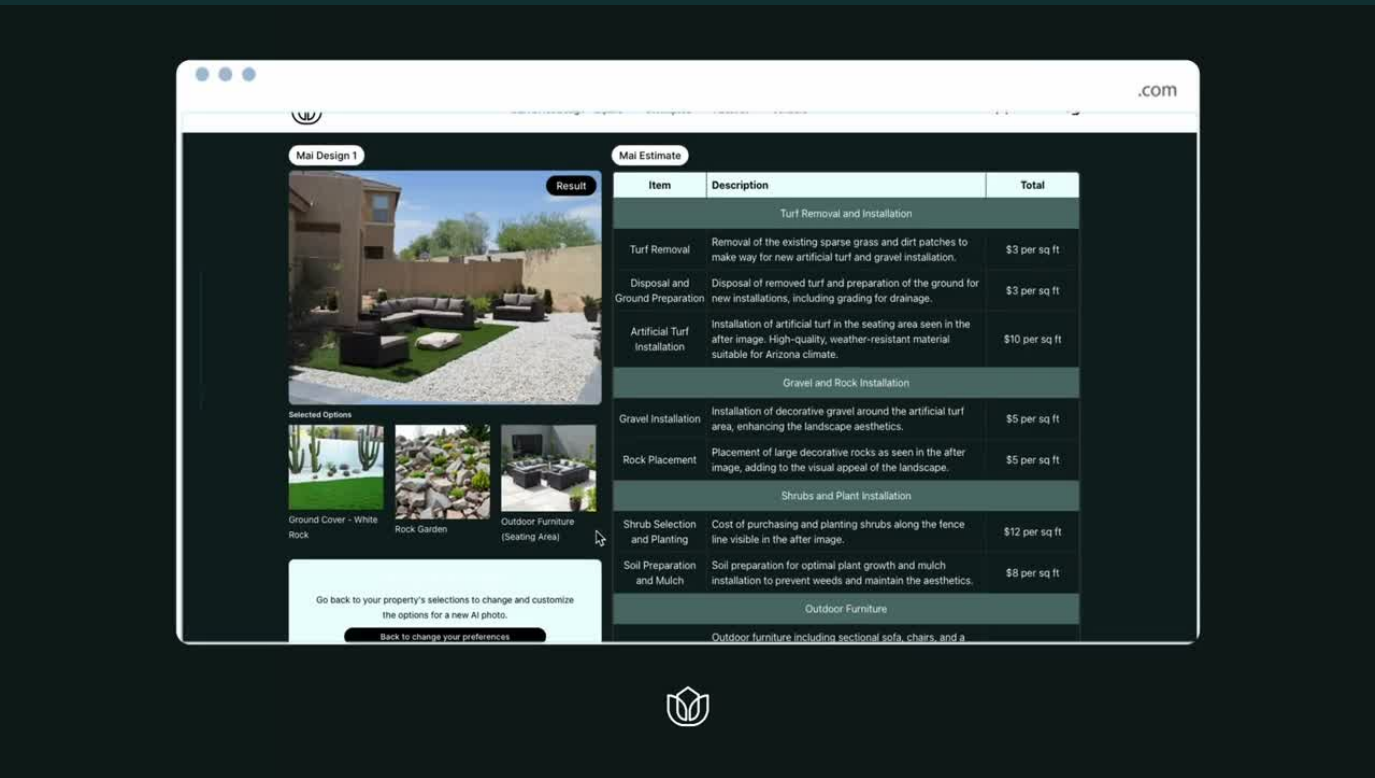


PROJECT BEGAN IN 2024 / CUSTOM AI LANDSCAPING

MaiProperty

Before GPT Image.
Before Nano Banana.

Starting in March 2024, BearPlex built a turnkey lawn-makeover platform: custom AI design, marketplace products and quotations, contractor leads and lender connections for loan pre-approval.



MaiProperty design and estimate experience.

