

PLUTUS AI

THE COLLECTORS UNFAIR ADVANTAGE

TEAM 9



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Antique Industry Overview

Pricing is manual, subjective, inconsistent

Lack of tech used in the field = behind times (inventory + pricing issues)

Item expertise is not easily accessible

Multi-Billion \$\$\$ Industry in Collectables + Antiques

+**\$111B**

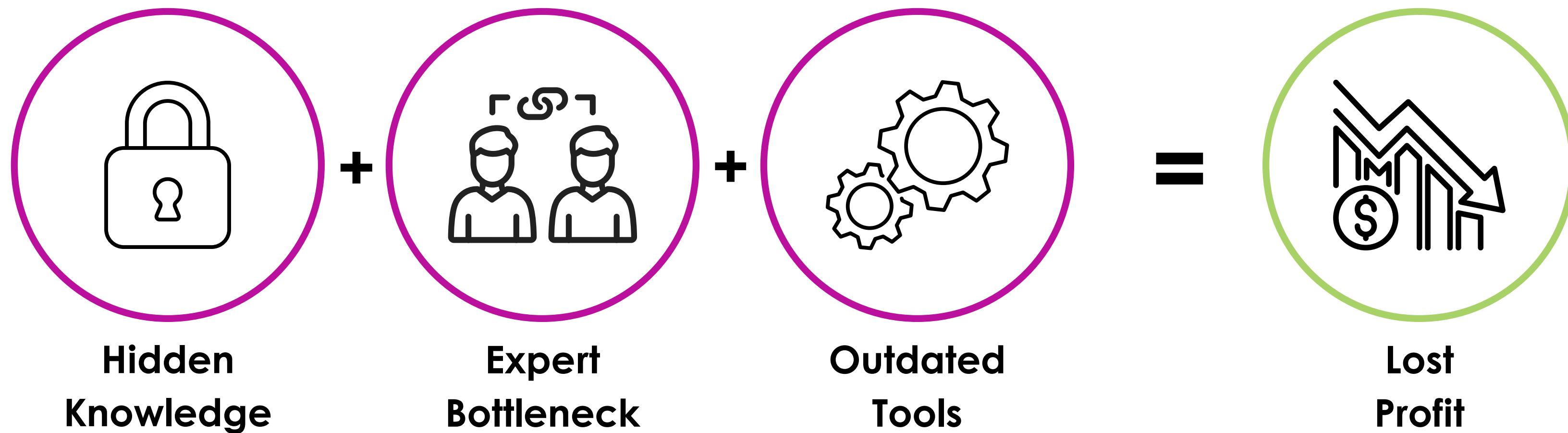
GLOBAL MARKET OPPORTUNITY

+**30%**

PROJECTED MARKET GROWTH BY 2029

The Problem

Why antique valuation is slow, costly, and inconsistent.



Average Antique Valuation Today



**4 – 6 weeks
for one professional appraisal**

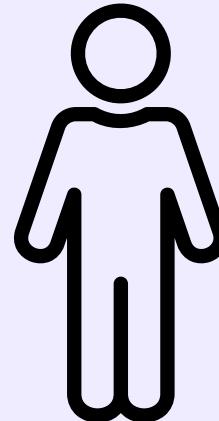
**Online listings
are often mis-priced**



Target Industry Players

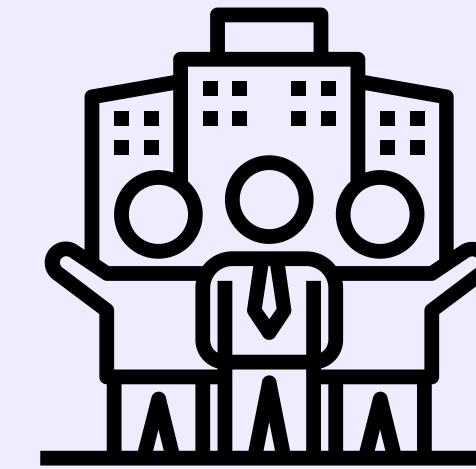
Small players

- Local antique shops
- Individual collectors
- Resellers and dealers
- Estate sale companies
- Garage sale sellers

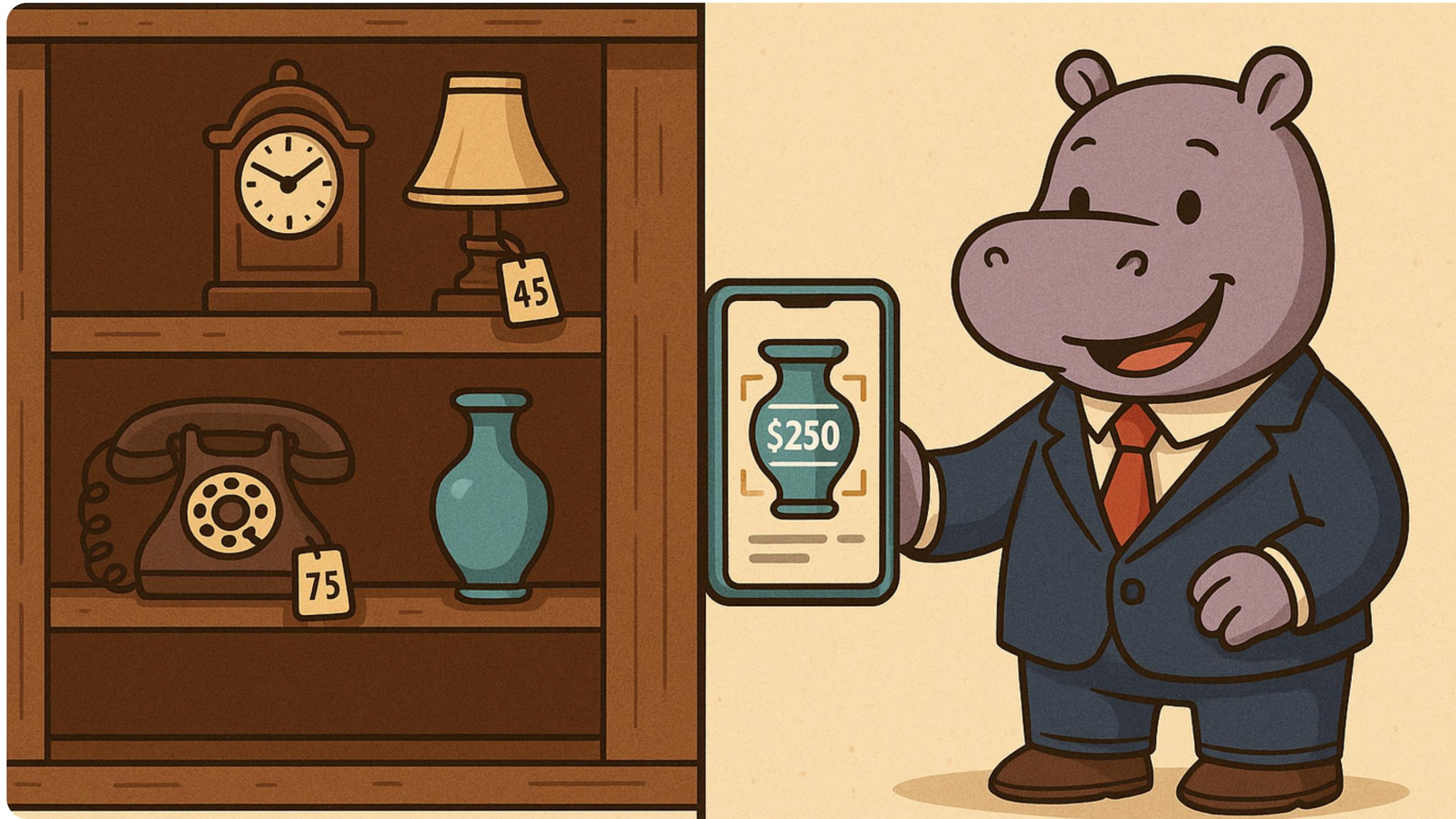


Large Players

- Online marketplaces
- Auction houses
- Appraisers and valuation experts
- Insurance claims

