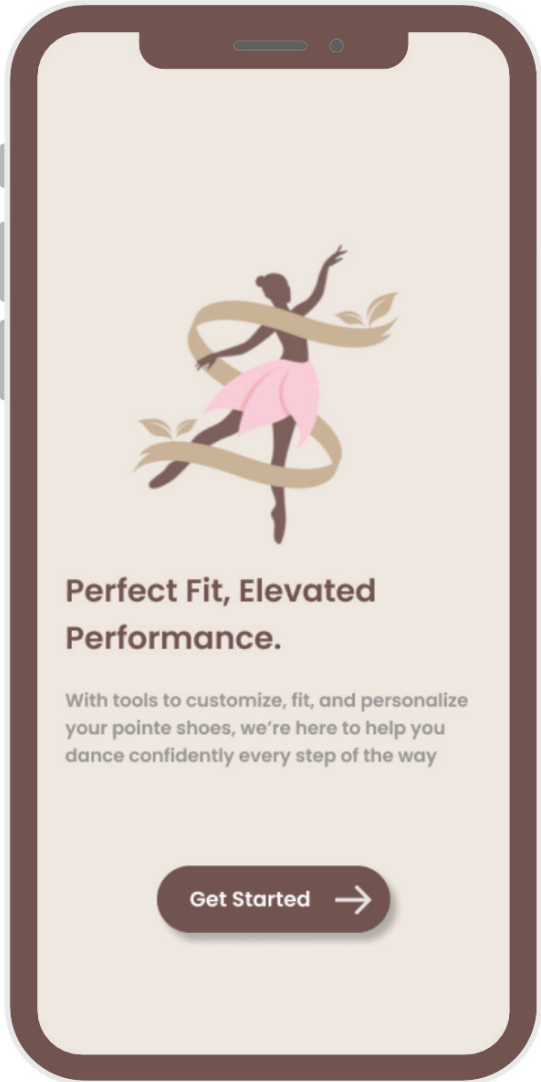
Acumin Sans-Serif



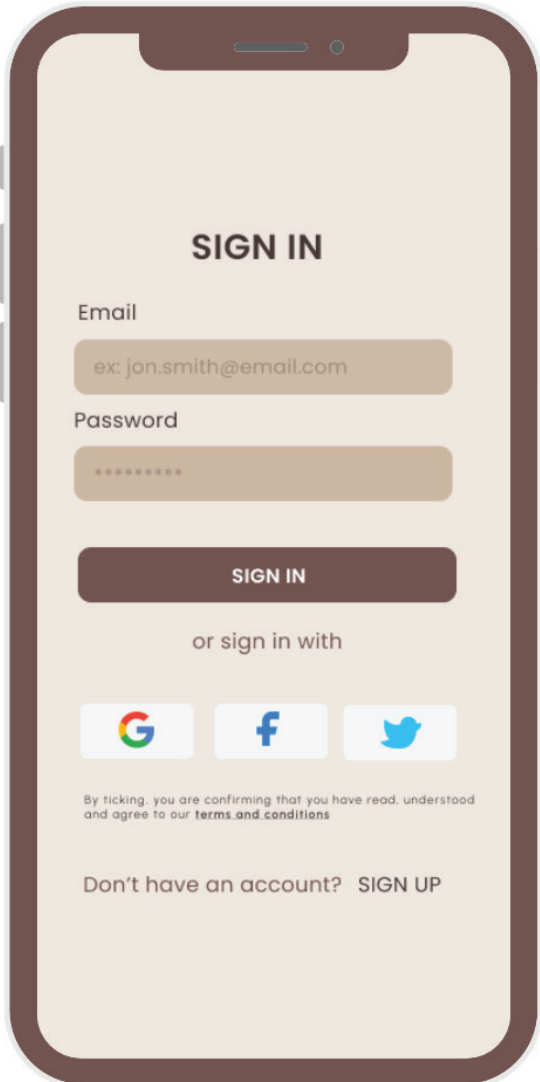
COLOR PALETTE



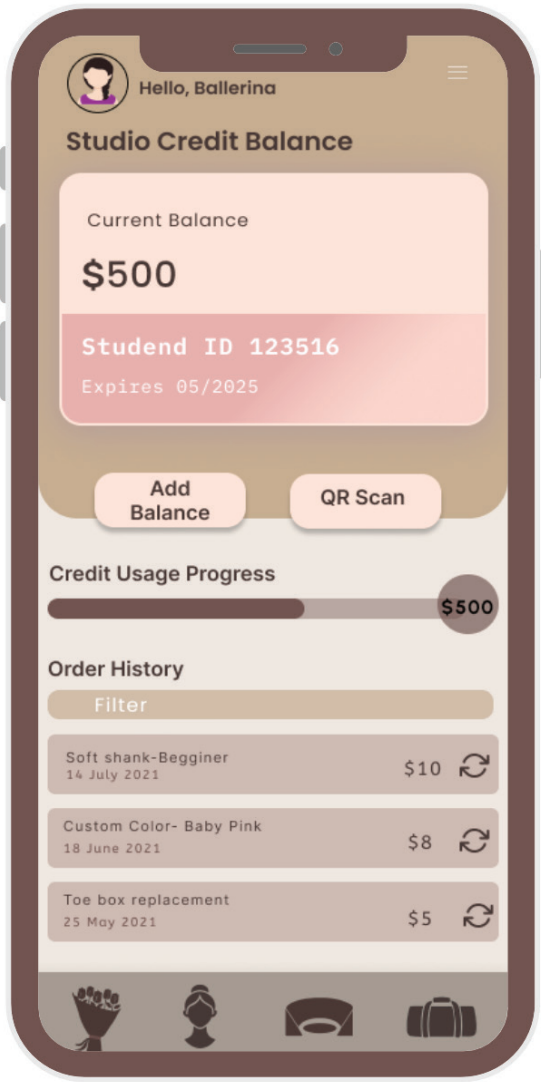
APP DESIGN HIFI WIREFRAMES



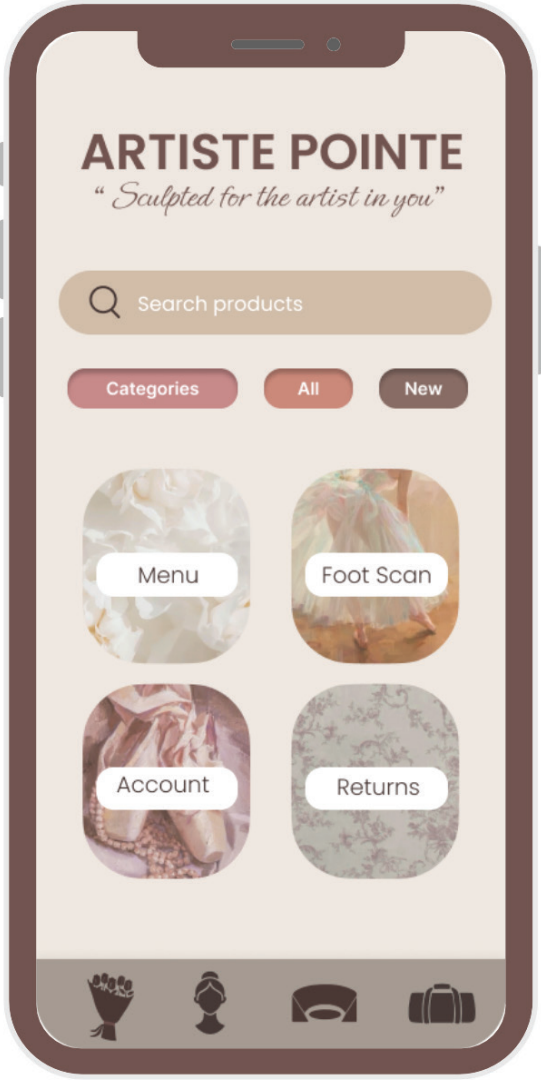
LANDING PAGE



SIGN IN

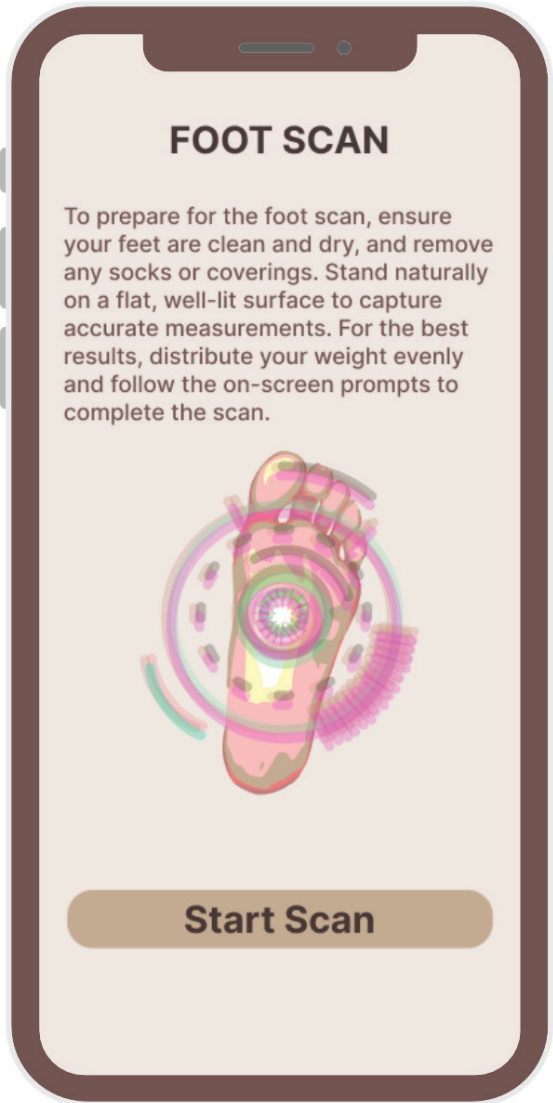


HOME PAGE



MENU

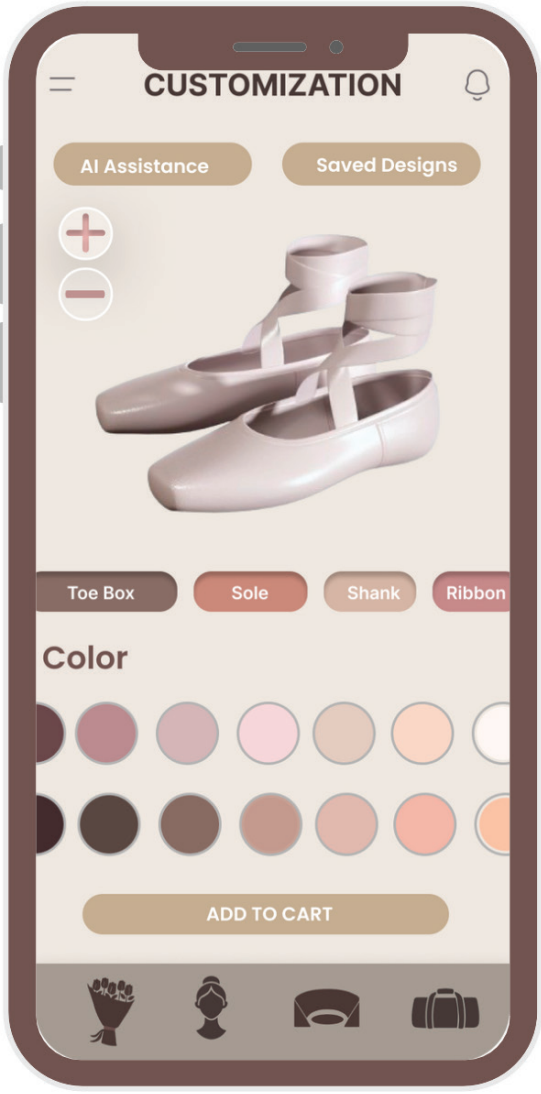
APP DESIGN HIFI WIREFRAMES



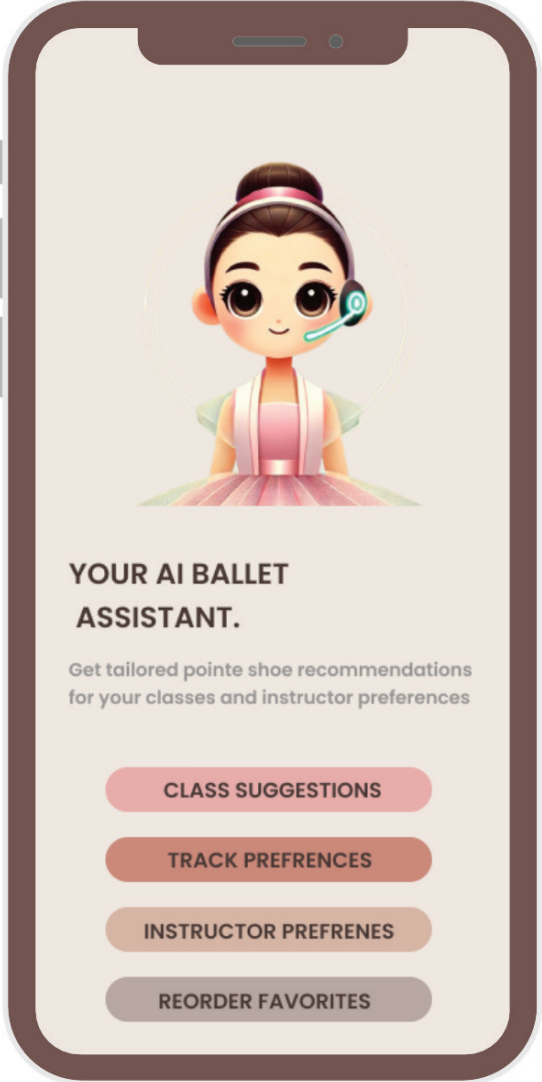
FOOT SCAN



AUGMENTED REALITY



CUSTOMIZATION

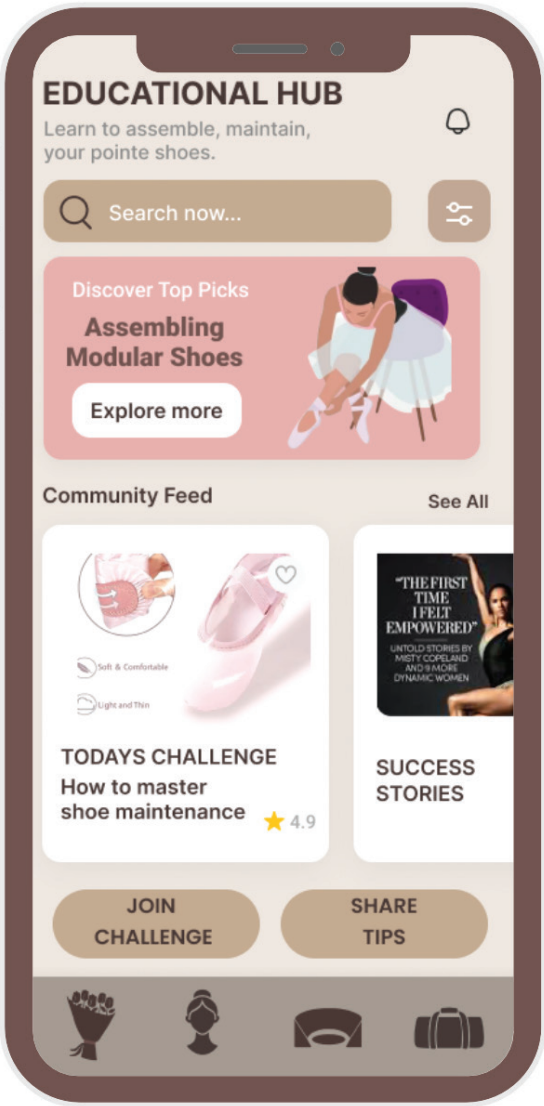


AI ASSISTANCE

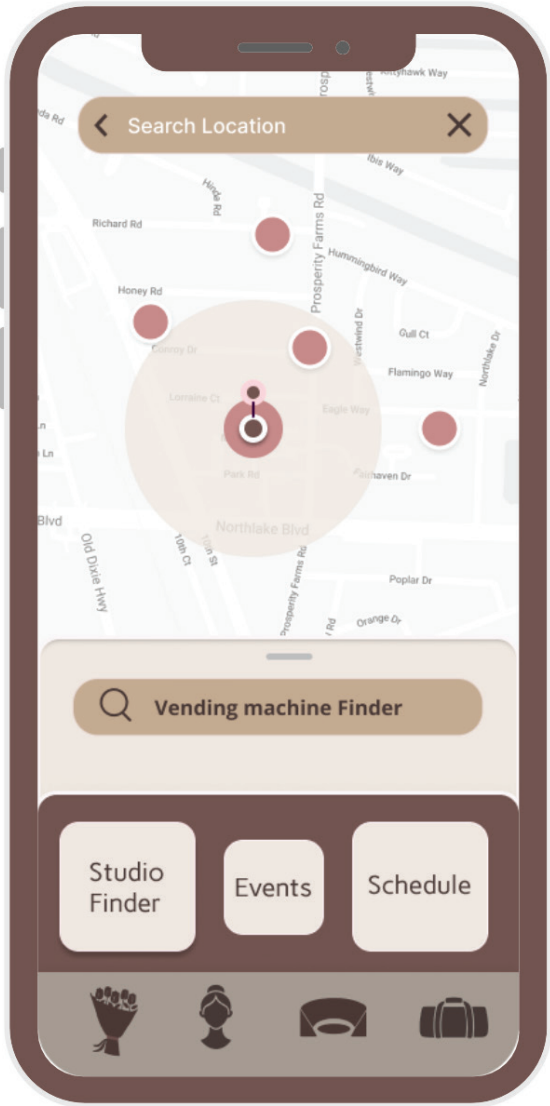
APP DESIGN HIFI WIREFRAMES



