- **Vertex AI (AI Platform)**
- **Natural Language**
- **Speech-to-text**
- **Text-to-Speech**
- **Vision AI**
- **Cloud Translation**
- **Document AI**
- **Video Intelligence**

Build with AI

Vertex AI

Unified ML platform

Auto ML

High-quality custom
ML models with ease

AI Infrastructure

Cloud TPUs, GPUs and
CPUs to train ML models
cost-effectively

Conversational AI

Speech-to-Text

Text-to-Speech

Contact Center AI
(Virtual Agent, Diaglow CX,
Agent Assist, CCAI)

AI-powered conversation using
advanced virtual agents

AI for documents

Natural Language

Translation

Document AI

Vision AI

Video AI

AI for Industries

Media Translation

Translate real-time streaming
or pre-recorded audio into text
in another language.

Healthcare Natural Language

Assisting healthcare professionals to
find, assess, and link the medical
knowledge in text data.

Recommendation AI

Deliver highly personalized
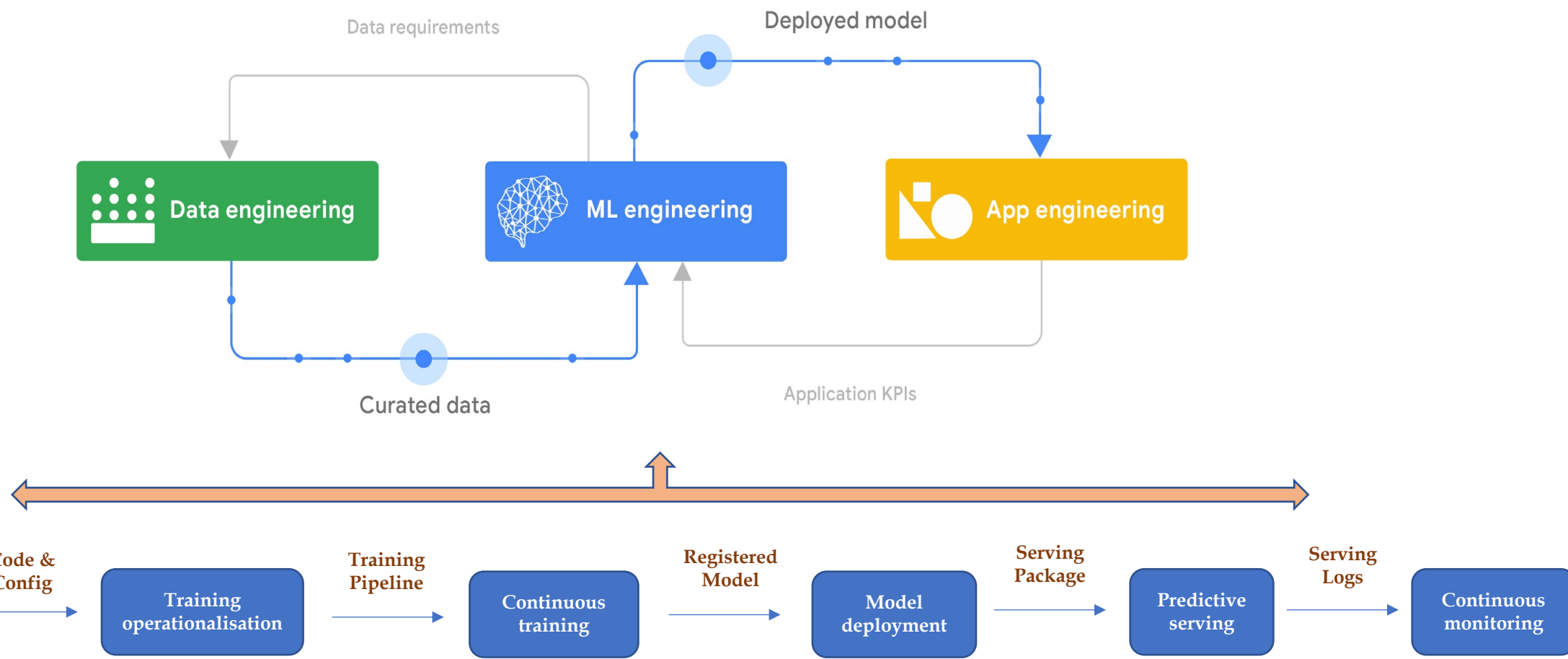product recommendations
at scale.