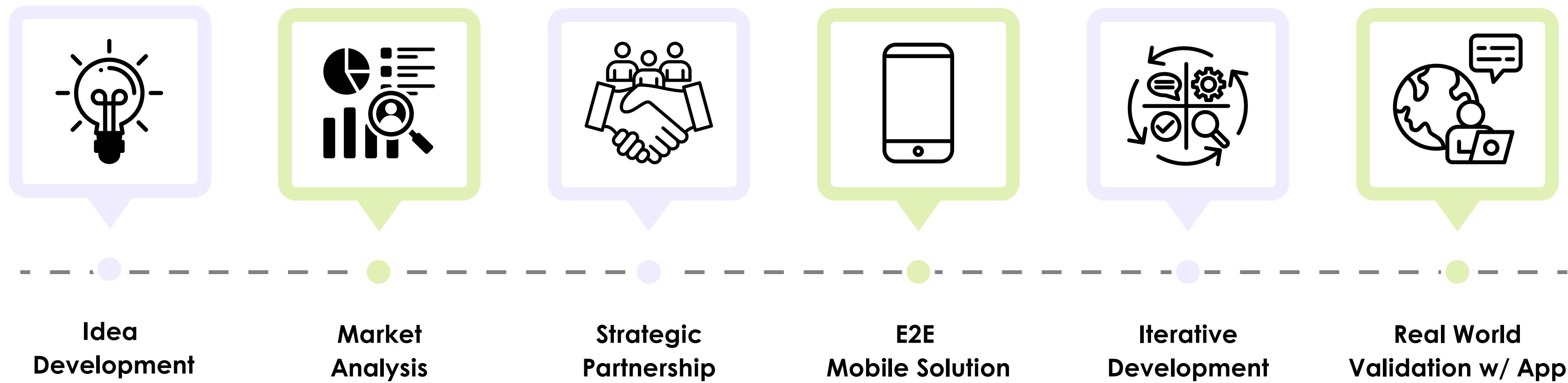


Vision



Digitally transform a lagging industry by leveraging
Computer Vision + Artificial Intelligence

Methodology



Project Scope & Objectives



Partnered with Rewind
Consignment & Vintage

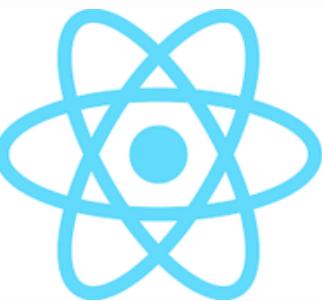
Build a mobile-first valuation assistant

Enable item identification via image
detection

Store and manage collections

Enrich with metadata and historical
pricing

Core Frontend Development



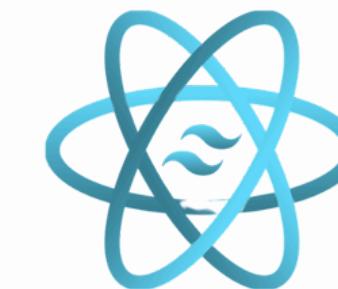
REACT

Mobile app development framework.



EXPO

Mobile app development sandbox (iOS/Android)



NATIVEWIND

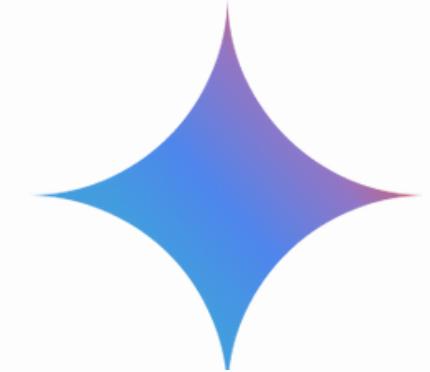
Styling for mobile app

Computer Vision / AI Integration / Data Management



ROBOFLOW

Image annotation, model
training (YOLOv12),
augmentation



GEMINI

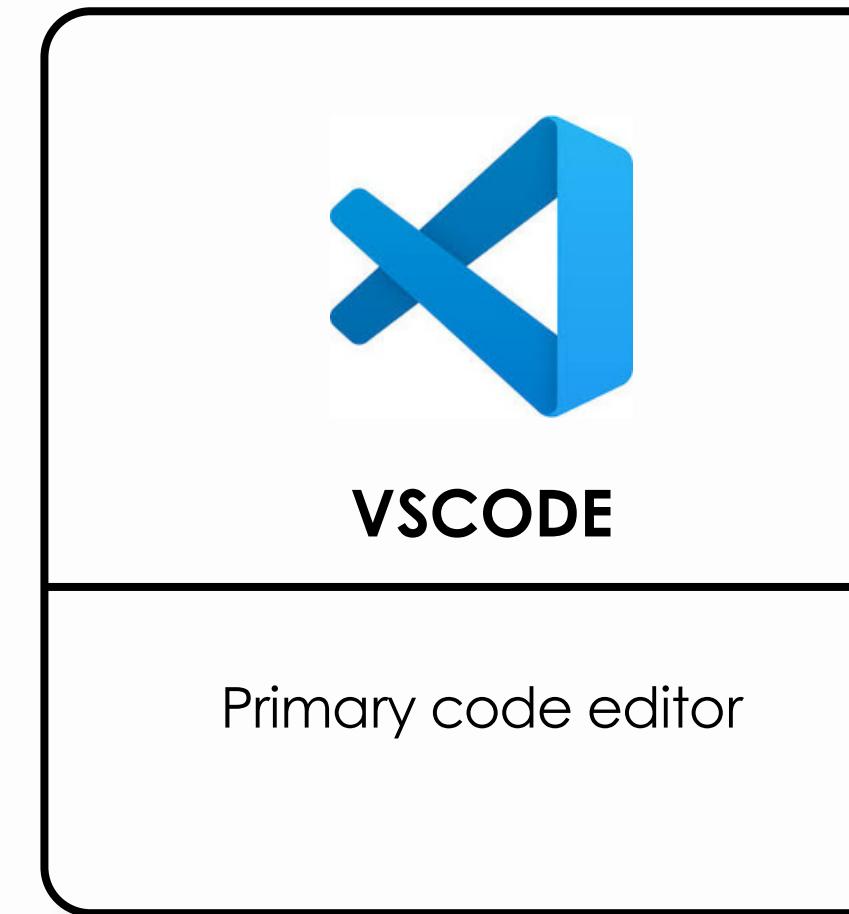
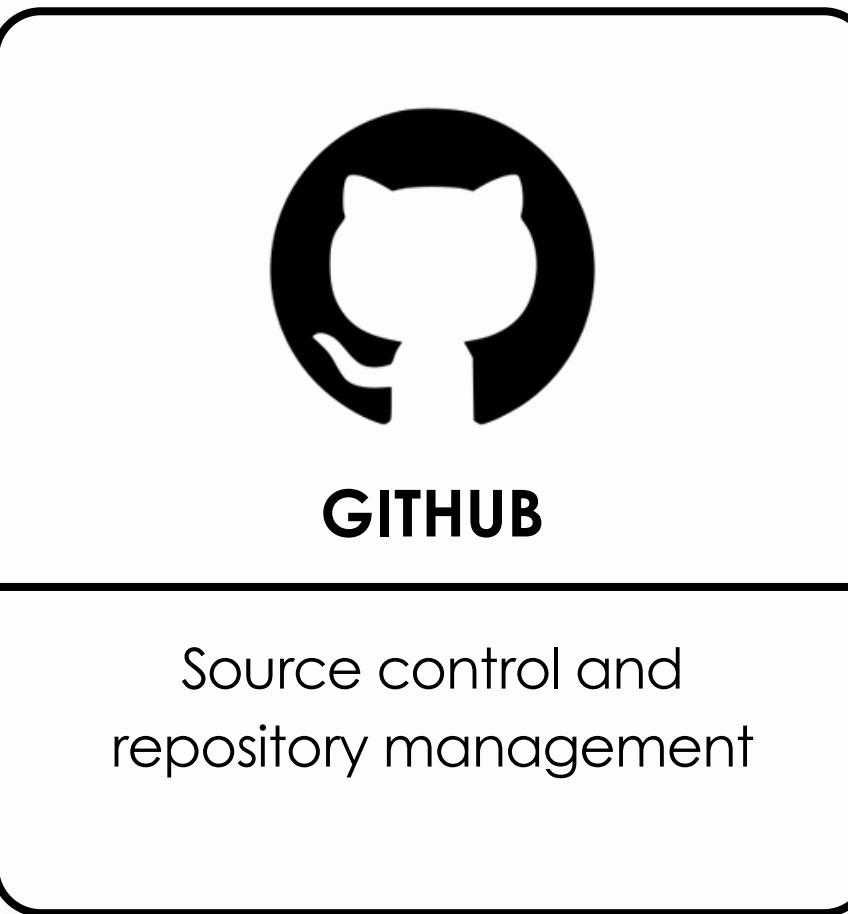
LLM for real-time price
estimation