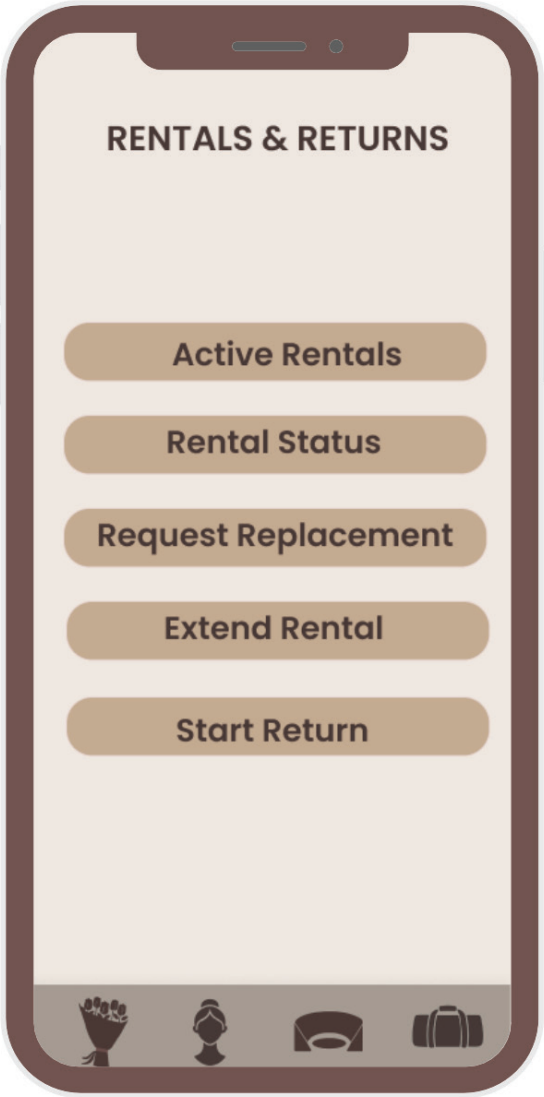
AI CHAT



HOW TO USE

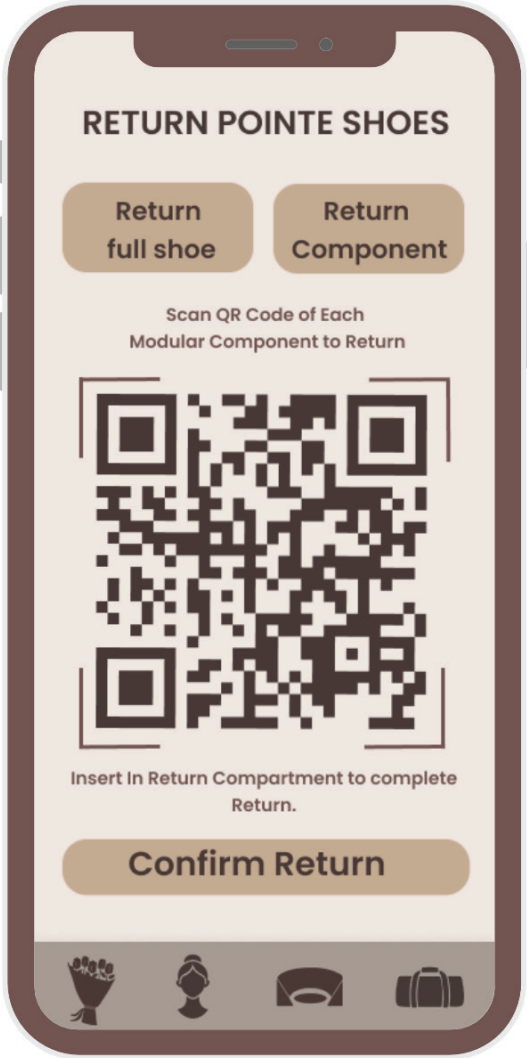


LOCATION PAGE

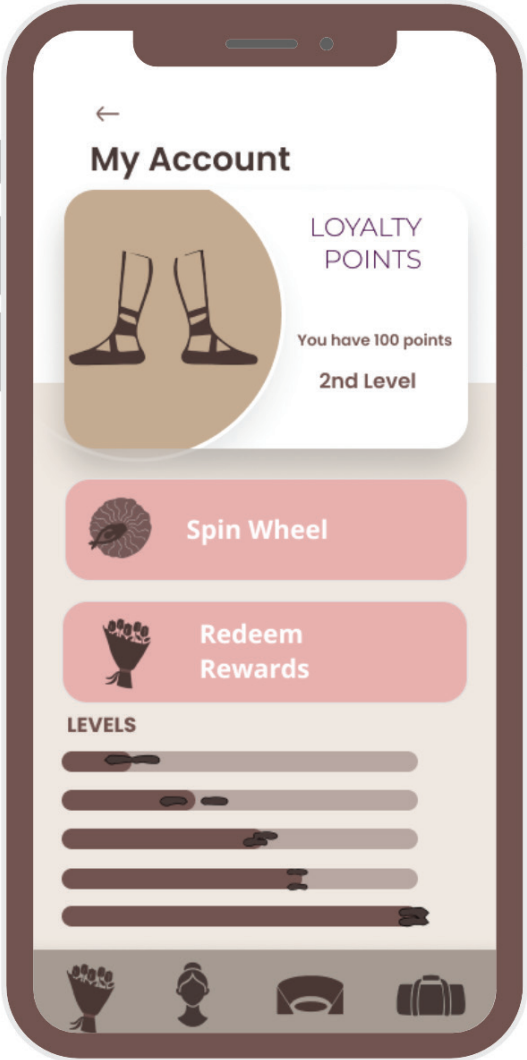


RENTALS PAGE

APP DESIGN HIFI WIREFRAMES



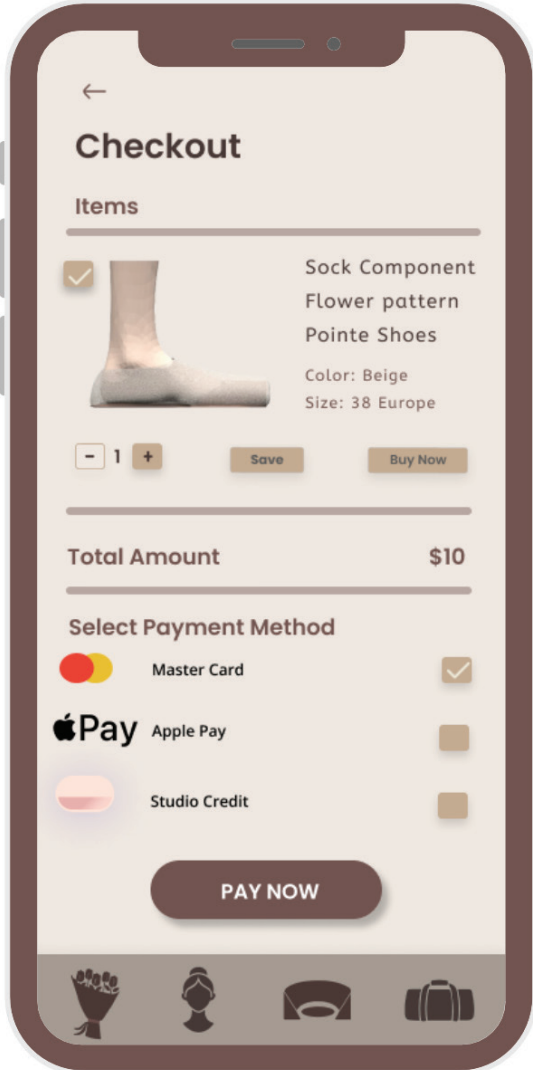
RETURN PAGE



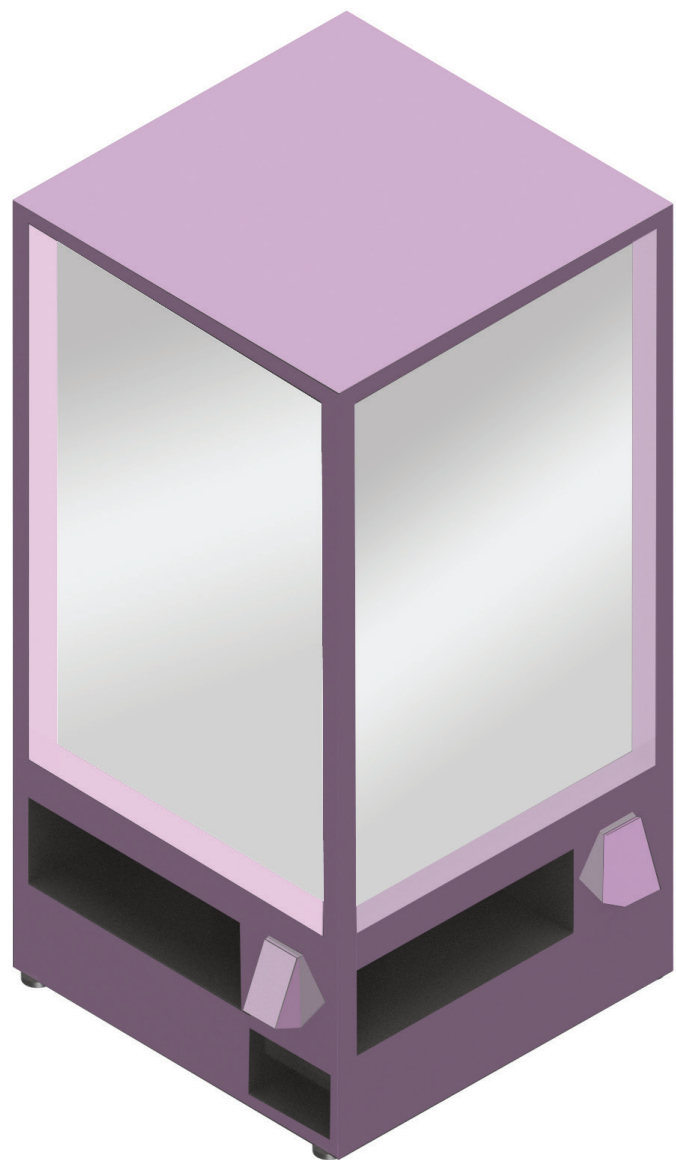
PROFILE PAGE



ACTIVE RENTALS



CHECKOUT PAGE



03

VENDING MACHINE

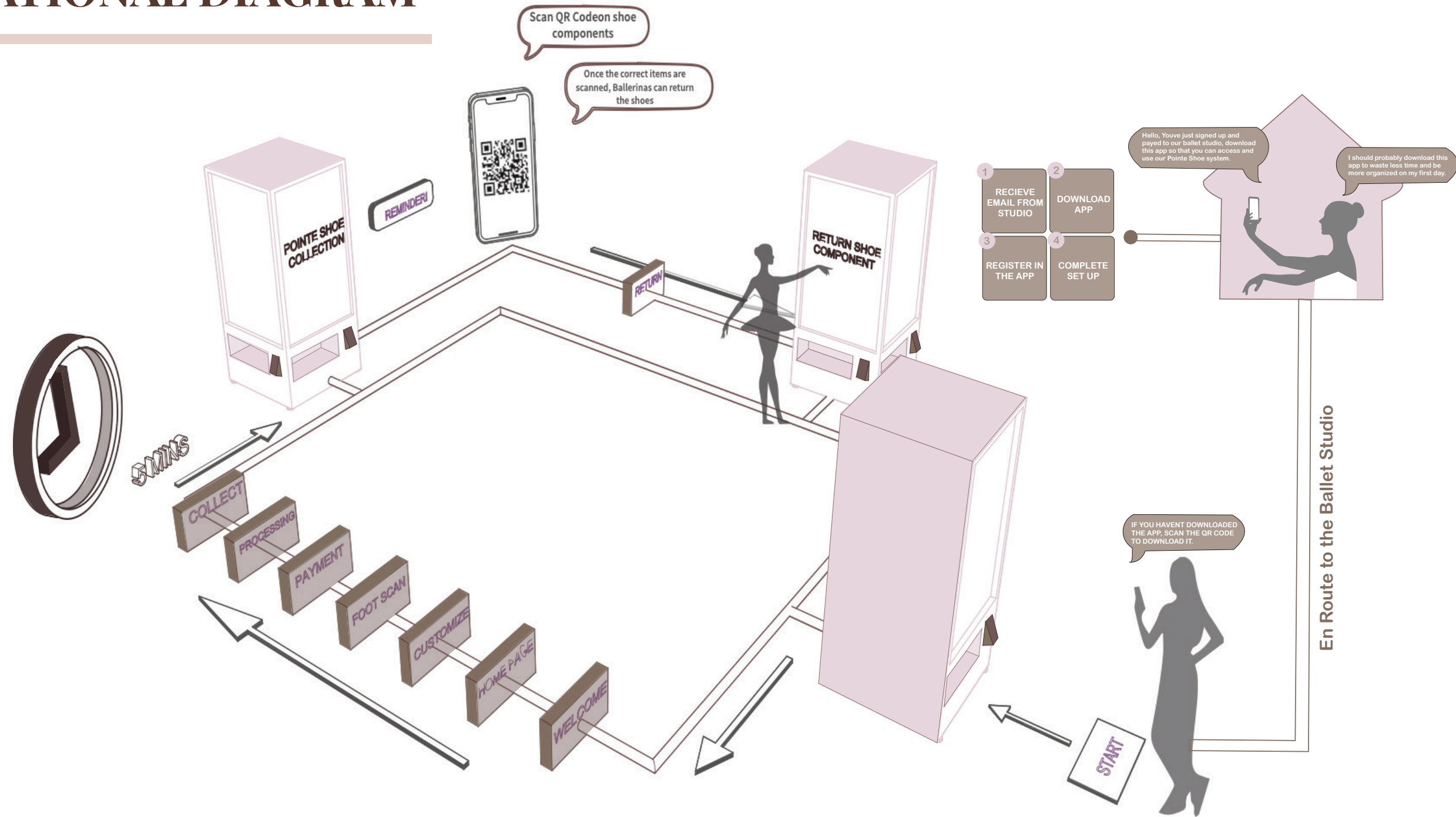
VM 3D MODEL

ON SITE
BALLET STUDIO
RECEPTIONS



atap.co

NAVIGATIONAL DIAGRAM



VENDING MACHINE

USER INTERFACE INSPIRATION



<https://www.hndi.co.jp/en/categories-en/works-en/acure-pass-compatible-innovation-vending-machines.html>