CUSTOM AI PIPELINE

GroundedSAM + Stable Diffusion

TURNKEY SERVICES

Products + quotes + leads

FINANCING CONNECTIONS

Lender pre-approval journey

2024 / THE ENGINEERING CONTEXT

The pipeline was part of the product.

MaiProperty began before GPT Image and Nano Banana. Delivering its landscaping experience meant assembling and operating the image-processing workflow ourselves.

MAR 2024

MaiProperty research begins

Segmentation, masks, inpainting and model evaluation

What the team had to solve

Find the editable region

Evaluate segmentation models, isolate the lawn and adjust masks to control which parts of the scene could change.

Control the generation

Compare inpainting checkpoints, prompts, guidance and denoising settings. Test preservation of buildings and other surrounding details.

Turn the workflow into a service

Integrate ComfyUI and its Python API with the application, run inference on AWS GPU infrastructure and manage service configuration.

THE LATER MODEL RELEASES

GPT Image 1 API: 23 April 2025 / Nano Banana: 26 August 2025

Release dates link to the official OpenAI and Google announcements.

01 / THE PRODUCT

Make a future landscape easier to imagine.

MaiProperty set out to help homeowners explore changes to their own outdoor space and discover businesses that could help bring those ideas to life.

The challenge

A convincing garden render has to remain recognizably tied to the property. The system needed to interpret the lawn, respect the surrounding scene and translate a customer's service choices into useful design directions.

The product response

BearPlex built the application around a shared project: an uploaded photo, selected services, generated alternatives and relevant vendors and products. Customer, vendor and admin interfaces supported different parts of that journey.

- 01 Describe the space**
Upload a property photo, choose landscaping services and add location, area or instructions.
- 02 Explore a design**
Send the image and assembled prompt to the inference service; return generated alternatives.
- 03 Keep and revisit**
Store generations, organize collections, mark favorites and capture feedback.
- 04 Find a way forward**
Discover vendors by service and city, alongside products related to the requested work.

The service journey extended to third-party marketplace product matching, quotations, contractor leads and lender connections for lawn-makeover loan pre-approval.

SERVICE LAYER / FROM DESIGN TO DELIVERY

A complete lawn makeover. One connected journey.

The AI design opened the conversation. Marketplace sourcing, quotations, service-provider leads and financing connections helped customers move toward making it happen.

- 01 Understand the space**
Segmentation identified the lawn and defined the editable region. The pipeline used that mask to guide the design around the existing property.
- 02 Match real products**
Third-party marketplaces connected the design direction with relevant products and materials, turning visual choices into sourcing options.
- 03 Build the quotation**
Product matches and proposed landscaping work fed the quotation journey, giving the customer a clearer view of the makeover cost.
- 04 Generate service leads**
Customers ready to take the next step became leads for relevant vendors and contractors, connecting design interest with delivery services.
- 05 Connect the financing**
Lender connections supported loan pre-approval for the lawn makeover, helping eligible customers explore how to fund the work.

The turnkey proposition

Design the space. Source the products. Quote the work. Connect the contractor. Explore financing.

02 / DESIGN EXPLORATION

One space. Two directions.

A photo gives the design a starting point. Different landscaping preferences open up distinct possibilities for the same outdoor space.

**STARTING SPACE**

A blank canvas

An underused yard with dry grass, a simple patio and existing boundary walls.

**DIRECTION 01**

Green & inviting

A defined lawn, gravel borders, stepping stones and a comfortable place to sit.

**DIRECTION 02**

Desert character

Gravel, sculptural planting and a circular gathering space create another design direction.

Illustrative design example.

03 / AI ENGINEERING

Edit the lawn. Preserve the property.

In 2024, we tackled scene editing as an explicit pipeline: identify the lawn, tune the mask, then condition an inpainting model on the image and design prompt.

1 / Targeted segmentation

GroundedSAM used a lawn prompt and excluded trees. Mask adjustment controlled the editable region before generation.