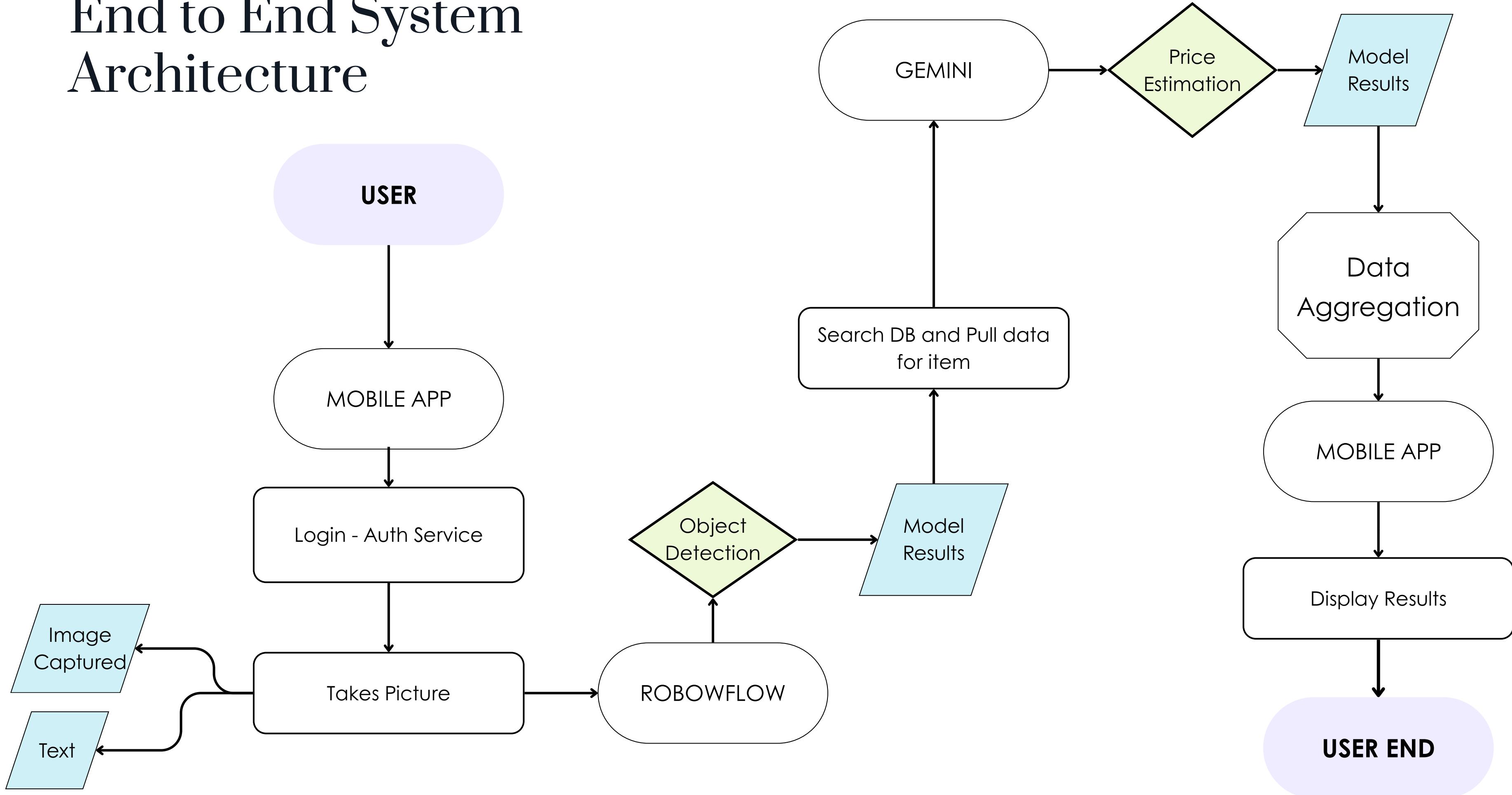
SUPABASE

Cloud Database, Storage,
Authentication

Development Environment and Support Tools



End to End System Architecture



Data Collection

Phase 1: In-Store Capture

- 25 items selected
- Standardized multi-angle imaging protocols



Phase 2: Marketplace Comparison

Metadata manually extracted from eBay, 1stDibs

A screenshot of an eBay listing for a vintage Mexican Folk Art Pottery Turtle Shaped Casserole Serving Piece with Lid. The item is shown in a large central image, which is a 3D rendering of the turtle. To the left of the main image is a vertical stack of smaller thumbnail images showing different angles of the item. The listing includes the seller's profile (maxinoesterlin0), item condition (Used), price (US \$145.00), and purchase options (Buy It Now, Add to cart, Make offer, Add to Watchlist). The item is described as having "Excellent condition. No cracks or chips."

Included historical sales prices, condition notes, item descriptions.