Company: Acure Pass

Product: Vending Machine

Region: Japan

Designer: Fumie Shibata

Payment Options:

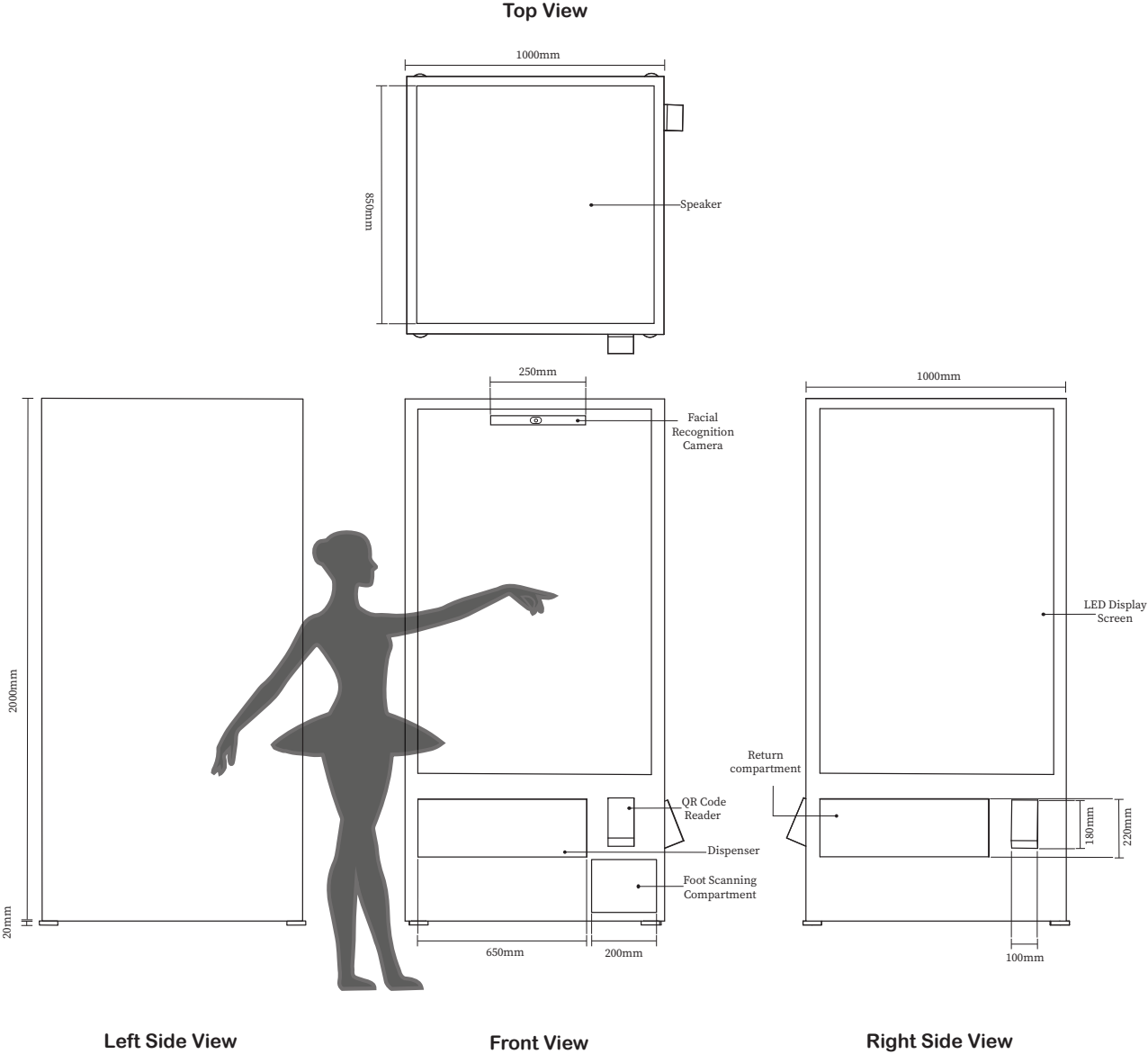
1. App Payment
2. Charge Accounts
3. IC Cards

Description:

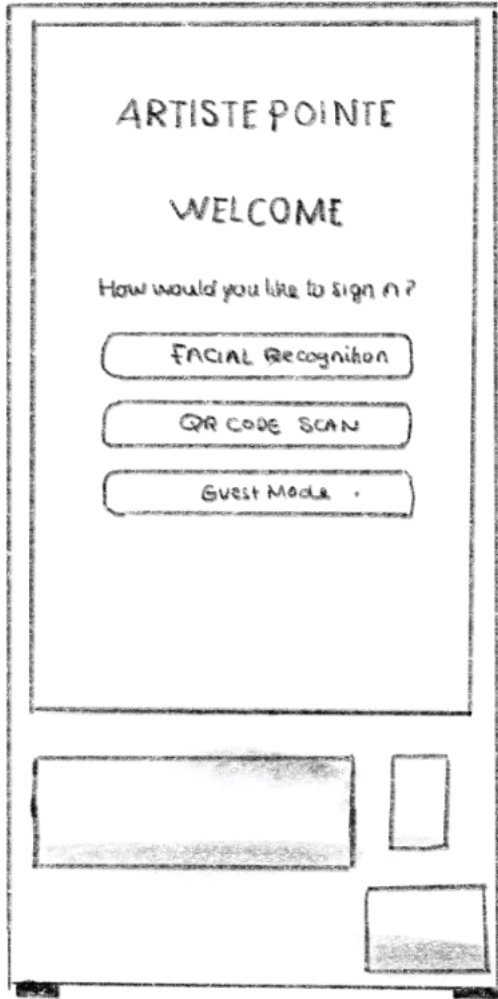
Acure Pass is a platform for convenient drink purchases from vending machines. The app supports single or bulk orders, gift sharing via LINE, Facebook, or Twitter, and includes a map to locate machines. Users enjoy discounts on bulk buys, free drink promotions, and can exchange 30 Acure Points for drinks with an Acure Members account.

