

AWS Ecosystem Business Unit – Generative AI COE

Intelligence Assist (QA)

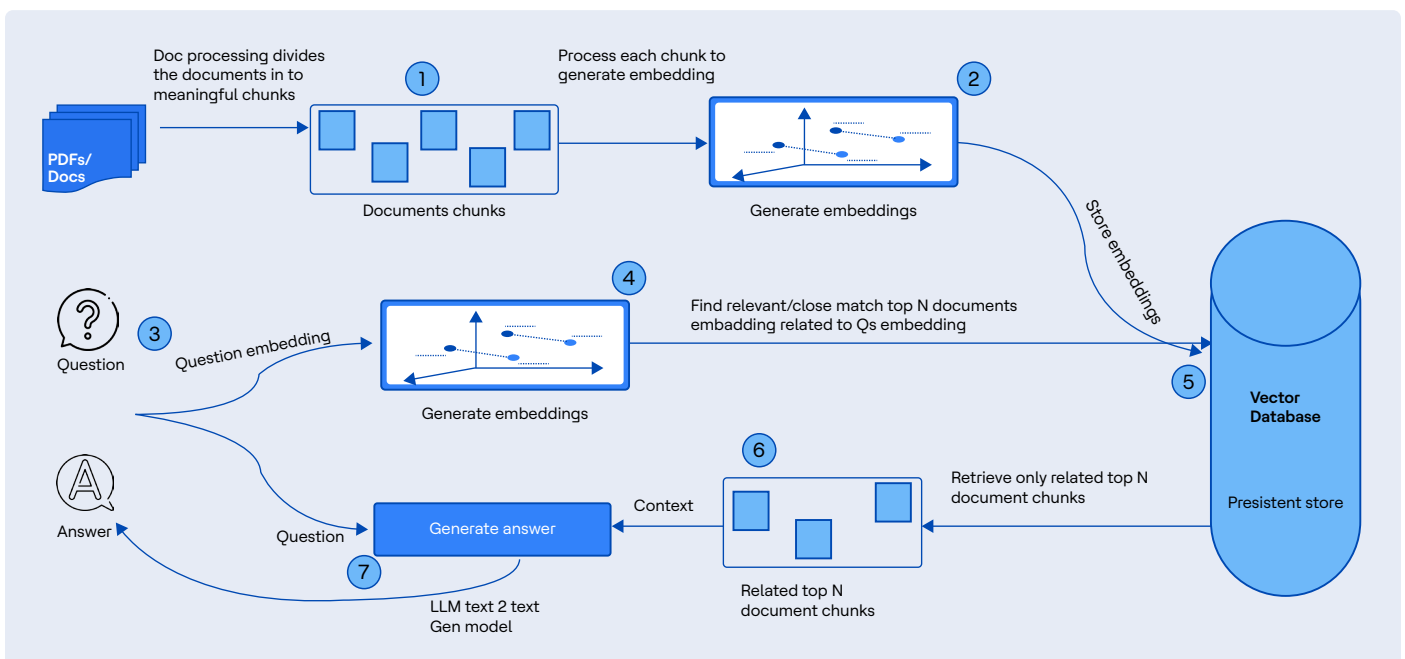
Overview

Every organization possesses a vast knowledge base embedded within its extensive document repositories. The majority of this data is either untapped or there is no structured way to query, scan through multiple documents and prepare a response that is in line with the user expectations. This knowledge is critical for supporting both customers and internal employees in comprehending organizational processes, products, policies and much more. For large, multinational corporations with a diverse, multi-lingual workforce, GenAI-powered intelligent assistants can serve as highly effective support agents by retrieving precise information from these knowledge sources at scale.

GenAI Intelligent Assist leverages generative intelligence to efficiently search across an organization's documents and provide accurate information to questions or requests. With inbuilt multi-lingual capabilities, it can serve global workforces by delivering the right knowledge to the right people when they need it, regardless of language or location.



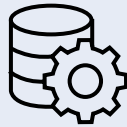
Process flow



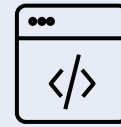
Data ingestion pipeline: Automated data ingestion pipeline to process documents at scale.



Document text extraction: Depending on the document type (audio, PDF, FAQ, etc.), the pipeline triggers appropriate workflows to extract text, tabular data and other key information.



Data chunking: To enable contextual storage and retrieval, large documents are split into smaller chunks.



Vector embedding generation: All chunks are then processed to generate vector embeddings, which are stored in a vector database. This allows data querying and similarity-based searches using vector embeddings.