Data Collection

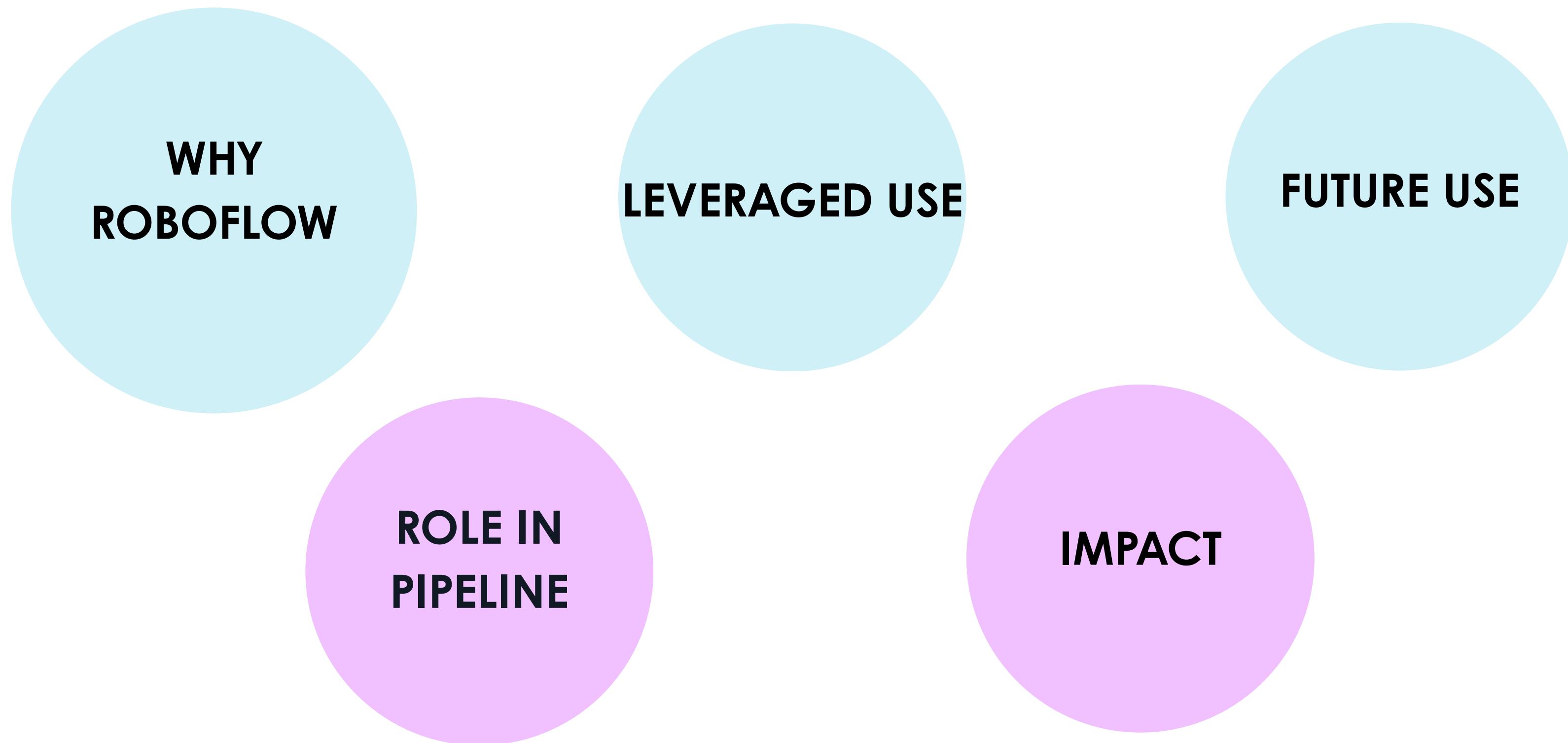
Challenges Addressed

- Manual entry of missing data.
- Standardization to resolve inconsistent labeling.
- Geographic tagging to correct for regional price bias.

Dynamic Data Collection

- User scans uploaded in real-time to Supabase.
- Metadata, Roboflow inferences, and Gemini valuations stored per scan.

Roboflow Training



Why YOLOv12

mAP@50 99.0% 

Precision 99.7% 

Recall 98.8% 

YOLOv12 Object
Detection (Accurate)

mAP@50 99.2% 

Precision 98.2% 

Recall 98.4% 

YOLOv11 Object
Detection (Accurate)

mAP@50 98.8% 

Precision 97.4% 

Recall 97.8% 

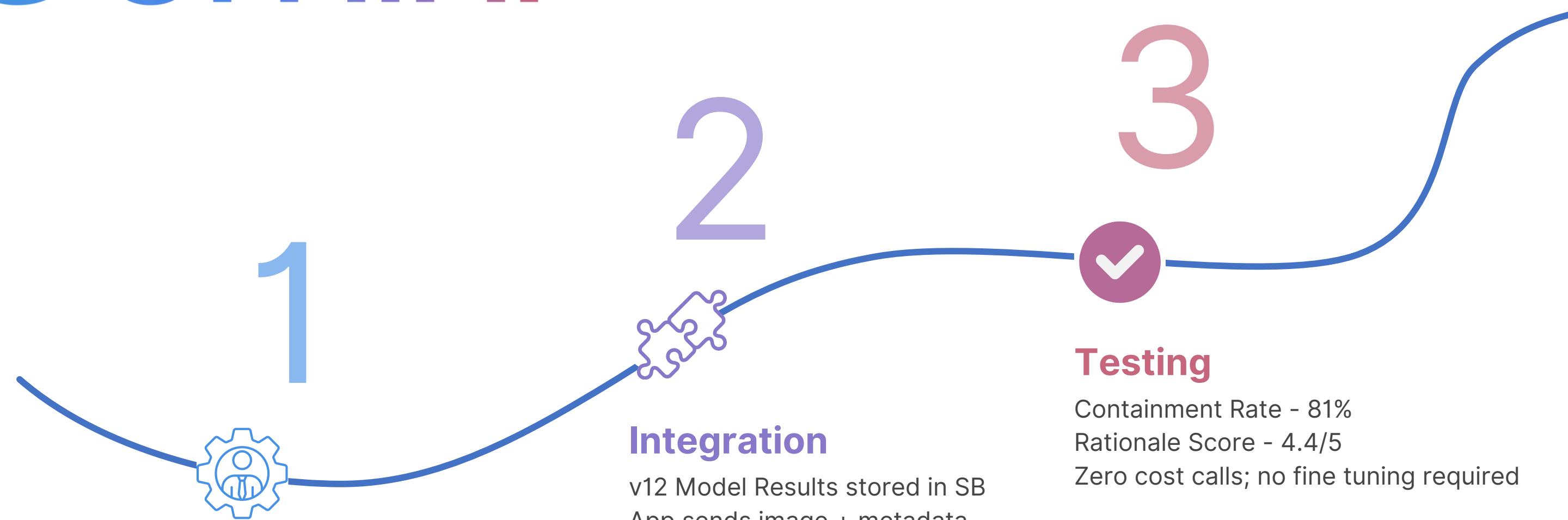
Roboflow 3.0 Object
Detection (Accurate)