VENDING MACHINE

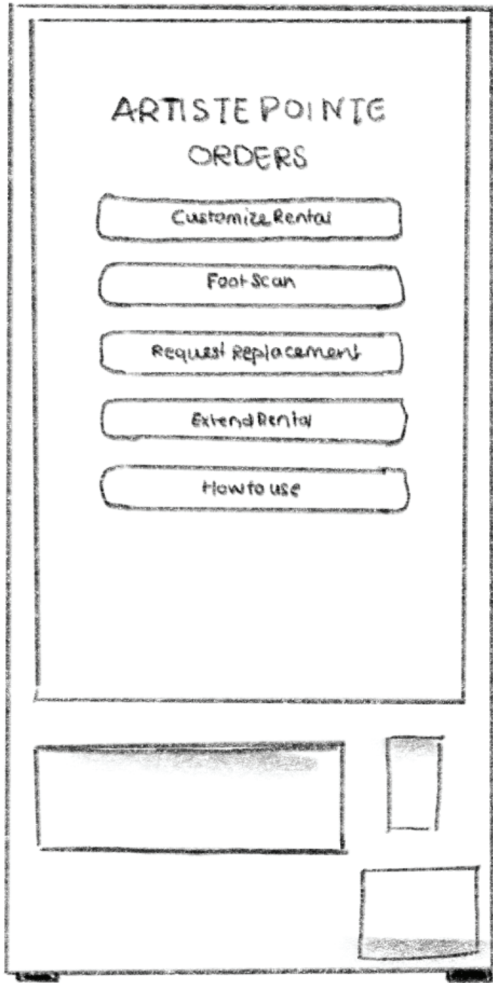
LABELLED USER INTERFACE



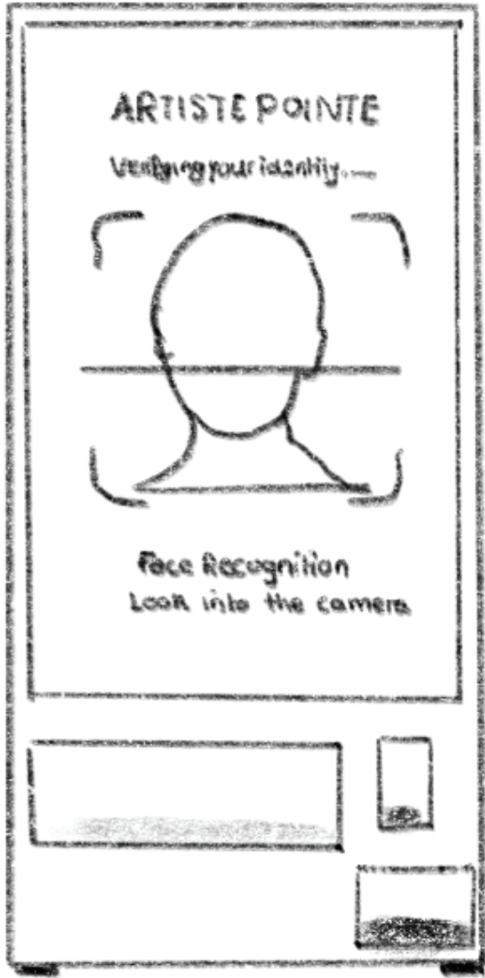
LOFI WIREFRAMES



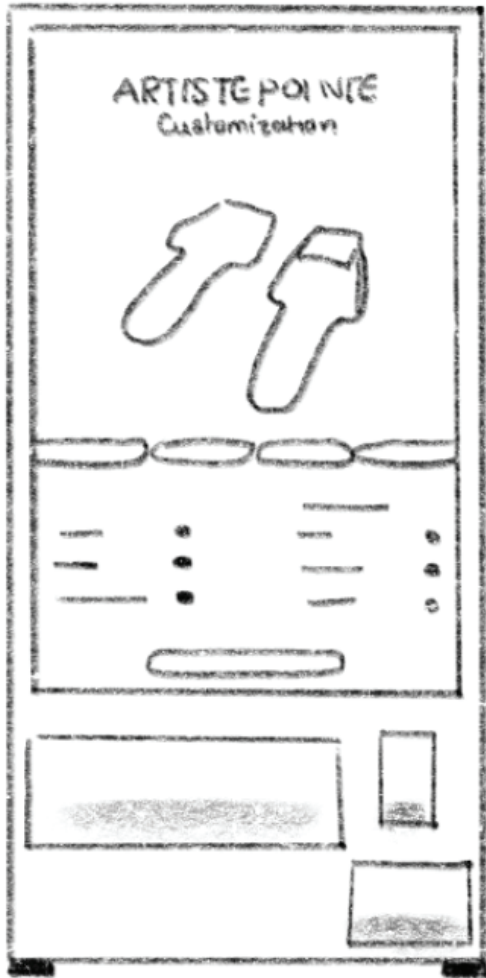
WELCOME SCREEN



ORDER SCREEN

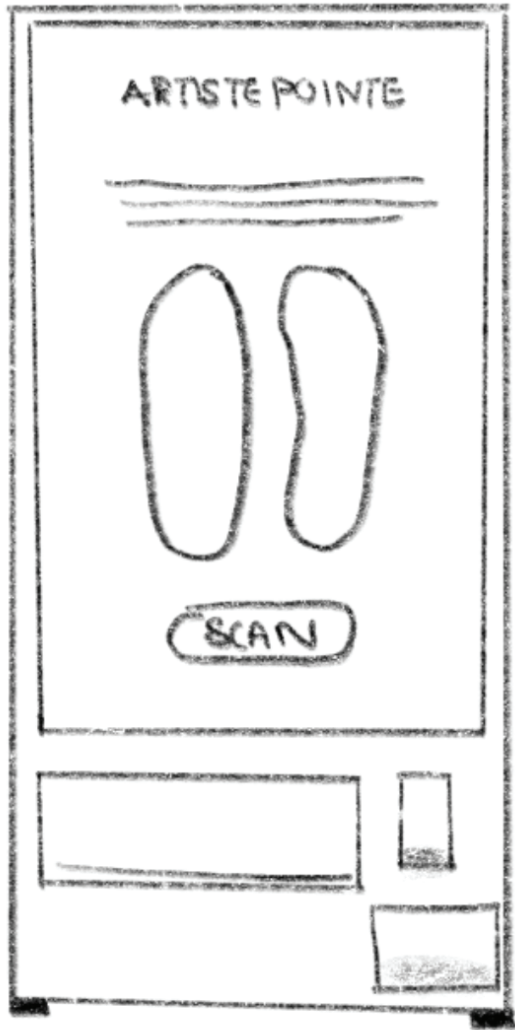


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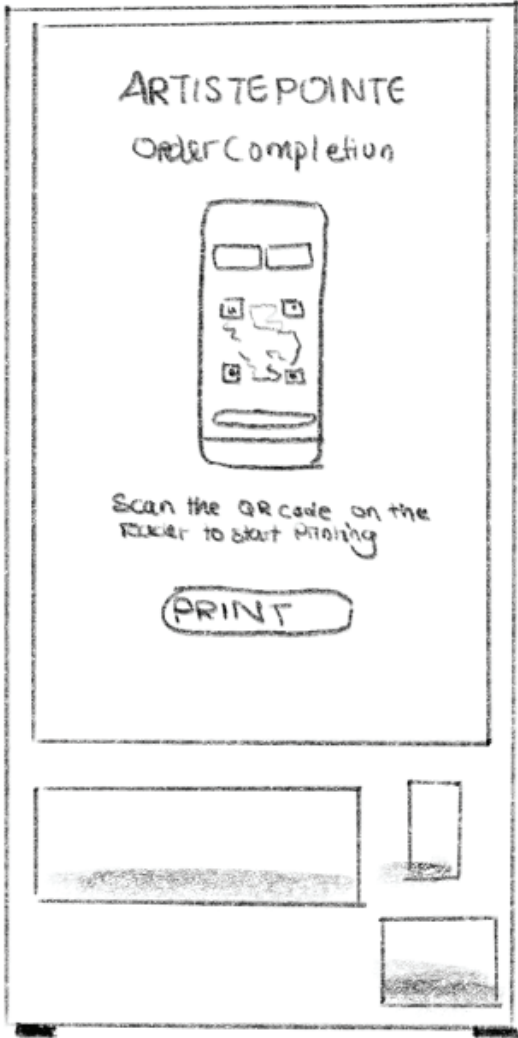