Lending DocAI

Transform the home loan experience for
borrowers and lenders by automating
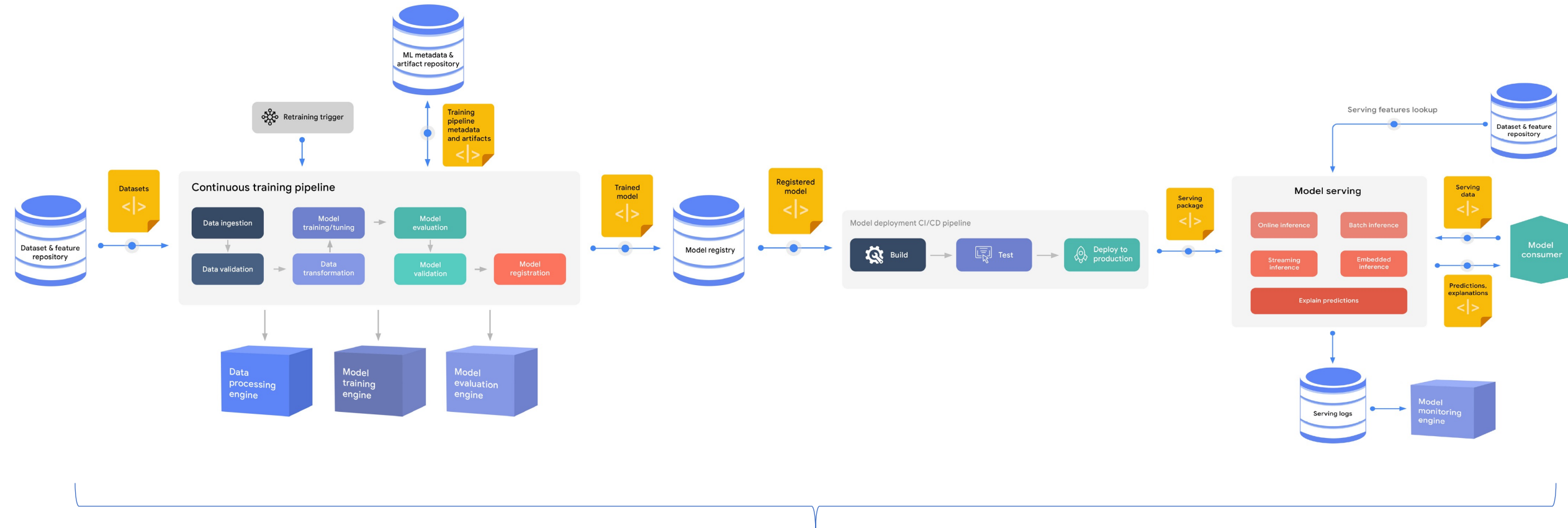mortgage document processing.

Procurement DocAI

Transform invoices and
receipts into structured data.

Vertex AI brings AutoML and AI Platform together into a unified API, client library, and user interface.