Fast real-time inference

Improved performance for
edge cases

Better performance in live
testing

Gemini



Role in Plutus

Generates price estimation

- confidence + rationale + sources

Provides real time expert evaluation

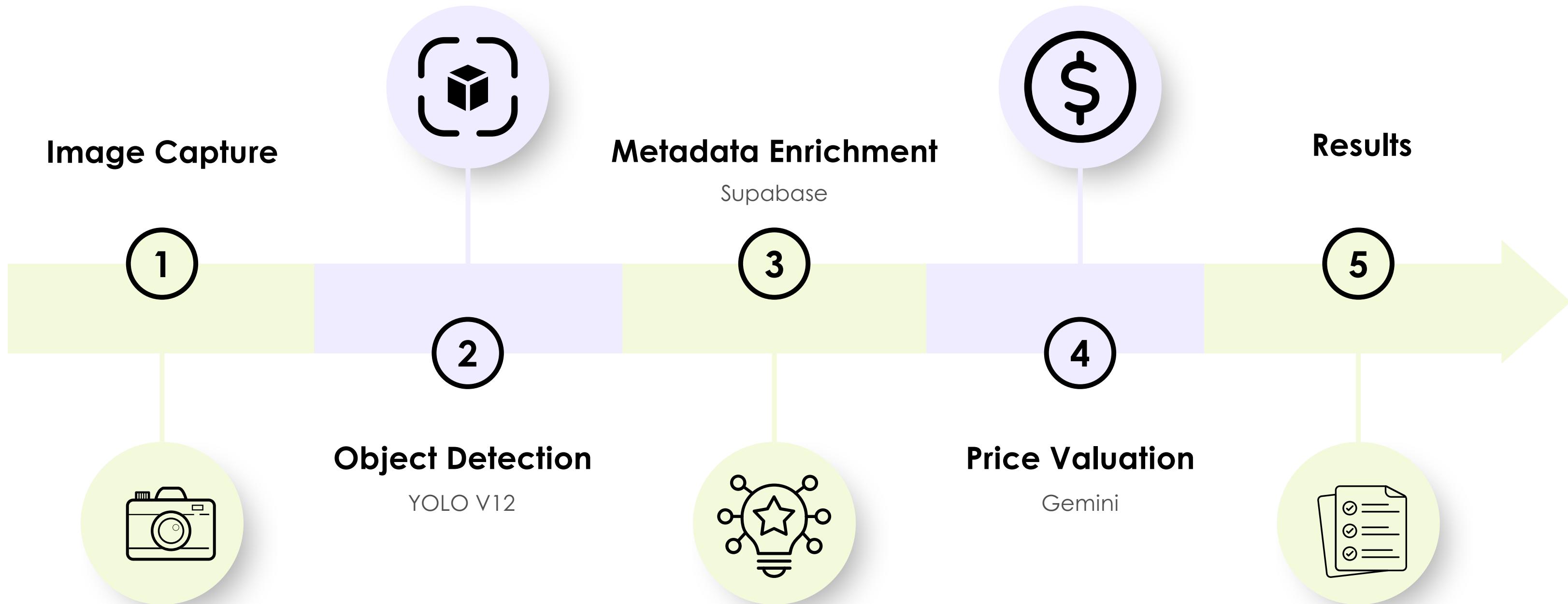
Integration

v12 Model Results stored in SB
App sends image + metadata to agent with tested prompt (json)
Results displayed + stored for future (RL + AL) pipeline

Testing

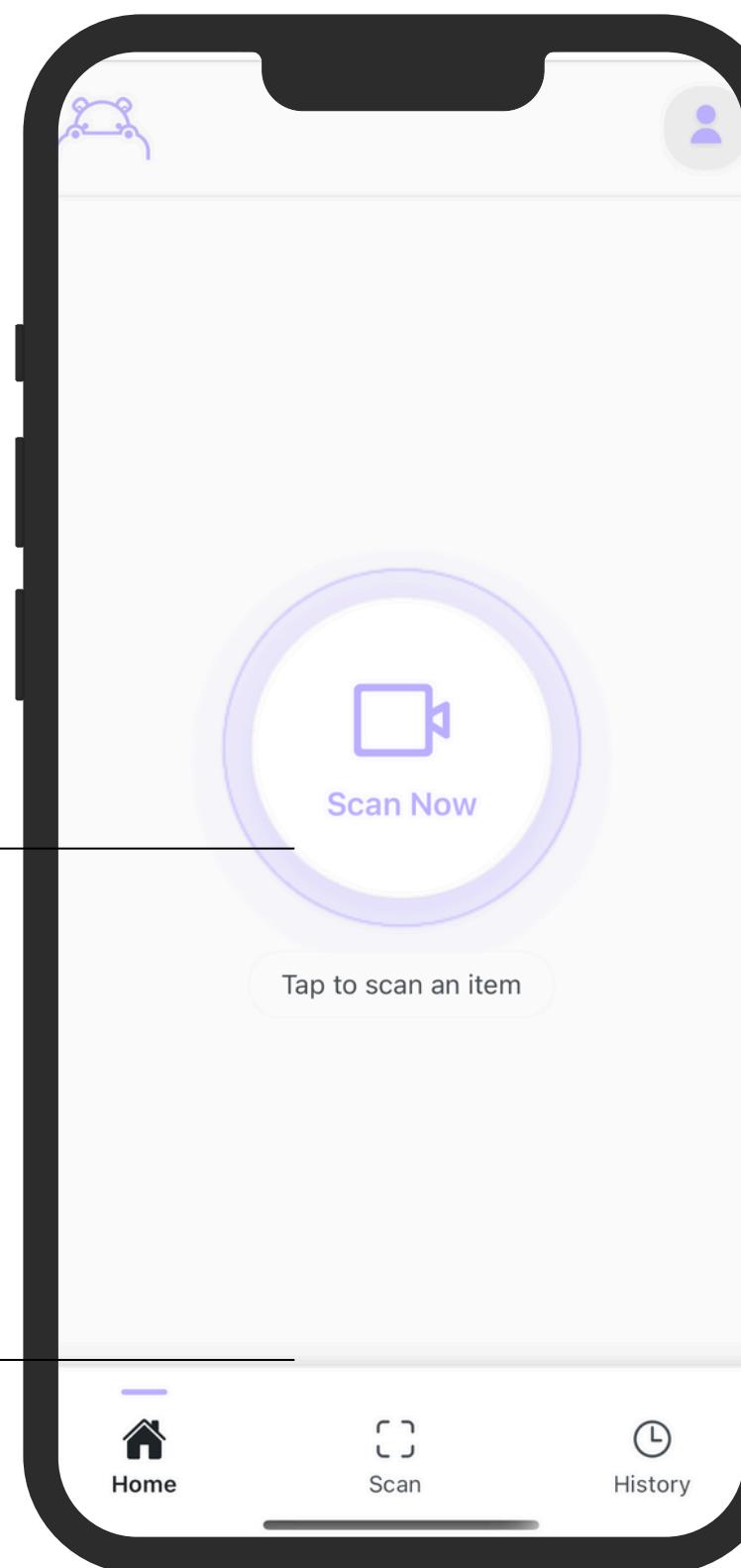
Containment Rate - 81%
Rationale Score - 4.4/5
Zero cost calls; no fine tuning required