CUSTOMIZATION

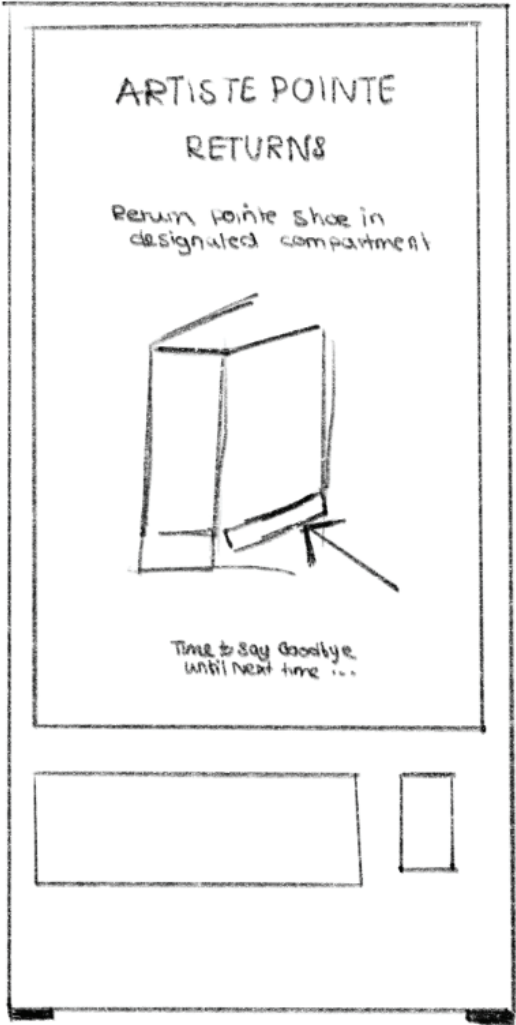
LOFI WIREFRAMES



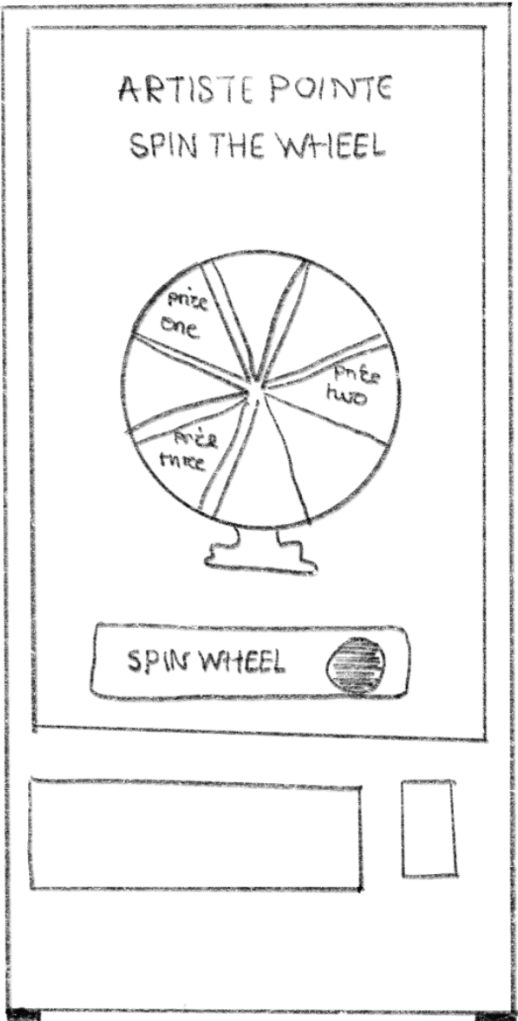
FOOT SCAN



ORDER COMPLETION



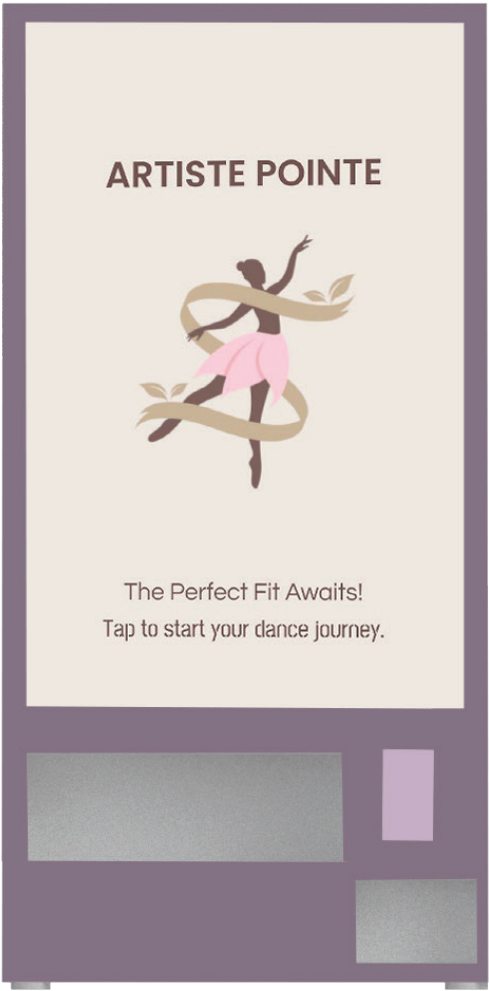
RETURN SCREEN



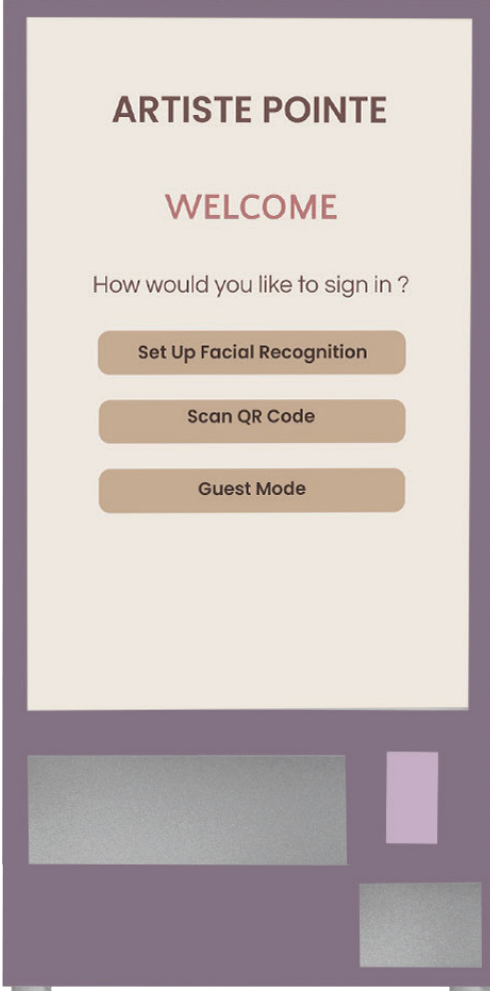
SPIN THE WHEEL

VENDING MACHINE HIFI WIREFRAMES

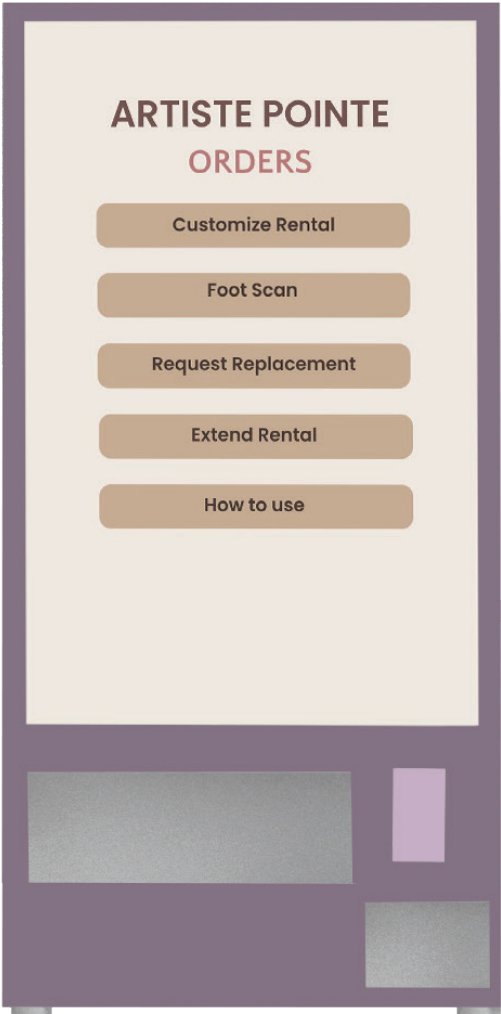
ORDER SCREENS



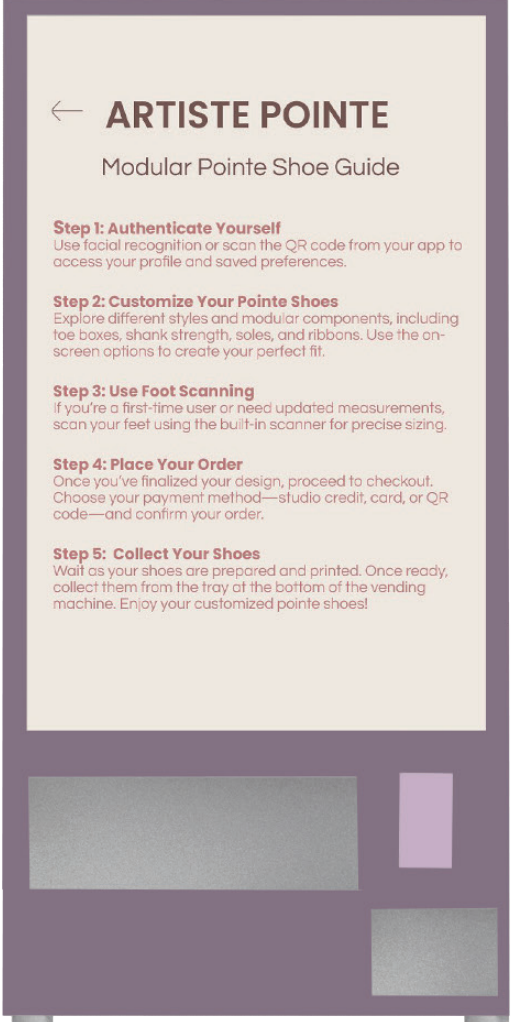
LANDING SCREEN



SIGN IN SCREEN

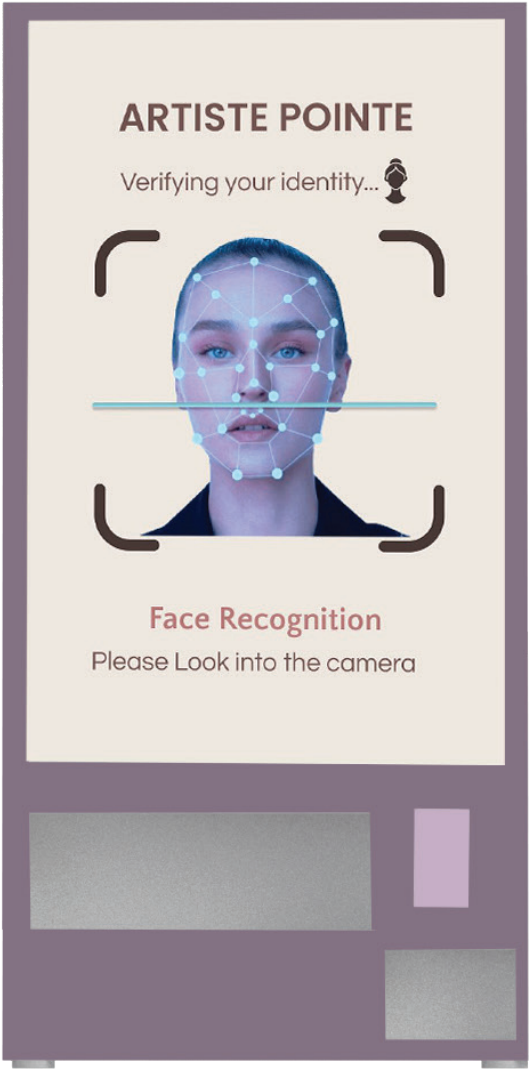


OPTIONS SCREEN

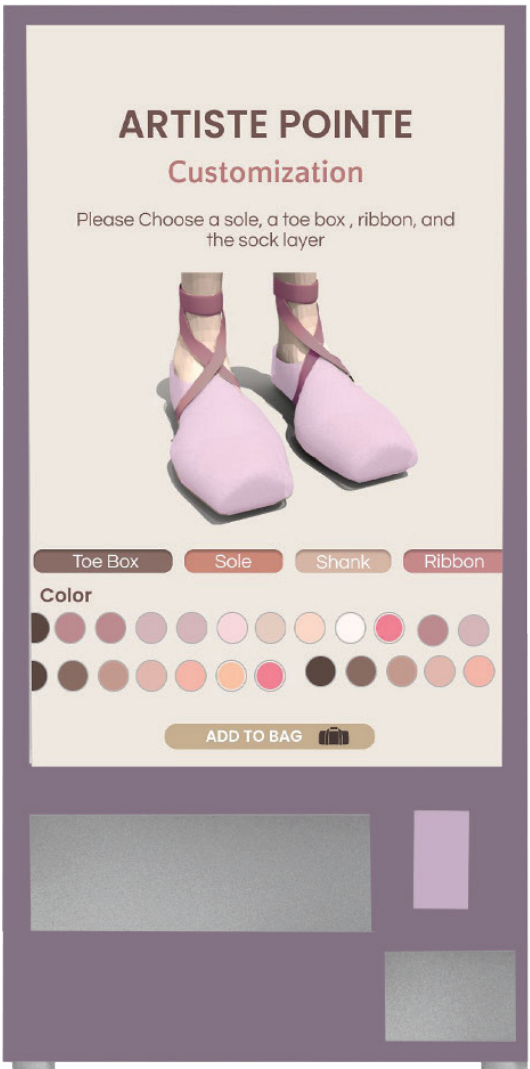


PRODUCT GUIDE

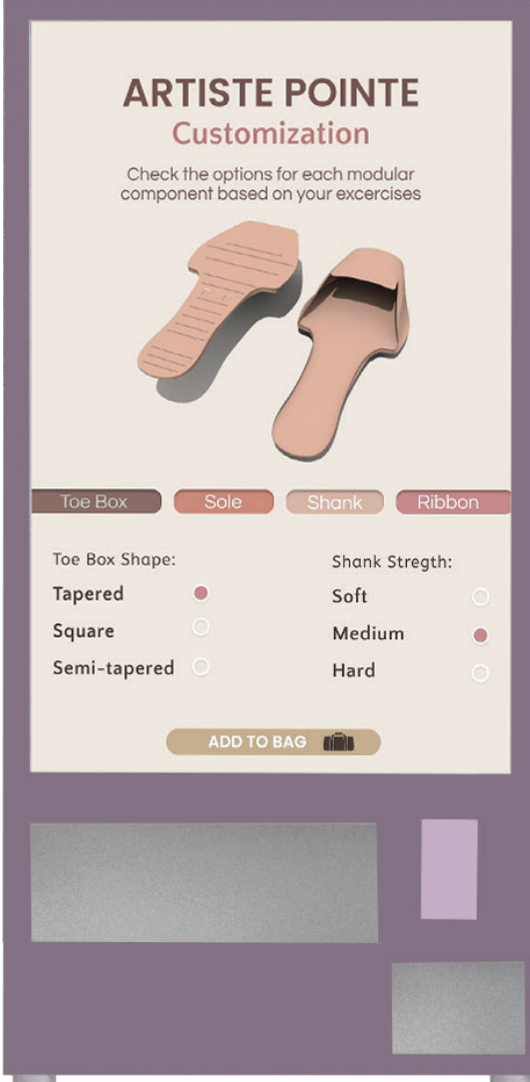
VENDING MACHINE HIFI WIREFRAMES



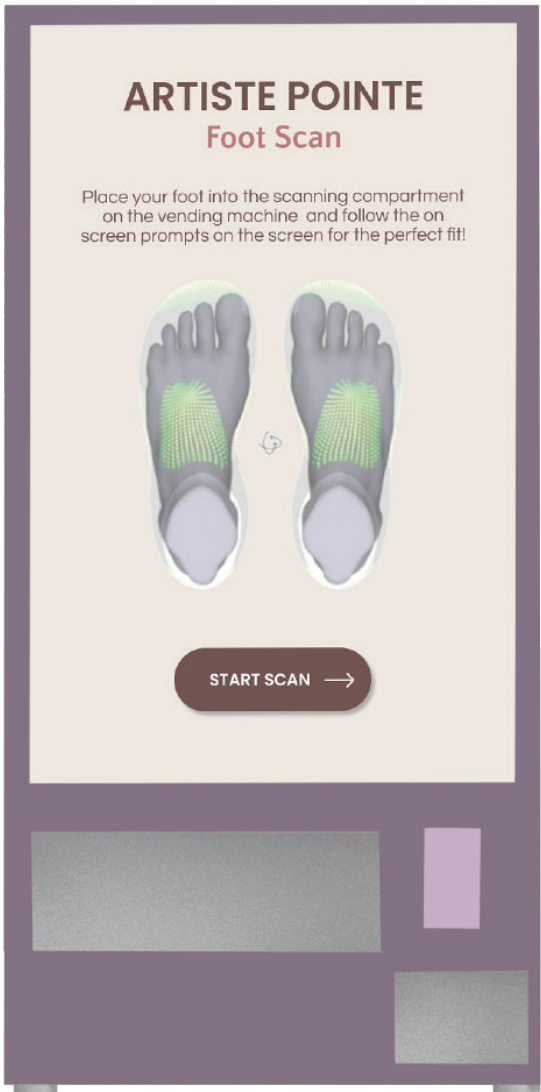
FACIAL RECOGNITION



CUSTOMIZATION



CUSTOMIZATION

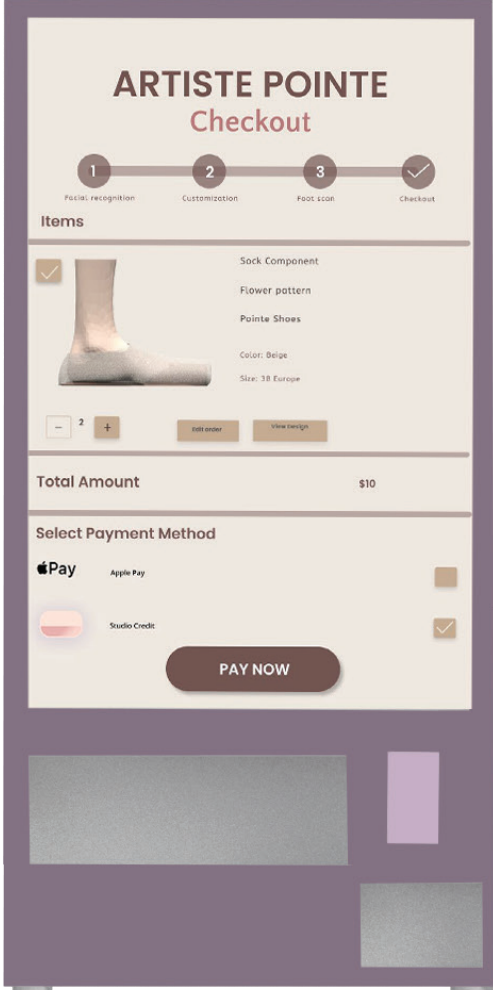


FOOT SCAN SCREEN

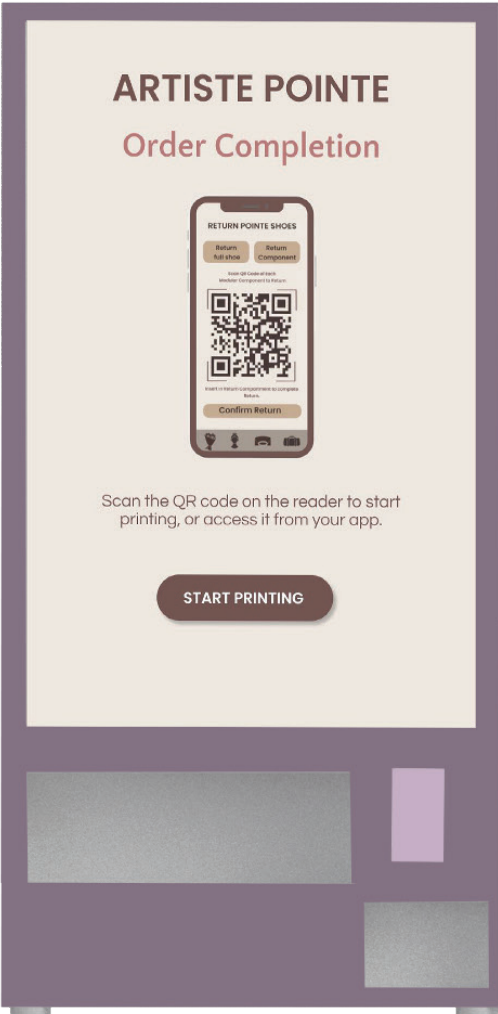
VENDING MACHINE HIFI WIREFRAMES



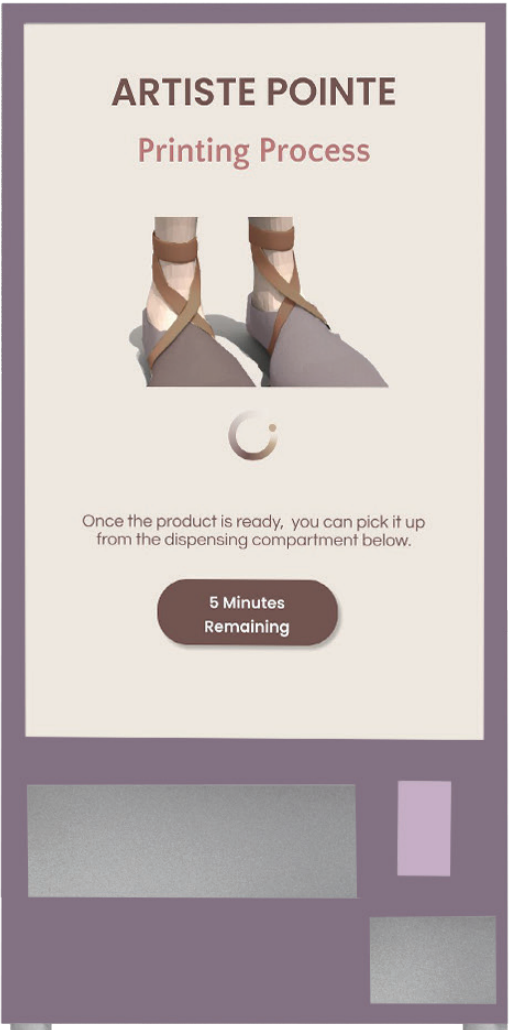
SAVED DESIGNS



CHECKOUT SCREEN



ORDER COMPLETION



PRINTING SCREEN

VENDING MACHINE RETURN INTERFACE

RETURN SCREENS



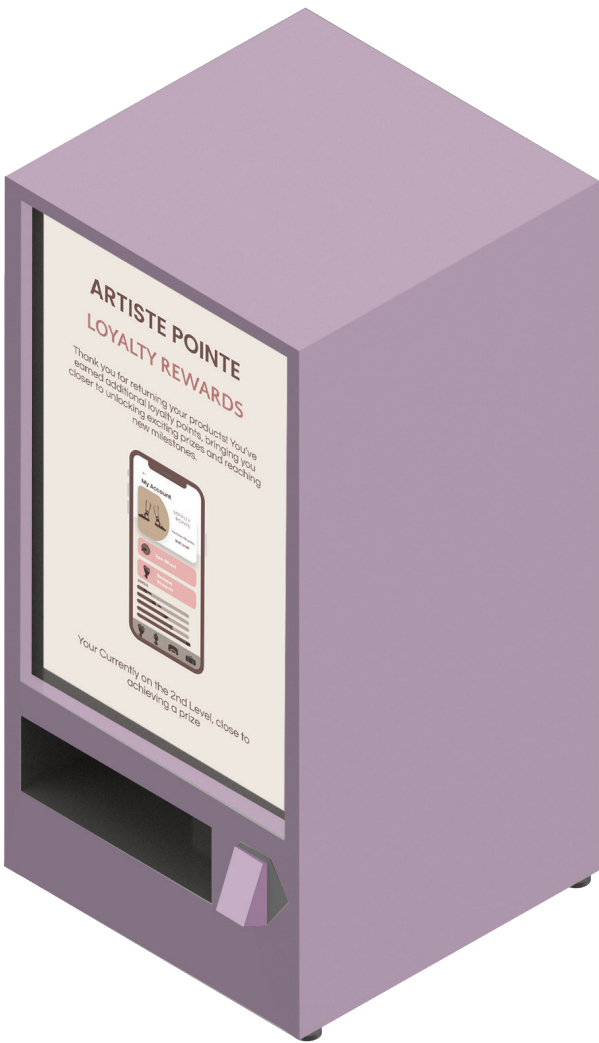
RETURN OPTIONS

RETURN CONFIRMATION