Building an ML-enabled system:

Data requirements

Deployed model

Data engineering

ML engineering

App engineering

Curated data

Application KPIs

| ML Development | Code & Config | Training operationalisation | Training Pipeline | Continuous training | Registered Model | Model deployment | Serving Package | Predictive serving | Serving Logs | Continuous monitoring |

MLOps: An end-to-end workflow:

ML metadata & artifact repository

Retraining trigger

Training pipeline metadata and artifacts </|>

Continuous training pipeline

Datasets </|>

Data ingestion → Model training/tuning → Model evaluation

Data validation → Data transformation → Model validation → Model registration

Dataset & feature repository

Data processing engine

Model training engine

Model evaluation engine

Trained model </|>

Model registry

Registered model </|>

Model deployment CI/CD pipeline

Build → Test → Deploy to production

Serving package </|>

Model serving

Online inference | Batch inference
Streaming inference | Embedded inference
Explain predictions

Serving features lookup

Dataset & feature repository

Serving data </|>

Model consumer

Predictions, explanations </|>

Serving logs → Model monitoring engine

Vertex AI

Unified ML platform for image, tabular, text, video and custom training.
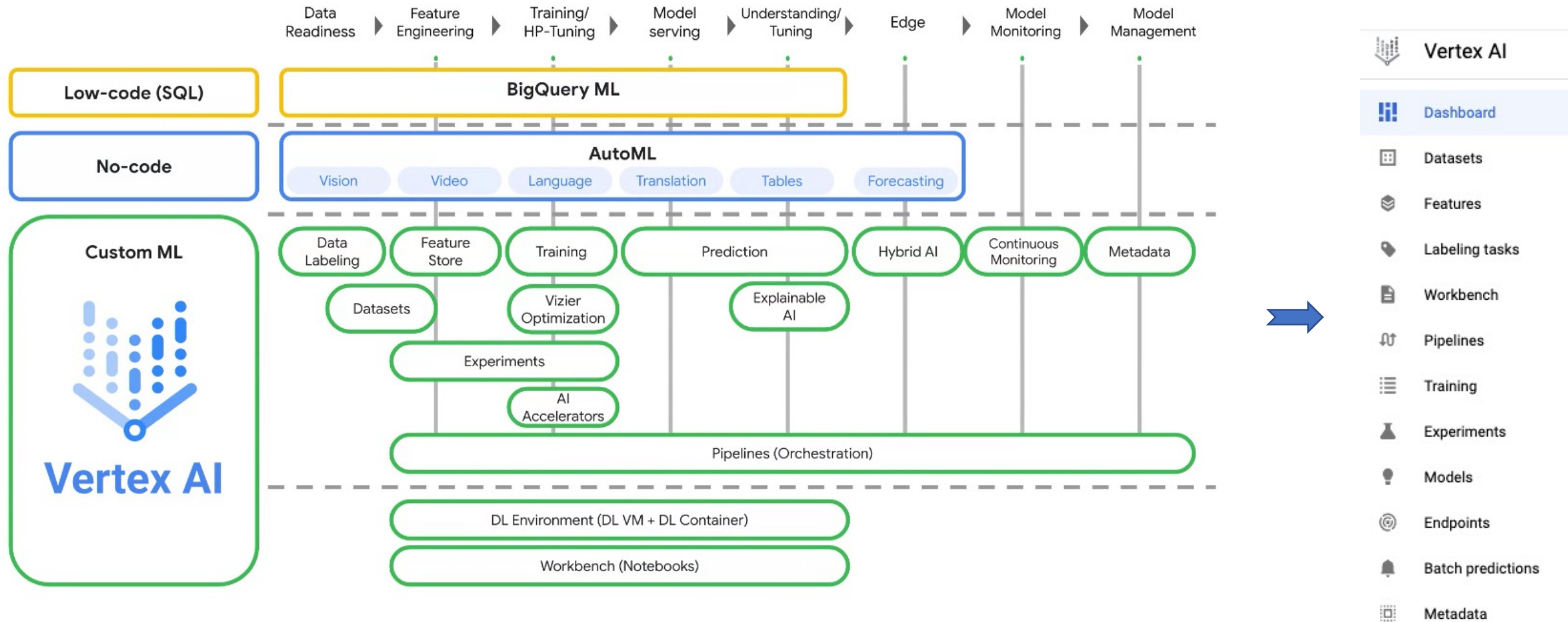
Accurately convert speech into text using an API powered by Google's AI technologies.

