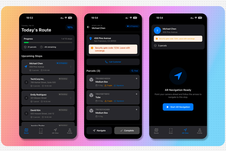
case study - 2025

DropAR

Reimagining Last-Mile Delivery through Augmented Reality

Role	Timeline	Domain	Tools
Product Designer	6 Weeks	AR · Mobility Tech · Logistics	Figma, After Effects (AE motion charting), research interviews + shadowing



Primary Dashboard Interface in real time

Background

Last-mile delivery remains the most expensive and error-prone part of logistics accounting for nearly 53% of total shipping cost. Drivers deal daily with confusing addresses, heavy workloads, and constant switching between navigation, calls, and apps.

dropAR was designed to merge real-world navigation and digital workflow into one seamless augmented experience allowing drivers to focus on the road, not the screen.

The Challenge

Delivery agents face three recurring friction points:

- Difficulty locating precise drop-off points in dense neighborhoods
- Cognitive overload from switching between navigation and delivery apps
- Manual input and verification errors causing delays

My Objective

To create an AR-assisted mobile experience that simplifies last-mile delivery by:

- Providing context-aware, real-time guidance
- Reducing mental effort and screen dependency
- Streamlining scan-to-deliver workflow

53% shipping cost

35% higher task load

The Solution

dropAR overlays digital intelligence on the physical world using AR navigation, voice guidance, and smart recognition to simplify each delivery step.

Core features

- AR Navigation View: dynamic route arrows projected onto real environments
- Smart Parcel Scan: automatic recognition and verification of package IDs
- Voice Workflow: spoken updates and commands to reduce touch interaction
- Doorstep Precision Mode: detects entrances and improves micro-location accuracy

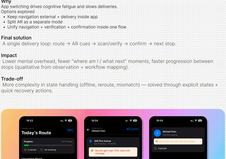
Design Methodology

Architectural efficiency through intelligent integration

A look into how I streamlined the design lifecycle by embedding AI at key friction points, speeding delivery without losing structural clarity.

How I used AI to move faster

01	Discovery & Synthesis	Used LLMs to cluster interview notes faster, so I could pivot earlier without waiting days to "finish research".
02	Information Architecture	Generated edge case paths (signal loss, reroutes, mismatch flows) and validated the logic against real delivery snags.
03	Content & Microcopy	Explored tone variants for voice prompts + error states, then rewrote with real delivery context (no generic copy).
04	Prototyping & Iteration	Accelerated layout options + interaction variations, keeping human focus on motion clarity and safety.
05	Quality Assurance	Used structured checklists for states + accessibility: glare readability, contrast, touch targets, offline behavior.



Design Decisions

Decisions & Impact

An architectural breakdown of the key product decisions that shaped dropAR's core experience.

Decision 01

Consolidated Delivery Workflow (No App Switching)

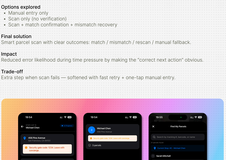
Why
App switching drives cognitive fatigue and slows deliveries.

Options explored
- Deep navigation external + delivery inside app
- Split AR as a separate mode
- Unify navigation + verification + confirmation inside one flow

Final solution
A single delivery loop: route → AR cues → scan/verify → confirm → next stop.

Impact
Lower mental overhead, fewer "where am I / what next" moments, faster progression between stops (qualitative from observation + workflow mapping).

Trade-off
More complexity in state handling (offline, reroute, mismatch) — solved through explicit states + quick recovery actions.



Decision 02

AR Cues Over Addresses

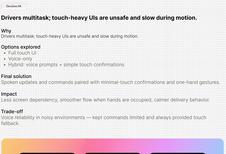
Why
Addresses alone fail in dense areas; drivers use landmarks and visual memory.

Options explored
- Stronger map UI
- Text-based step guidance
- AR camera overlay with directional cues

Final solution
Camera view becomes the primary navigation surface, with route arrows and contextual cues.

Impact
Faster orientation at the last 20–50 meters, less second-guessing entrances and drop points (behavioral insight driven).

Trade-off
Visibility issues in glare/bright light — handled with contrast-first UI and simplified overlays.



Decision 03

Smart Parcel Scan With Verification States

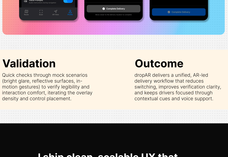
Why
Manual input + verification mistakes cause delays and escalations.

Options explored
- Manual entry only
- Scan only (no verification)
- Scan + match confirmation + mismatch recovery

Final solution
Smart parcel scan with clear outcomes: match / mismatch / rescan / manual fallback.

Impact
Reduced error likelihood during time pressure by making the "correct next action" obvious.

Trade-off
Extra step when scan fails — softened with fast retry + one-tap manual entry.



Decision 04

Drivers multitask; touch-heavy UIs are unsafe and slow during motion.

Why
Drivers multitask; touch-heavy UIs are unsafe and slow during motion.

Options explored
- Full touch UI
- Voice only
- Hybrid voice prompts + simple touch confirmations

Final solution
Spoken updates and commands paired with minimal-touch confirmations and one-hand gestures.

Impact
Less screen dependency, smoother flow when hands are occupied, calmer delivery behavior.

Trade-off
Voice reliability in noisy environments — kept commands limited and always provided touch fallback.

Validation

Quick checks through mock scenarios (bright glare, reflective surfaces, in motion gestures) to verify legibility and interaction safety. Iterated on the overlay density and control placement.

Outcome

dropAR delivers a unified, AR-led delivery workflow that reduces switching, improves verification clarity, and supports safer navigation through contextual cues and voice support.

I ship clean, scalable UX that respects constraints and delivers measurable outcomes.

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