RETURN GUIDE

RETURN COMPLETED

VENDING MACHINE HIFI WIREFRAMES



LOYALTY POINTS



LOYALTY REWARDS



SPIN THE WHEEL



THANK YOU SCREEN

04

PRODUCT-SERVICE

ARTISTE POINTE

*A PREBROKEN-IN POINTE SHOE
PRODUCT-SERVICE*



PROBLEMS SOLVED BY ARTISTE POINTE

TIME-CONSUMING BREAK-IN PROCESS



BREAKING SHANK

SCORING SOLE



BENDING SHANK



GLUING THE TOE BOX

PAIN & FOOT DAMAGE



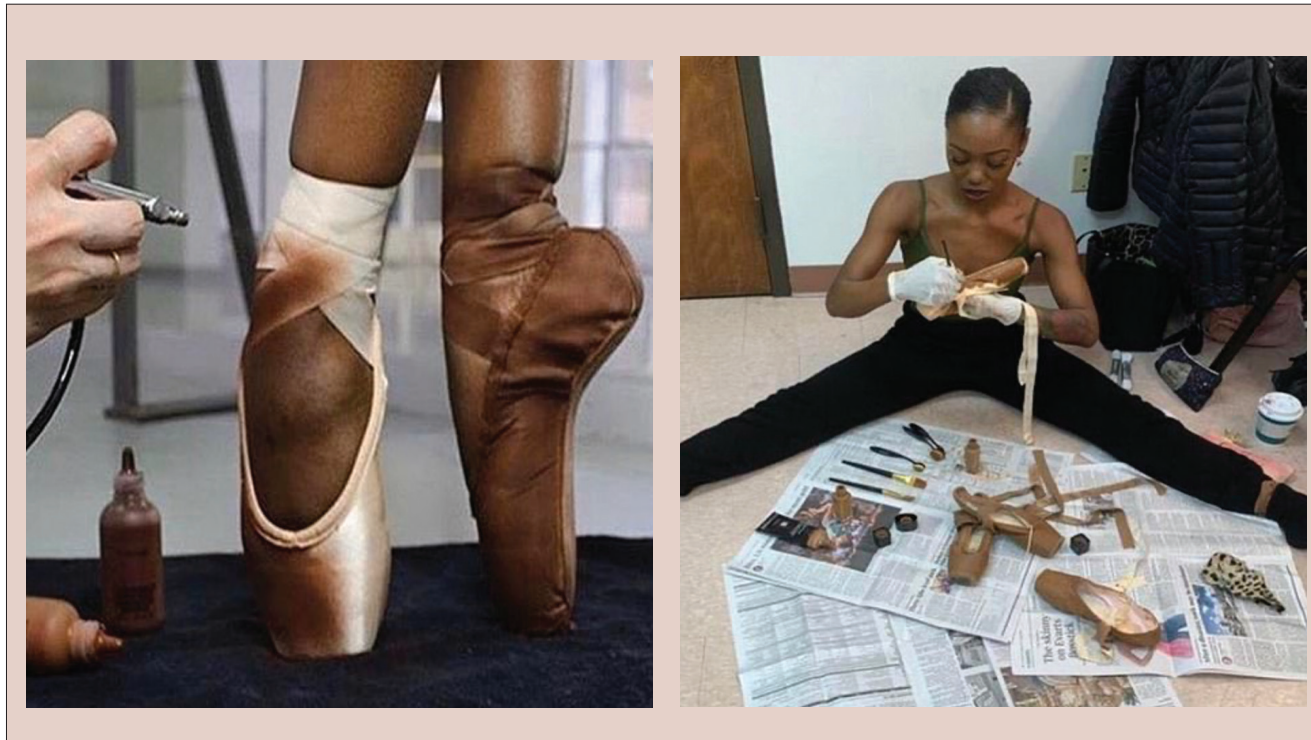
<https://nothingintherulebook.com/2018/10/22/horrible-feet/>

HIGH REPLACEMENT COST



https://www.pinterest.com/pin/AabZUc-ua_vSSShoOjf8xQTMVAPB9_f6z48FmVTFV1_DwkVmHBZ9sPE/

INCLUSIVITY THROUGH CUSTOMIZATION



<https://www.dailymail.co.uk/femail/article-8399337/How-ballerinas-color-pancake-pointe-shoes-brown-makeup-match-skin.htmlHBZ9sPE/>

REDUCES LANDFILL WASTE



AI Generated Image

PRODUCT PRECEDENT



<https://grishkoshop.com>

Brand: Grishko

Product: DreamPointe shoes

Description:

Ballet industry's most popular pointe shoes called DreamPointe, known for advanced support and precision, lightweight, available in multiple widths and sizes.