Convert text into natural-sounding speech using an API powered by Google's AI technologies.

Use Cases:

Improve customer service

Empower customer service system by adding IVR (interactive voice response) and agent conversations to call centers. Perform analytics on conversation data to gain more insights into the calls and customers. Speech-to-Text and its enhanced phone call models are already powering Google Cloud's powerful solution, Contact Center AI.
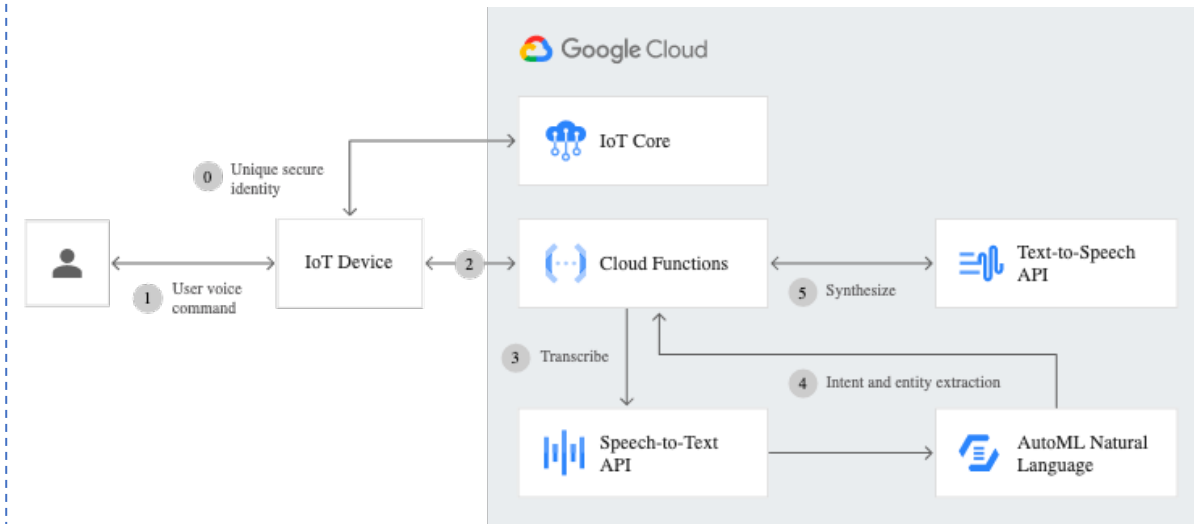
Use Cases:

Voice generation in devices

Enable natural communications with users by empowering devices to speak humanlike voices. Build an end-to-end voice user interface together with Speech-to-Text and improve user experience with easy and engaging interactions.
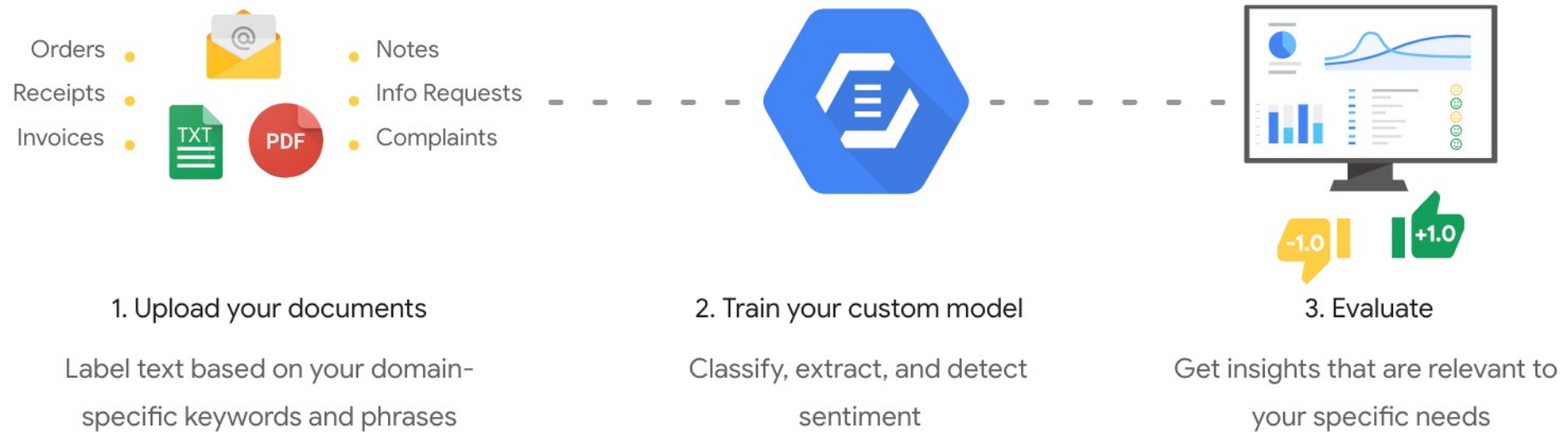
Natural Language uses machine learning to reveal the structure and meaning of text.

Natural Language product suite has the following variants:
- AutoML Natural Language
- Natural Language API
- Healthcare Natural Language AI

How AutoML Natural Language works:

1. Upload your documents

Label text based on your domain-specific keywords and phrases

2. Train your custom model

Classify, extract, and detect sentiment

3. Evaluate

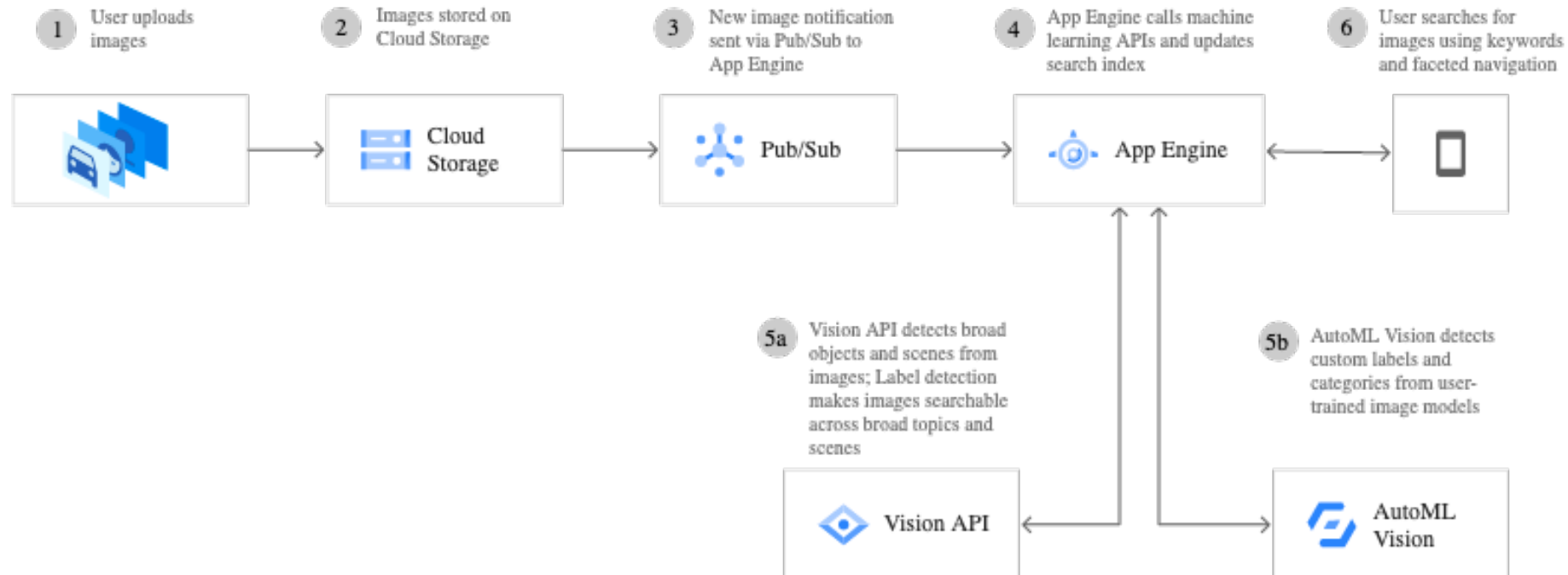Get insights that are relevant to your specific needs

