

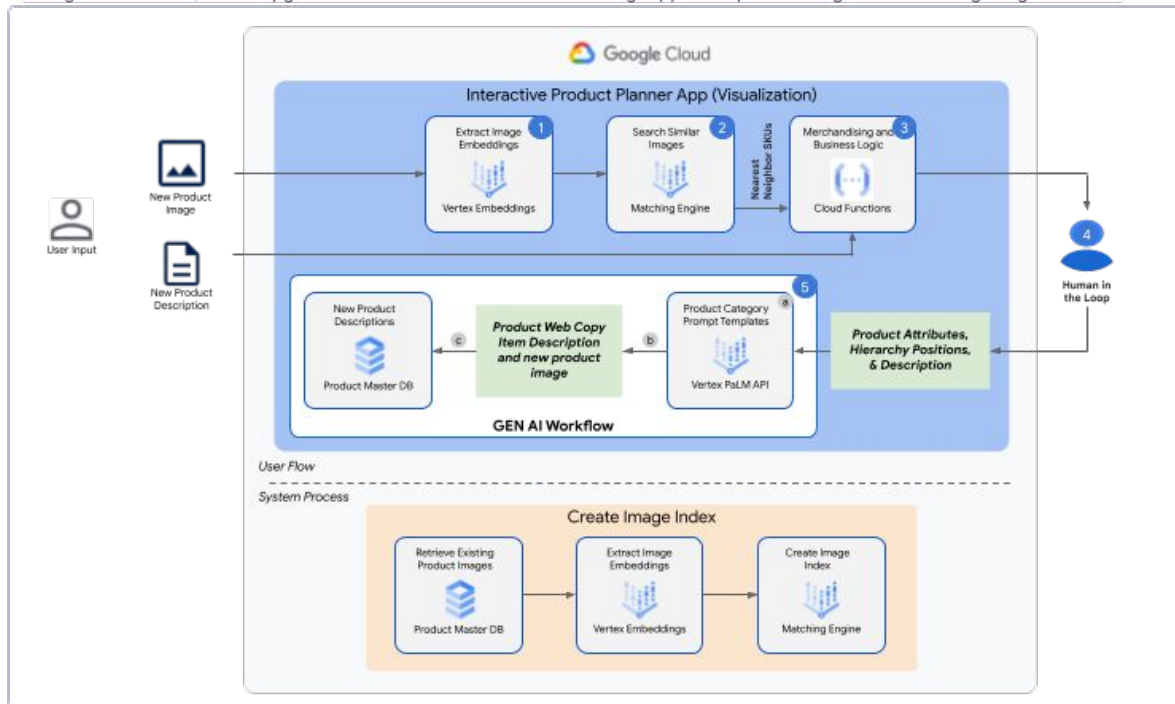
Reference Architecture

Products on the Digital Shelf [Retail]



This reference architecture shows the flow of generating product attributes, and marketing material for a new product, based on an image, using Vertex Model Garden and Matching Engine.

Use case: Jill, a retail planner at a large retailer, needs to onboard a new product. She provides the system with one or more photos and a short description of the product. The system then classifies the product hierarchically, matches granular attributes using embeddings, processes the data through business rules, and finally generates detailed ecommerce and marketing copy for the product using few-shot learning and generative AI.



Components Description

- 1 Extract embeddings from uploaded image:** We extract the image embeddings with Vertex AI Embedding Extractor. We will use these embeddings to search for similar images.
- 2 Search for similar images:** We call the Vertex Matching Engine match function, and pass it the image embeddings. Vertex Matching Engine will return top -n nearest neighbor image matches. Matching Engine image index created by Create Image Index process.
- 3 Business logic check:** Ensure that the outputs of the automated ingestion process are consistent with the department and category of the new SKU, and with merchandising and risk and compliance rules. If there are any data quality issues, semantic anomalies, or business rule violations, an alert is generated. New product description is added to flow. Human-in-the-loop completes and audit. Implementation will vary by customer.
- 4 Human process:** Review description from matched product retrieval, add product hierarchy information.
- 5 Send product attributes, hierarchy position, and description to GenAI workflow**

A: few-shot PaLM API with category-specific templates.

B: generate web copy and (optionally) image(s) from PaLM API

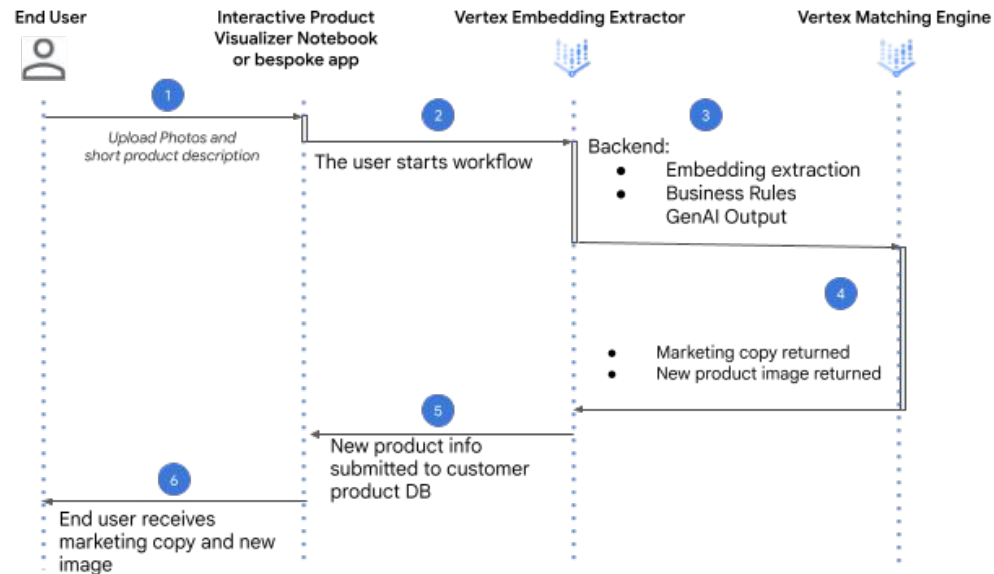
C: insert new record into (customer) Product Master Database

User Interaction Diagram

Product Cataloguing with Generative AI ^[Retail]

This diagram shows the user interaction flow between components in the reference architecture and onboarding new products & skus

Use case: Jill, a retail planner at a large retailer, needs to onboard a new product. She provides the system with one or more photos and a short description of the product. The system then classifies the product hierarchically, matches granular attributes using embeddings, processes the data through business rules, and finally generates detailed ecommerce and marketing copy for the product using few-shot learning and generative AI.



User Interaction Flow

- 1 User uploads a photo to be processed as new product
- 2 User confirms image classification. The classification can be overridden
- 3 Image is processed through backend steps
- 4 Marketing copy and new product image(s) are available
- 5 Customer updates customer product database
- 6 User receives outputs