Industry: Ballet

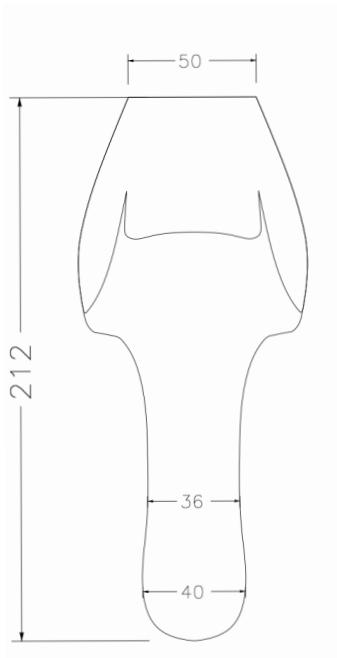
Weight: 5 oz

Dimensions: W8cm X H5cm X L24cm

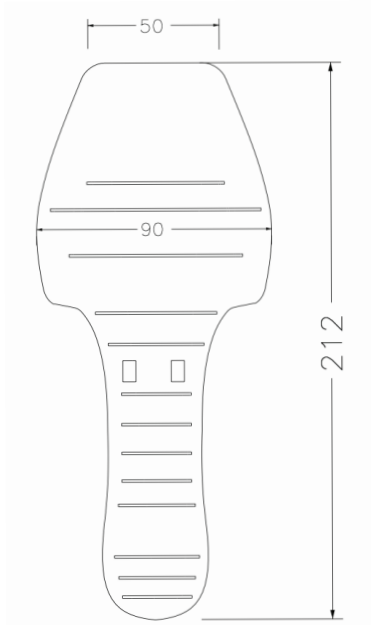
Materials: High quality satin, elacticed bindings/Toe box

PRODUCT DIMENSIONS

SOLE + TOE BOX



TOP VIEW

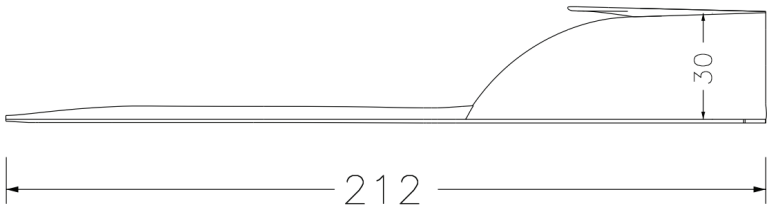


BOTTOM VIEW

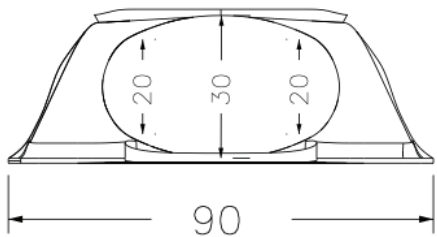


*Dimensions are in mm

COMPONENT

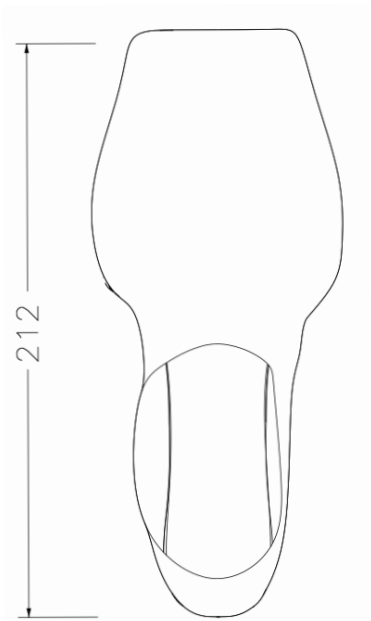


SIDE VIEW

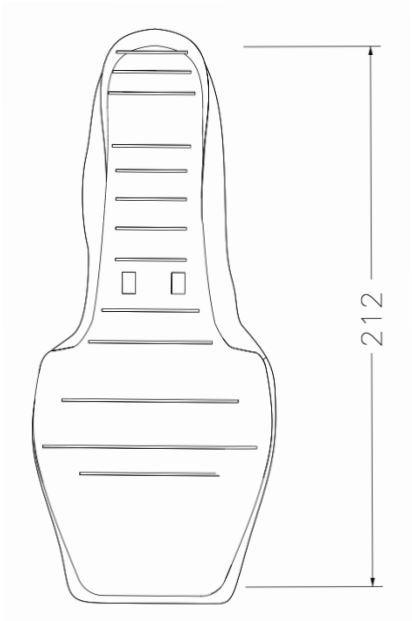


FRONT VIEW

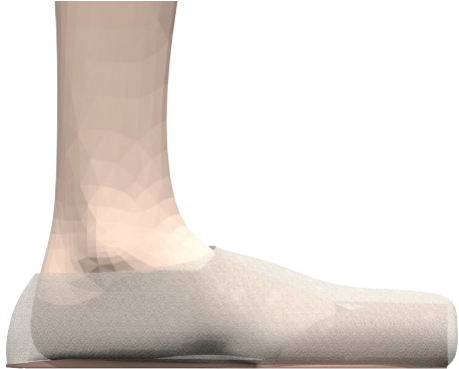
FULL POINTE SHOE



TOP VIEW

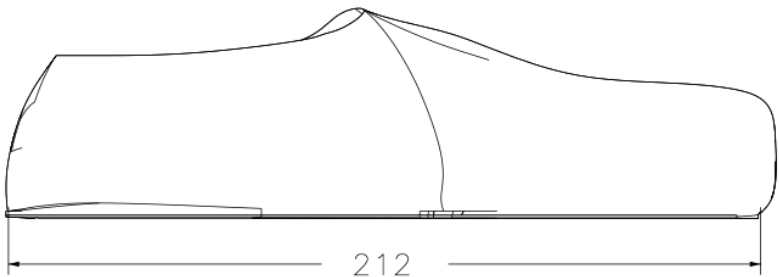


BOTTOM VIEW

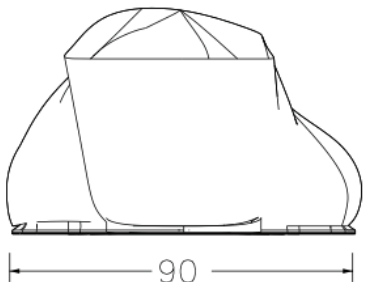


*Dimensions are in mm

COMPONENT



SIDE VIEW



FRONT VIEW

PRODUCT DEMONSTRATION



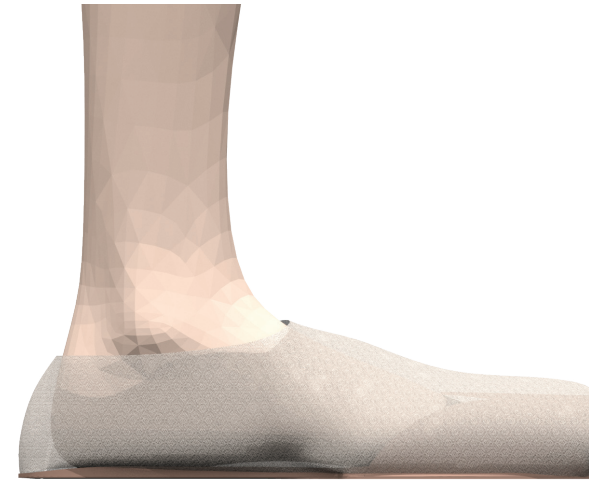
Barefoot Preparation

ensure your foot is clean, dry, and free of any lotions or oils to ensure a secure and comfortable fit of the shoe.



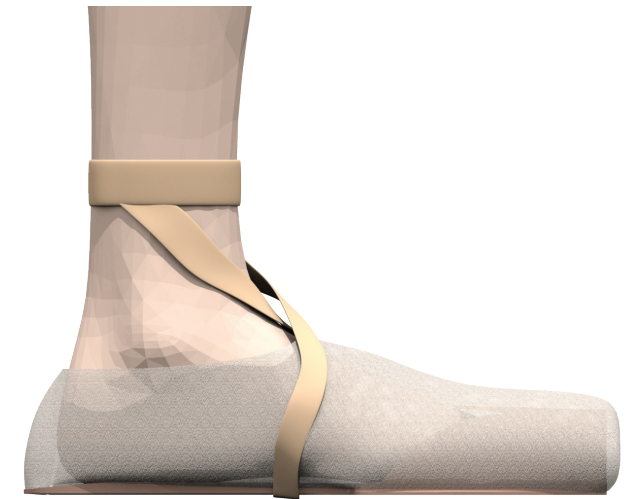
Attach Sole + Toe Box Component

Slide your foot into the main sole and toe box component, securing the base and providing the primary support. Additional option of securing the toe box tightness with adjustable strap offered.



Add Sock Component

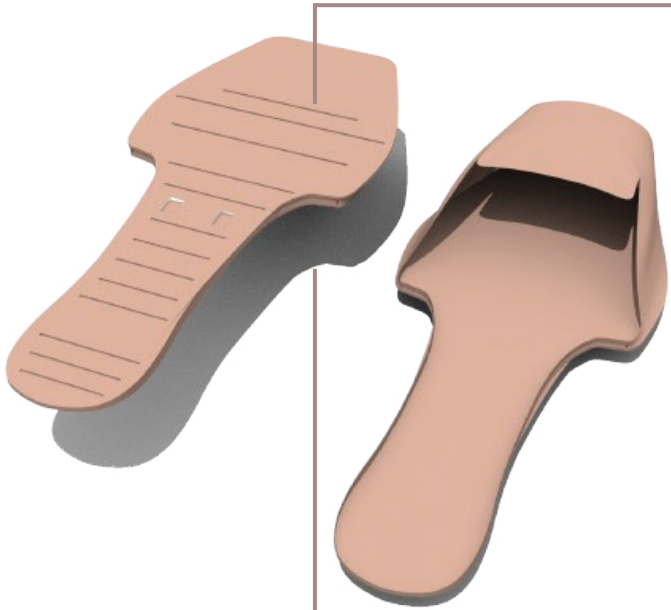
Pull on the soft, sock-like layer over the ankle for additional support and comfort around the foot and ankle. This part mimicks the body of a traditional pointe shoe.