Natural language Q&A: Interactive GUI enables users to

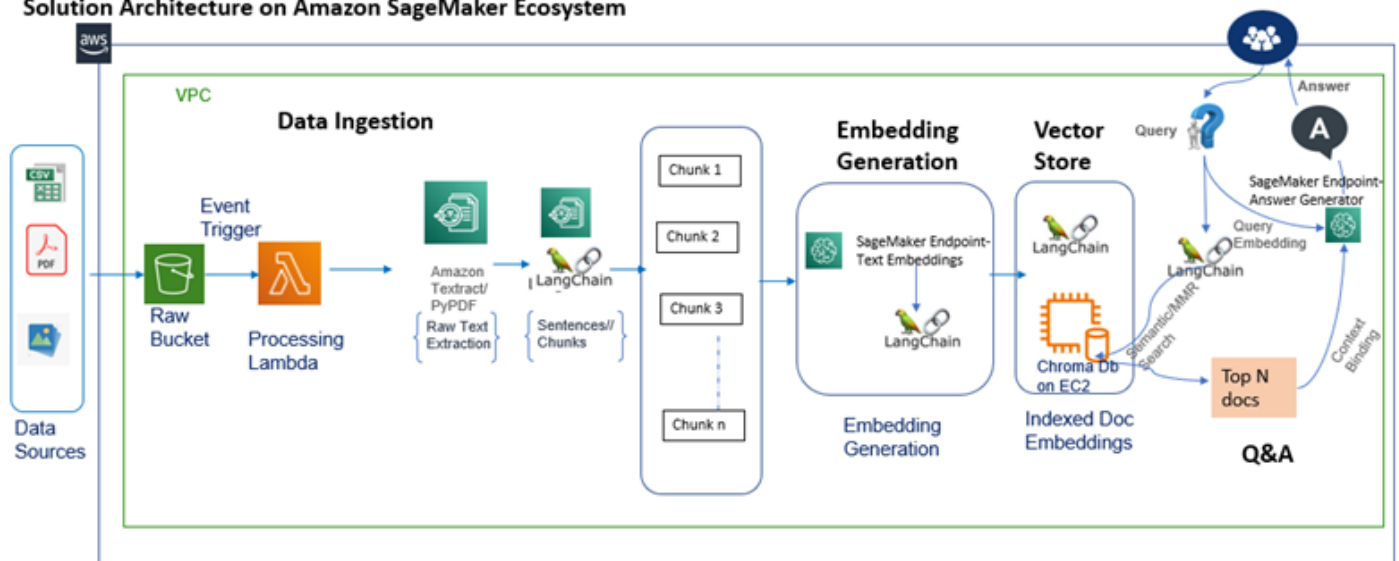
01 Ask questions related to the products/policies as you would in a very natural language way

02 The algorithm checks relevant matching documents from the ingested knowledge repository

03 Based on the context, the GenAI model (LLM) generates the contextual response and sends it back to the user

Natural language Q&A: Interactive GUI enables users to

Solution Architecture on Amazon SageMaker Ecosystem



- Core Architecture Components**
- Amazon Textract/PyPDF2:-** AI Services to extract text from the PDF/scanned docs/images.
 - Amazon SageMaker / Bedrock:-** API based LLM invocation (Bedrock), End Point based LLM Invocation
 - Langchain:-** open-source framework for developing applications powered by language models.
 - ChromaDb-** Vector DB for persistent storage & retrieval of documents & embeddings.
 - Streamlit-** open-source app framework for Machine Learning and Data Science teams

Industry adoption: The purpose of this solution is to enhance customer experience and focus more on value-added activities than searching for information, making it scalable and adaptable across various industries. Specifically, it helps customers better understand the products and services an organization offers. Below are some examples of how this solution can be implemented across different industries:

Industry	Solution adoption
Financial	Explain complex financial products and services to clients in a natural language way. Clients could receive personalized product recommendations based on their financial situations and goals.
Education	Virtual tutors or teaching assistants answer students' questions, provide feedback and adapt instruction to each learner's level of understanding. This enables more personalized and effective education for students.
Healthcare/Insurance	Assist customers in understanding various insurance products, determining health insurance eligibility and providing personalized insurance product recommendations tailored to each client's needs.
HR	Address employee inquiries regarding benefits, time off policies, training opportunities and other related topics. This allows companies to provide 24/7 employee support and respond to questions in a timely manner and this comes in more than handy, especially for new joiners.
Travel and hospitality	Virtual assistants can recommend activities, respond to common travel questions and assist with trip planning to improve the traveler's experience and convenience.
Retail	Provide personalized recommendations and comparisons to help customers find products best suited to their needs and answer common questions about product features and specifications.

HCLTech | Supercharging Progress™

HCLTech is a global technology company, home to more than 221,000 people across 60 countries, delivering industry-leading capabilities centered around digital, engineering, cloud and AI, powered by a broad portfolio of technology services and products. We work with clients across all major verticals, providing industry solutions for Financial Services, Manufacturing, Life Sciences and Healthcare, Technology and Services, Telecom and Media, Retail and CPG, and Public Services. Consolidated revenues as of 12 months ending September 2023 totaled \$12.9 billion. To learn how we can supercharge progress for you, visit hcltech.com.

hcltech.com