2 / Masked inpainting

Stable Diffusion experiments combined the source image, mask and design prompt to explore turf, pathways, seating and garden features.

A useful tradeoff emerged in the first tests

Segmenting every object produced 192 masks, creating extra work to identify the lawn. Targeting the lawn directly reduced irrelevant output and processing time in our initial tests.

42.3 s

SAM: all-object segmentation

3.8 s

GroundedSAM: targeted lawn

Initial segmentation tests on NVIDIA A40, using one reference image. All-object and lawn-specific workloads; figures represent this experiment, not end-to-end generation time.

Image quality drove the next decision

We tested SDXL and alternative inpainting checkpoints, adjusting denoising steps, guidance and prompts to balance scene preservation, creativity and GPU time. ComfyUI integration and a Python API connected GPU inference to the application; the backend later integrated an SD3 endpoint.

04 / THE APPLICATION BACKEND

One request connected the image to the marketplace.

The Express backend coordinated generation, stored project context and returned relevant commercial results alongside the generated images.

Customer application / Next.js

Photo, customer, selected services, city and optional instructions

Application API / Node.js + Express

Validate inputs. Load service prompts and admin prompt settings. Assemble the generation request. Coordinate inference, persistence and recommendations.

AI service

Python API / ComfyUI
AWS GPU compute
SD3 API integration

Supabase

Customer and project data
Generation records
Services and vendors

Business services

Stripe subscriptions
Payment events
Pusher notifications

The generation path

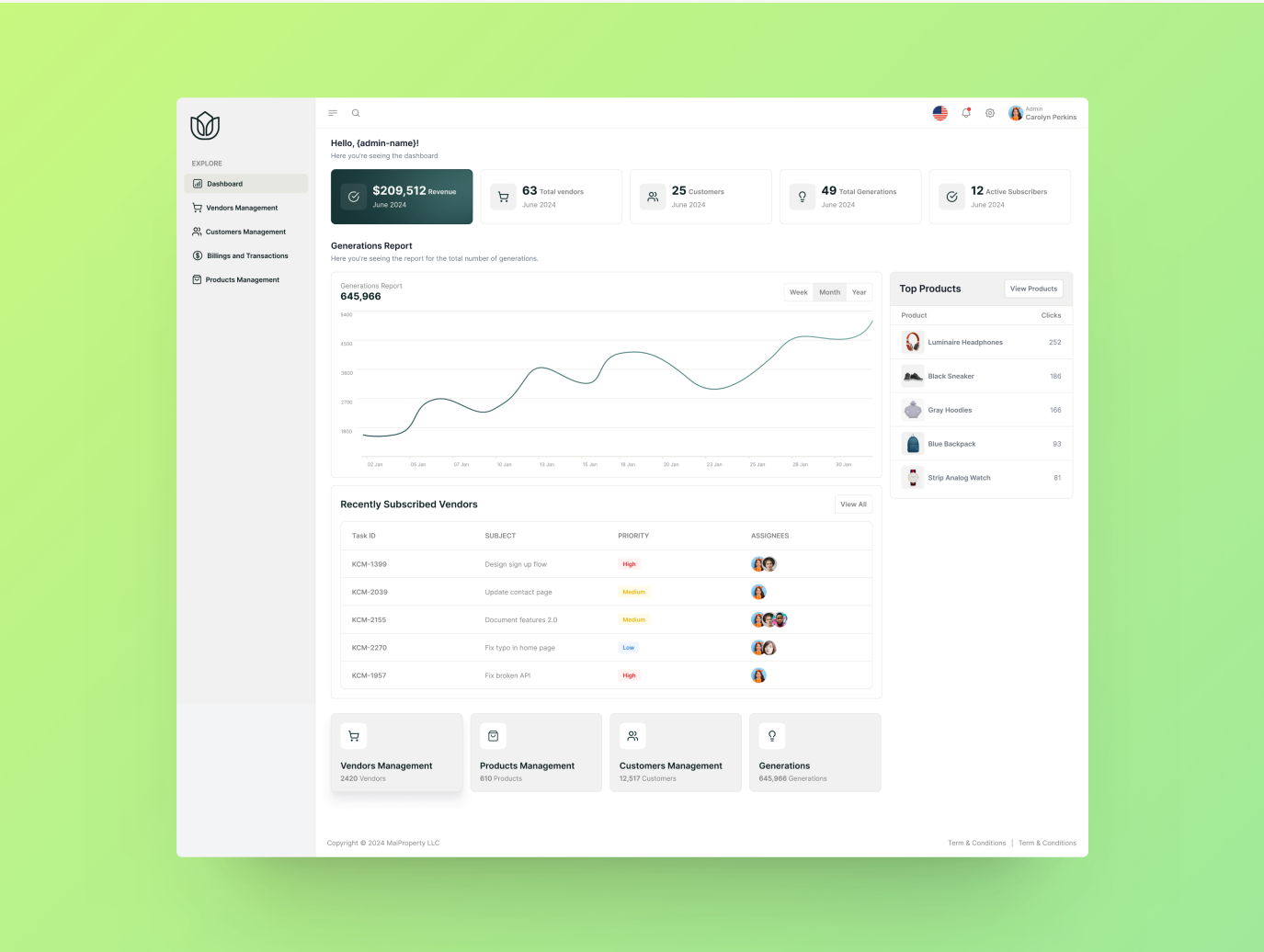
The backend combined a top-level prompt, area size, service-specific prompts, customer instructions and a closing prompt. It sent the image to the AI API, persisted the request and outputs, and returned image variations with vendors filtered by service and city and products matched to the selected services.