App Flow

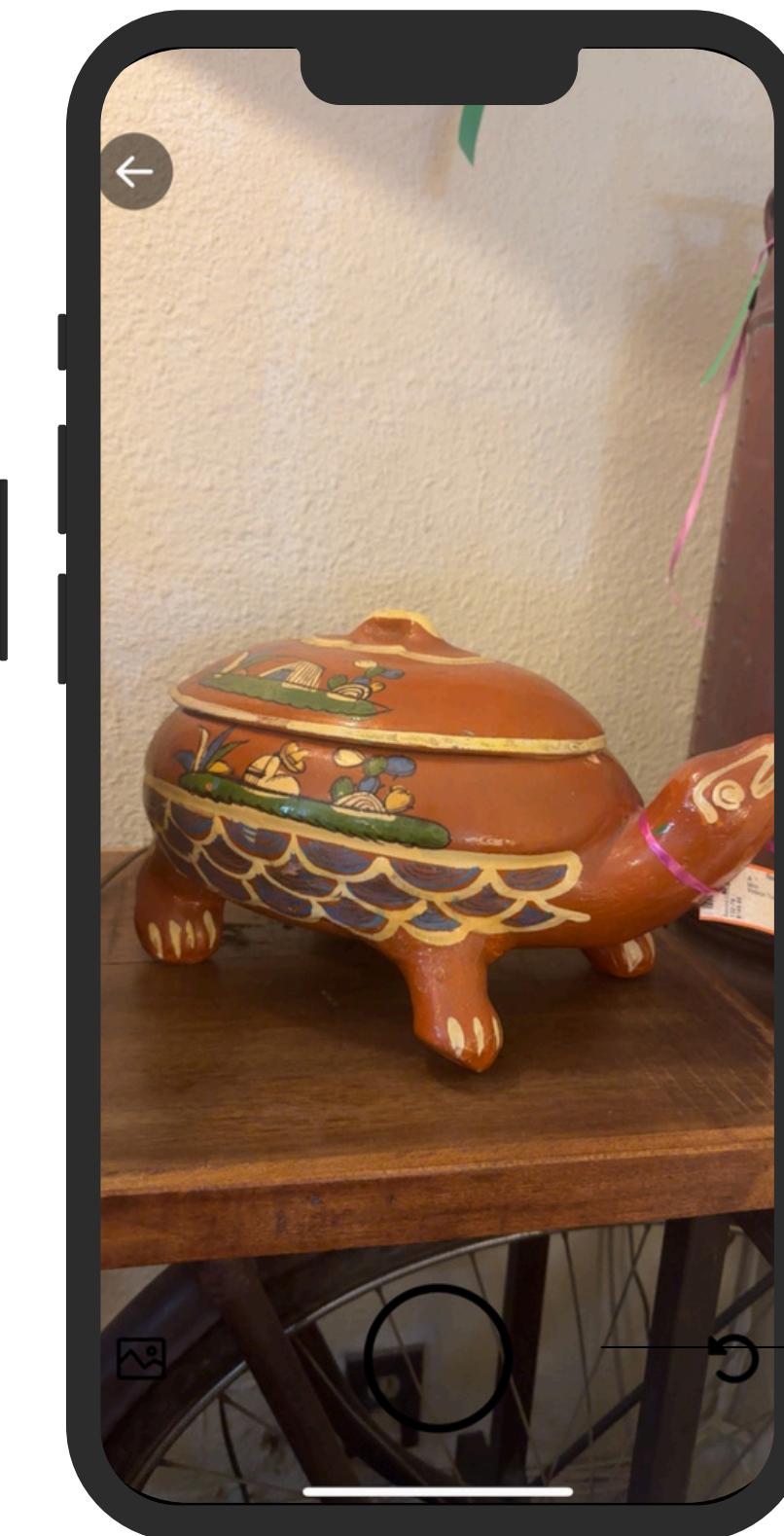


Home Screen

Quick Start



Camera Scan Screen

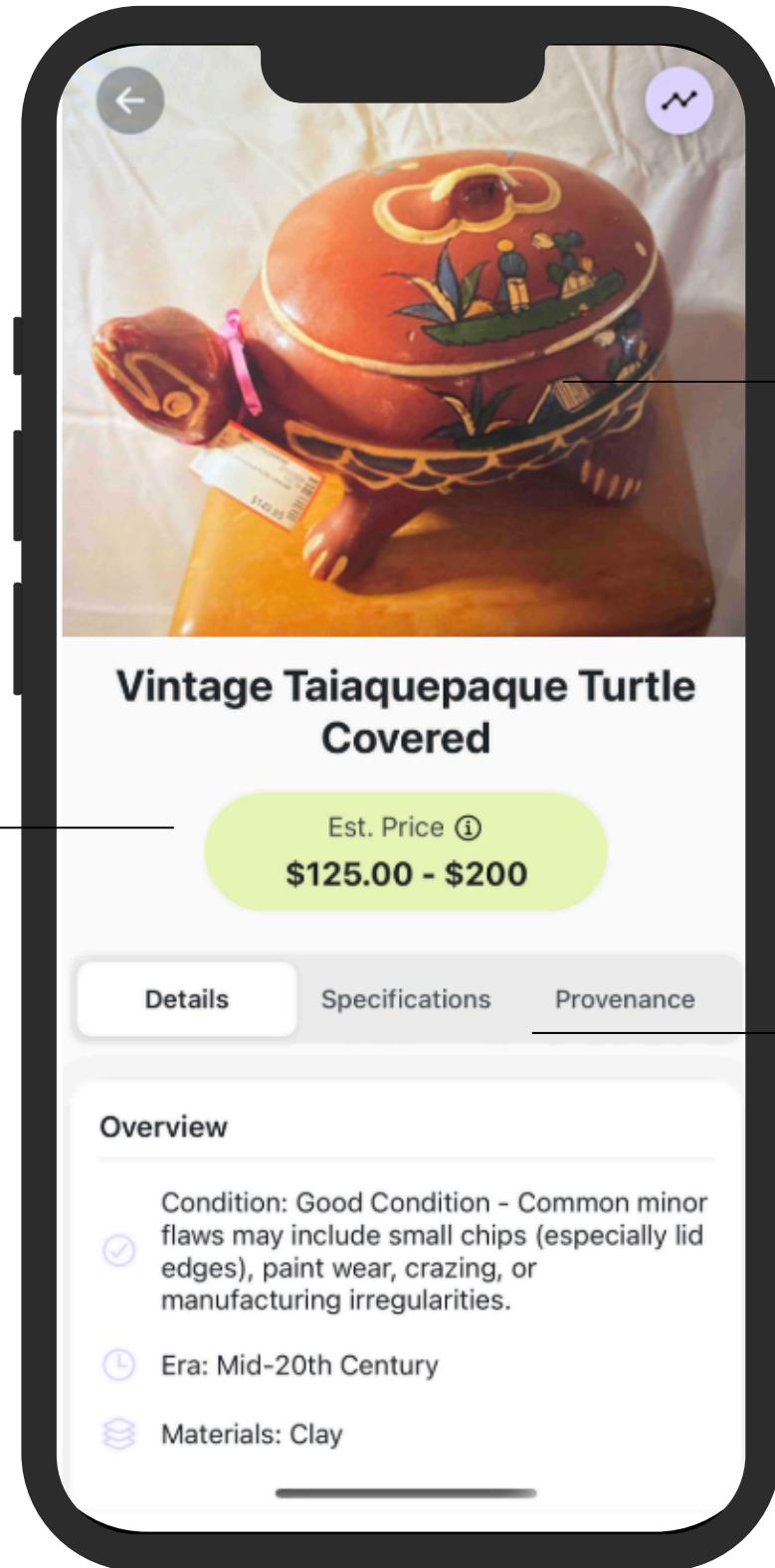


Simple Navigation

Capture Image

Results Screen

Estimated Value Range



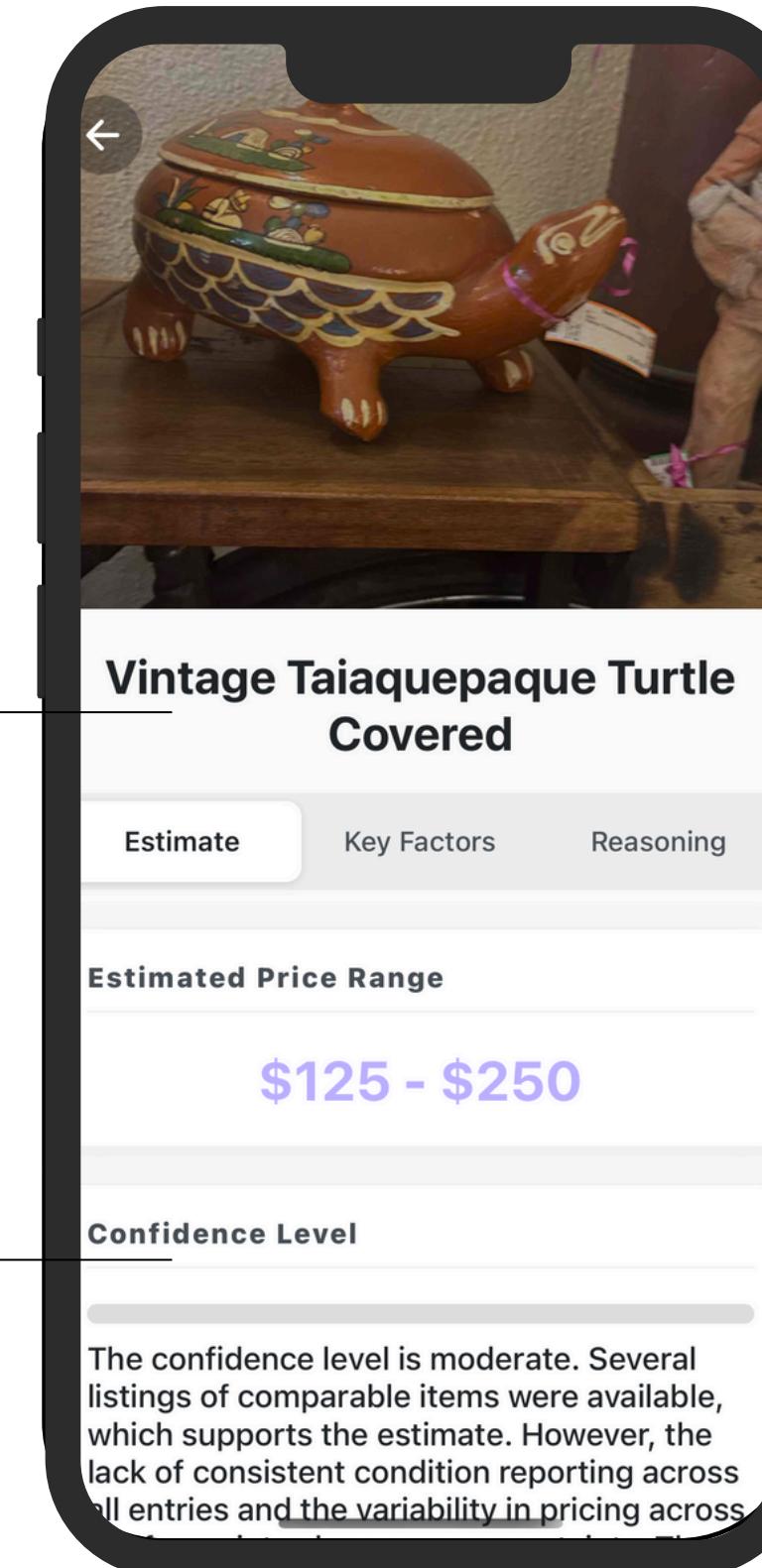
Immediate Visual Feedback

Metadata Summary

AI Analysis Screen

Detailed Valuation Breakdown
by Agent

Confidence level +
Pricing Rationale

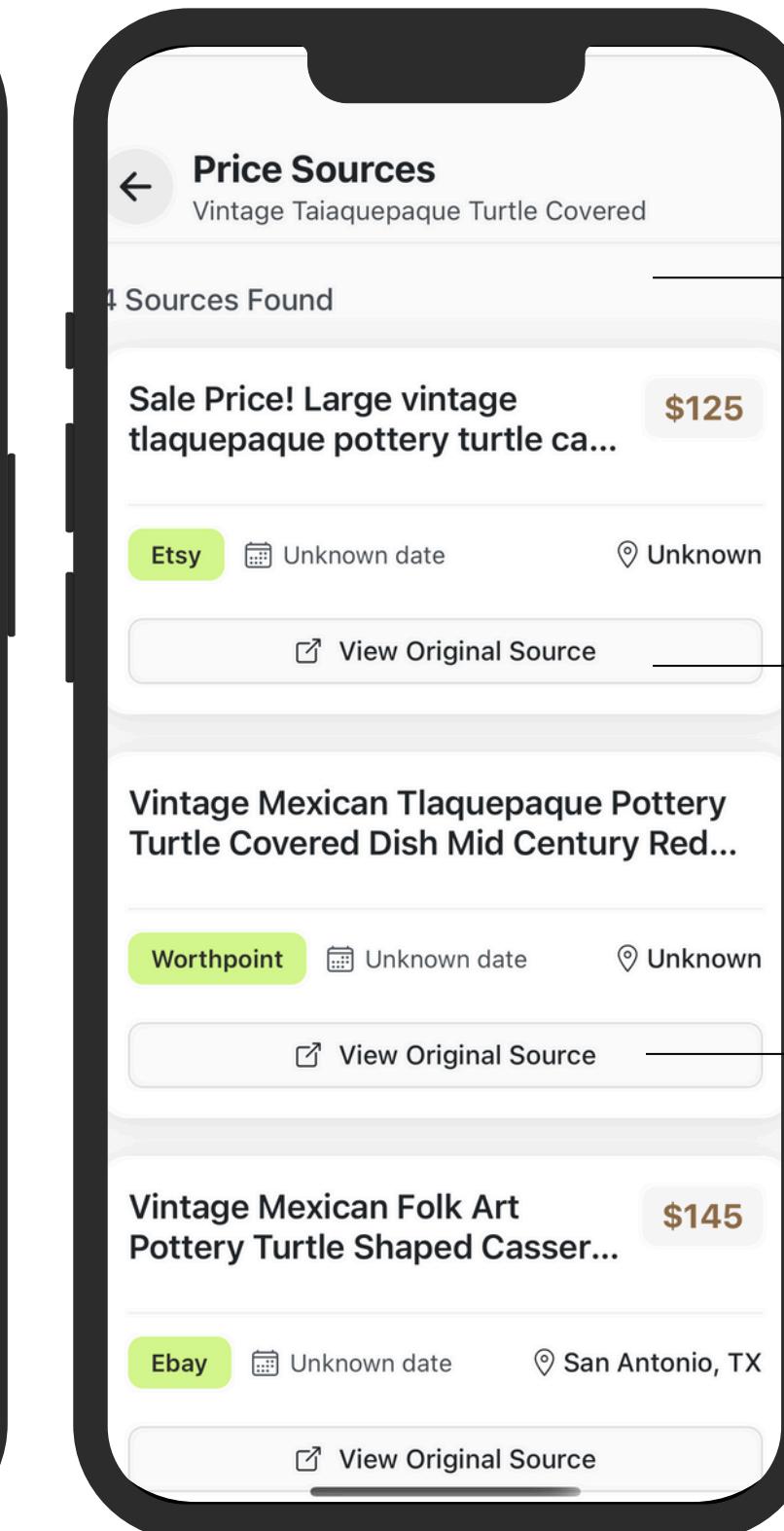


Sources Screen

Multiple Source Aggregation

Structured Metadata

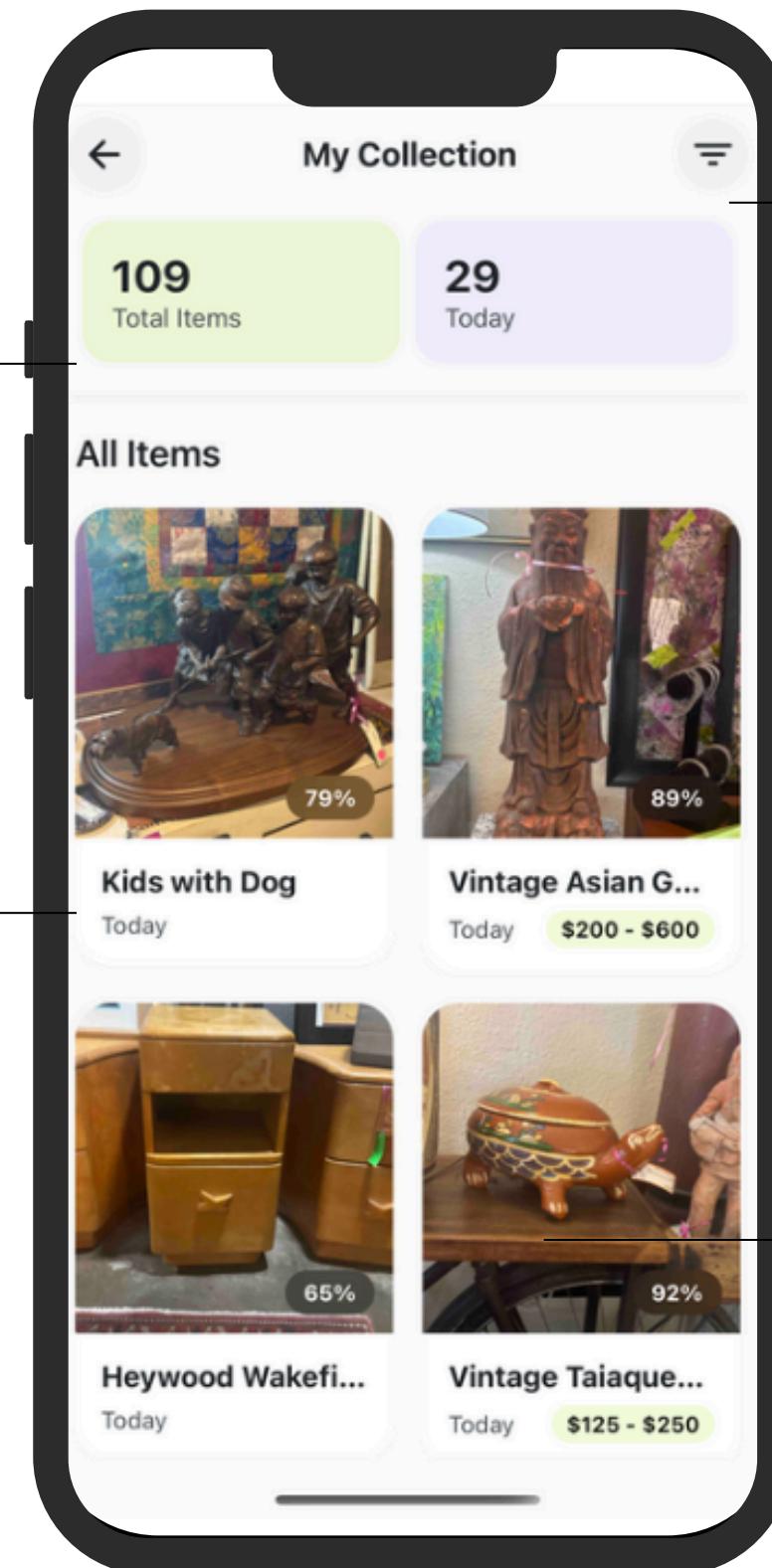
Interactive View



Collection Screen

User-Owned Database

Date Scanned



Category Filtering

Thumbnail + Metadata Display

Value & Impact