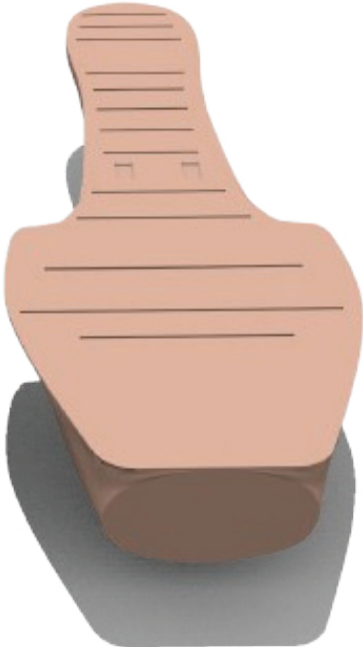
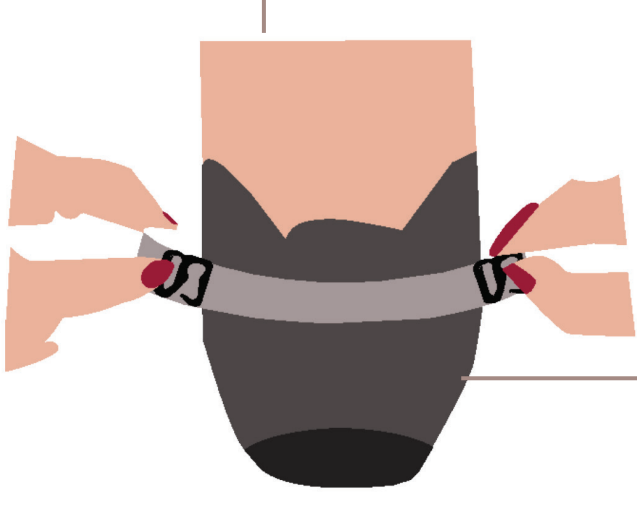
Tie the Ribbon

Insert the ribbon through the slot mechanism at the bottom of the shoe, wrap it around the ankle, and tie it securely to finish the fit.

EXPLORING PRODUCT FEATURES

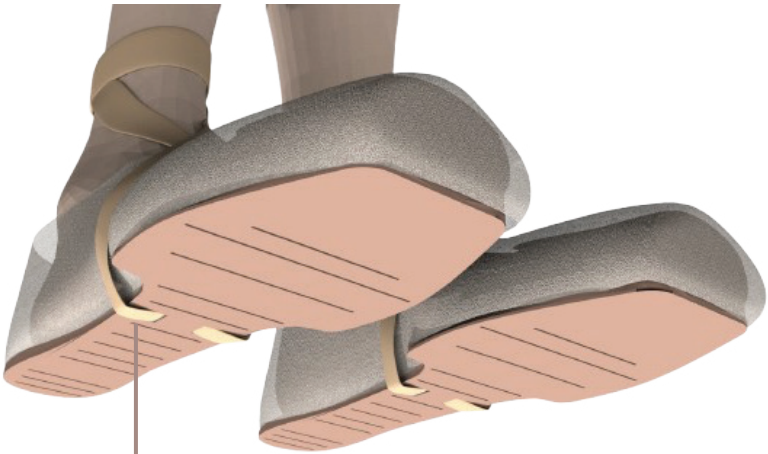


With the toe box and sole as one replaceable component, worn-down areas can be easily swapped without replacing the entire shoe, offering both cost-effectiveness and sustainability.

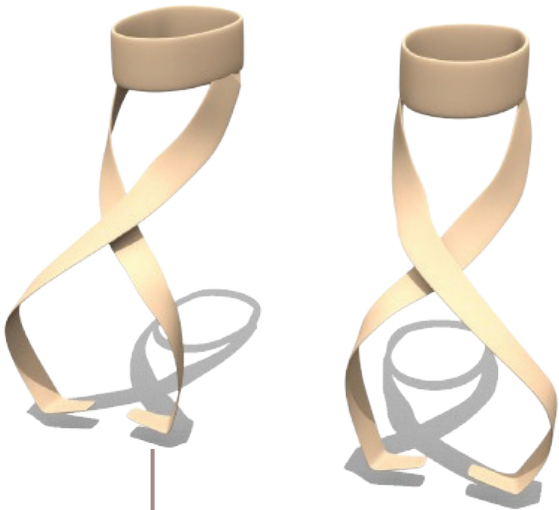
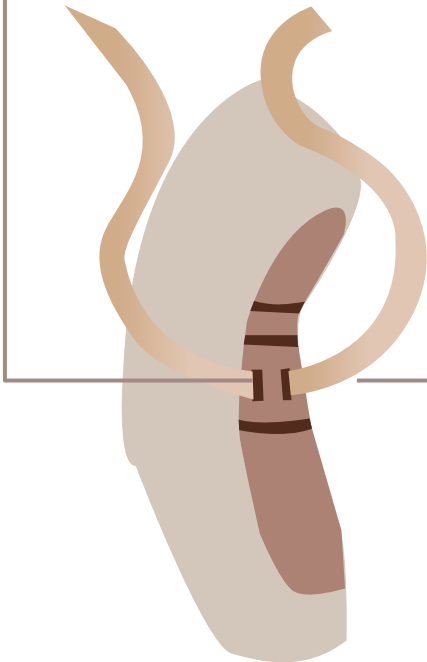


The slits/scoring on the bottom allow the shoe to flex more naturally with the dancer's foot, promoting better foot articulation and minimizing foot fatigue. This Mimicks the role of a already broken- in pointe shoe.

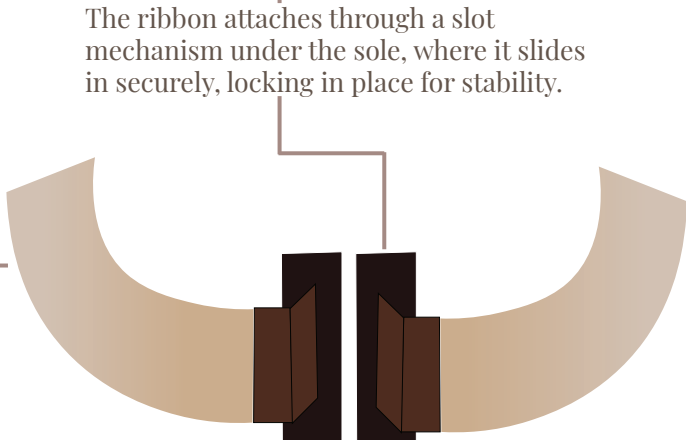
ring and hook mechanism around the toe box with an adjustable strap. This allows dancers to precisely control the tightness across the toe area, something traditionally achieved with tape.



Unlike traditional pointe shoes, Anchoring the ribbon from underneath offers a more secure fit around the foot.

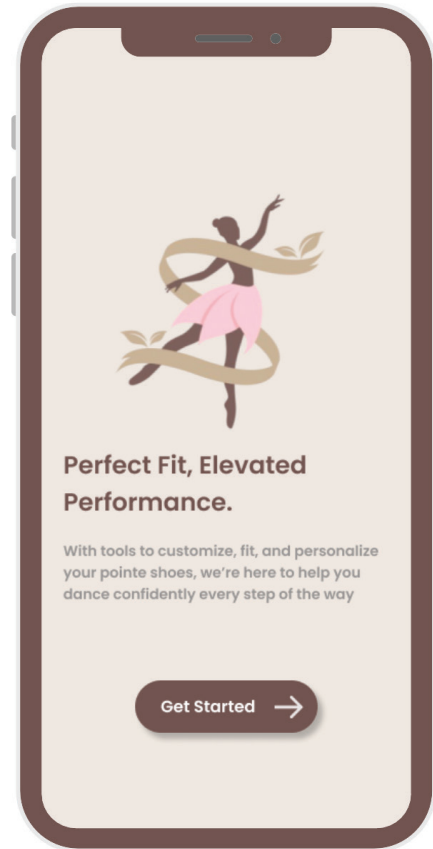


The ribbon is adjustable for customizable ankle support, stays securely in place, and can be removed if dancers prefer dancing without it.

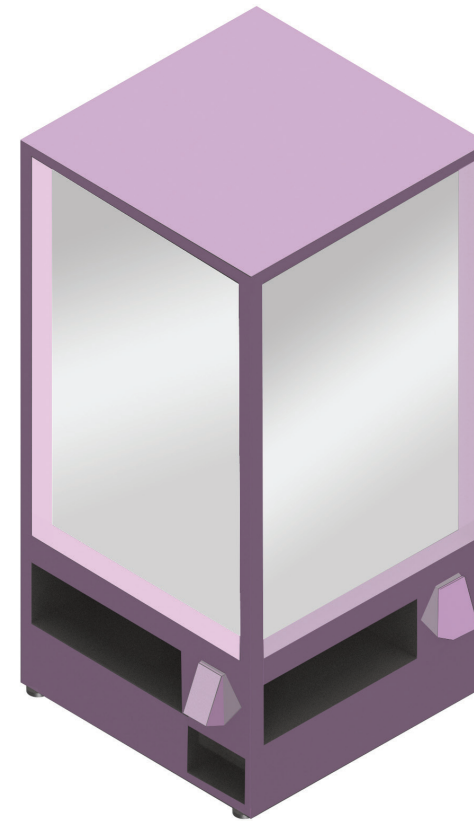


The ribbon attaches through a slot mechanism under the sole, where it slides in securely, locking in place for stability.

EPHERMAL E-COMMERCE VENDING SYSTEM



THE APP



VENDING MACHINE



PRODUCT-SERVICE

PROJECT MANAGEMENT OVERVIEW

Stage 1: Product- Service Development

In the initial phase of my design project, I delved into the conceptualization of modular, pre-broken-in pointe shoes guided by a user-centered design methodology. This exploration began with analyzing the product’s context, usage, demographic, and historical significance, uncovering the pain points associated with traditional pointe shoes, such as the arduous breaking-in process and discomfort. I examined the dimensions of standard pointe shoes and compared them to their broken-in state to understand the structural differences and replicate the broken-in effect. Recognizing the need for customization and ease, I decided to design the shoes as modular components, allowing for seamless mimicry of the broken-in feel. Later in the semester, I revisited this stage to develop a 3D model in Rhino, integrating insights gained into three modular components with broken-in features: the toe box/sole component, a sock-like layer, and the ribbon system. The purpose of Stage 1 was to establish a comprehensive understanding of the product’s technical and ergonomic aspects, laying a solid foundation for subsequent stages of development.

Stage 2: Vending Machine Development

In the second phase of my design project, spanning Weeks 3-7, I focused on developing the vending machine as the centerpiece of Artiste Pointe’s ephemeral e-commerce system. This began with creating scenario maps to analyze user interactions, particularly for first-time users, detailing their journey from placing an order to assembling and returning modular pointe shoe components. A navigational diagram was developed to map the interface’s functionality, which helped me design a user-friendly interface by simplifying interactions and ensuring intuitive navigation through the machine’s features. I then created a 3D model of the vending machine, followed by orthographic dimensions to ensure accuracy and appropriateness before placing it into ballet studio spaces. This included analyzing user flow, accessibility, and spatial integration. This phase balanced digital and physical elements, ensuring the vending machine provided an intuitive, accessible, and engaging user experience.

Stage 3: App Development

In Stage 3 of this design project, the focus was on developing an app to complement the vending machine system. I began by creating an app design sitemap to map out navigation between pages, ensuring seamless user flow. To draw inspiration for features and design, I conducted a precedent analysis of apps like Steezy and Level Shoes, identifying key elements to incorporate. This process started with low-fidelity (LoFi) wireframes for key pages such as the home page, customization options, and checkout. These were refined into high-fidelity (HiFi) wireframes, integrating fonts, colors, and graphics for a polished, user-friendly design. This iterative process ensured a visually appealing and functional app tailored to the needs of dancers and studios.

Stage 4: Vending Machine Interface Development

The fourth phase involved designing the vending machine interface, featuring two LED screens with distinct user interfaces—one for ordering and another for returning shoes. Inspired by the visual design of the Japanese company ACURE, I sketched static illustrations for key screens, such as “Order” and “Return,” detailing user interactions. Low-fidelity wireframes outlined the layout and functionality of the menus, while high-fidelity wireframes added polished visuals and graphics. This phase ensured a cohesive experience between the vending machine and the app, emphasizing simplicity and accessibility.

Stage 5: The Booklet

The final phase culminated in the creation of a presentation booklet that documented the entire Artiste Pointe system. It detailed the journey of the app, vending machine, and modular pointe shoe development, highlighting their integration into an ephemeral e-commerce solution. The booklet provided clear visuals and instructions for app use, vending machine operation, and shoe assembly. It also emphasized the system’s sustainability through its closed-loop recycling process. Designed for both novice and professional dancers, the booklet tied together the vision, process, and outcomes of Artiste Pointe into a cohesive narrative.

PROJECT MANAGEMENT OVERVIEW