Premium and freemium vendor groups, plus fallback vendor lists, supported the discovery flow. Saved image metadata included favorite and feedback state.

05 / OPERATING THE PRODUCT

Tools for the people behind each design.

The portal extended the platform beyond image generation, giving vendors a business interface and administrators control of the product.



MaiProperty admin dashboard design. Interface shown with illustrative data.

Vendor workspace

Explore generations; manage profiles, portfolios and services; access feedback, subscription plans, billing history and payment methods.

Admin workspace

Manage customers, vendors, products and services; review generations and transactions; edit AI prompt settings through the portal.

06 / DEPLOYMENT AND OPERATIONS

A web platform with a separate GPU workload.

We deployed distinct environments for the customer site, business portals, application API and inference service.

COMPONENT	HOSTING	ENVIRONMENT
Customer web app	Vercel	Staging and production
Admin / vendor portal	Vercel	Staging and production
Application backend	Render / AWS App Runner	Staging / production
Data platform	Supabase	Staging and production
AI inference	AWS EC2 GPU + ComfyUI	g5.xlarge GPU instance

Supporting the platform beyond launch

Our work included the application environments and the GPU service that powered generation. We supported an AWS account migration, aligned the inference domain and SSL configuration, and provided a technical handover for operating the ComfyUI service.

A complete delivery

Product interfaces, application services, AI inference and deployment were brought together as one customer experience.

07 / DELIVERY

Custom AI engineering. A complete product around it.

The work began in 2024, before GPT Image and Nano Banana. BearPlex combined custom AI engineering with a turnkey service journey spanning design, product sourcing, quotations, contractor leads and financing connections.

A design-to-delivery journey

Segmentation and image generation connected the customer's property to marketplace products, quotations and relevant service providers.

A service and financing layer

Project interest could become a contractor lead, while lender connections supported loan pre-approval for the proposed lawn makeover.

Delivery beyond the interface

The work included inference integration, environment deployment, a technical handover and post-deployment troubleshooting.

From concept to a working platform

Research and model evaluation / Application and portal development
AI service integration / Cloud deployment / Operational handover