IMMEDIATE

- Self-serve kiosk/mobile link
- One-tap digital catalog
- Guided pricing checklist
- Real-time Valuation
- Task relief

FUTURE

- Higher sales conversion
- More consignments
- Marketplace Hub
- Data-driven promotions
- Scalable Template

Key Insights & Takeaways



TECHNICAL

High-quality, diverse images lift model accuracy.

Standardized metadata = consistent valuations.

Few-shot learning helps, but >30 images per class beats heavy augmentation.



HUMAN

Staff gravitate to one-tap workflows; no extra forms.

Clear citations ("price source: eBay, 2024-05-12") build seller trust.



BUSINESS

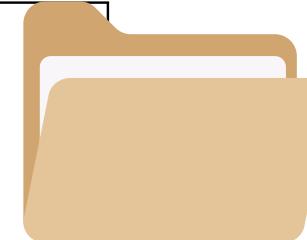
Digital catalog + instant pricing = shrinks appraisal time from 4-6 weeks → <30 sec.

Accurate pricing and provenance tracking raises gross margin by 10–15 %.

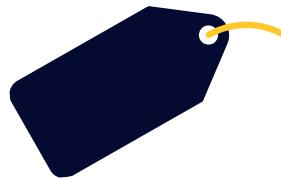
Challenges & How We Overcame Them

SMALL DATASET

Image Augmentation + Reinforcement Learning Loop



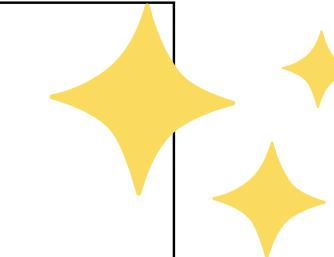
INCONSISTENT METADATA



Manual Validation + Standardization

SHINY SURFACES

Image Sampling



LATENCY



Batched Calls, Trimmed Prompts, Cached Queries

LIMITED COVERAGE

Roadmap to Ingest Global Marketplace Archives + Crowd Source



TEAM TAKEAWAYS



Demo

Something to think about...

What are the limitations in today's world with CV in businesses?

Thank You!