Vision AI helps derive insights from images with AutoML Vision or pre-trained Vision API models to detect emotion, understand text, and more.

Google Cloud offers two computer vision products :
- AutoML Vision
- Vision API

Use Case: Image search - Use Vision API and AutoML Vision to make images searchable across broad topics and scenes, including custom categories.

1. User uploads images

2. Images stored on Cloud Storage

3. New image notification sent via Pub/Sub to App Engine

4. App Engine calls machine learning APIs and updates search index

6. User searches for images using keywords and faceted navigation

Cloud Storage

Pub/Sub

App Engine

5a. Vision API detects broad objects and scenes from images; Label detection makes images searchable across broad topics and scenes

5b. AutoML Vision detects custom labels and categories from user-trained image models

Vision API

AutoML Vision

Cloud Translation enables organizations to dynamically translate between languages using Google's pre-trained or custom machine learning models. It detects text language and translates over 100+ languages with glossary support for brand translated content.

The product comes in following variants:
- AutoML Translation
- Translation API Basic
- Translation API Advanced
- Media Translation API

Cloud Translation Benefits:

Translate many languages

Translation API's pre-trained model supports more than one hundred languages, from Afrikaans to Zulu. AutoML Translation lets you build custom models in more than fifty language pairs.

Language detection

When you don't know your source text language — for instance, in user-generated content that doesn't include a language code — our translation products automatically identify languages with high accuracy.

Glossary support

Translation API's glossary can help you maintain your brand in translated content. Simply define the vocabulary you want prioritized, then save the glossary file to your translation project, and those words and phrases will be included in your copy.

Highly scalable

Our translation products scale seamlessly. We provide a generous daily quota and let you set lower limits. And you can use batch translation with Google Cloud Storage to reduce the workflow complexity of translating long or multiple text files.

Easy integration

Translation's easy-to-use Google REST API means you don't have to extract text from your document; just send the HTML and you'll get back translated text.

Simple, affordable pricing

Translation charges on a per-character basis, even if the character is multiple bytes. AutoML Translation charges for training, per-character prediction usage, and storage. You only pay for what you use, so our products are usually more affordable than other options.

Using the same deep machine learning technology that powers Google Search and Assistant, Google Cloud's Natural Language products derive valuable insights from unstructured documents.
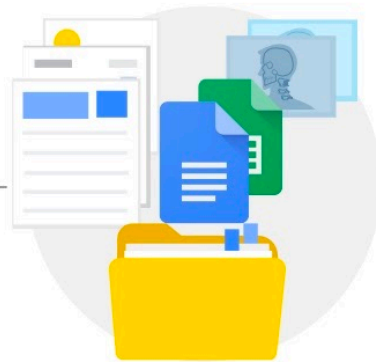
Document AI can be used for:

- Convert images to text
- Classify documents
- Analyze and extract entities

Document AI currently offers the following document processors:

- Document OCR (Optical Character Recognition)
- Form parser
- Document splitter
- W9 parser
- 1040 parser
- W2 parser
- 1099-MISC parser
- Lending document splitter & classifier
- 1003 parser
- Invoice parser
- Receipt parser

1. See what's there

2. Understand it

3. Make it useful