ABAP SDK for Google Cloud

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ABAP Developer

GOAL

To write code in development of applications and services in SAP applications to meet my key business needs

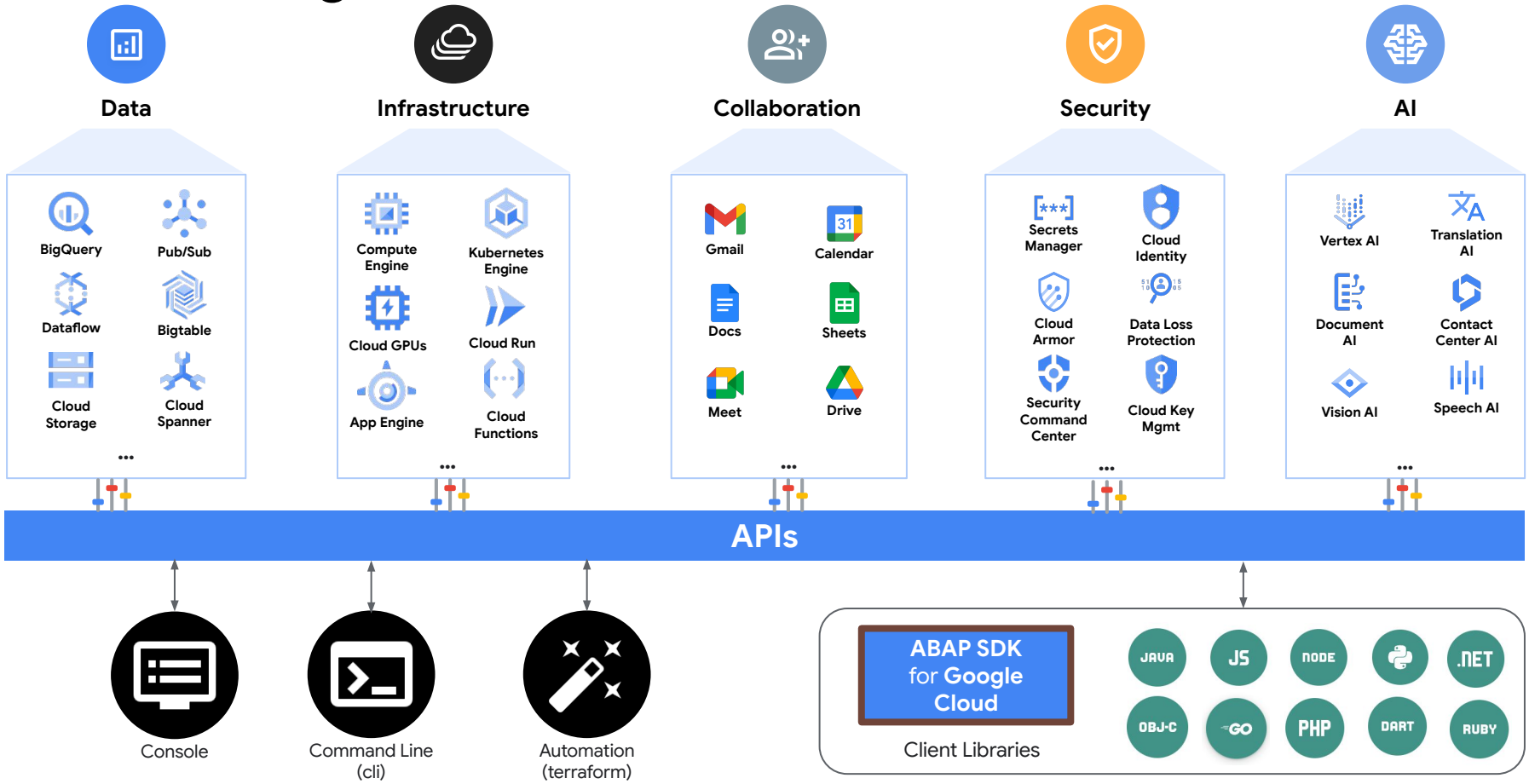
What I know well

- ABAP programming
- ABAP development tooling
- SAP data model
- SAP business logic
- SAP configuration
- SAP integrations
- SAP enhancement options
- Tribal knowledge of key design decisions

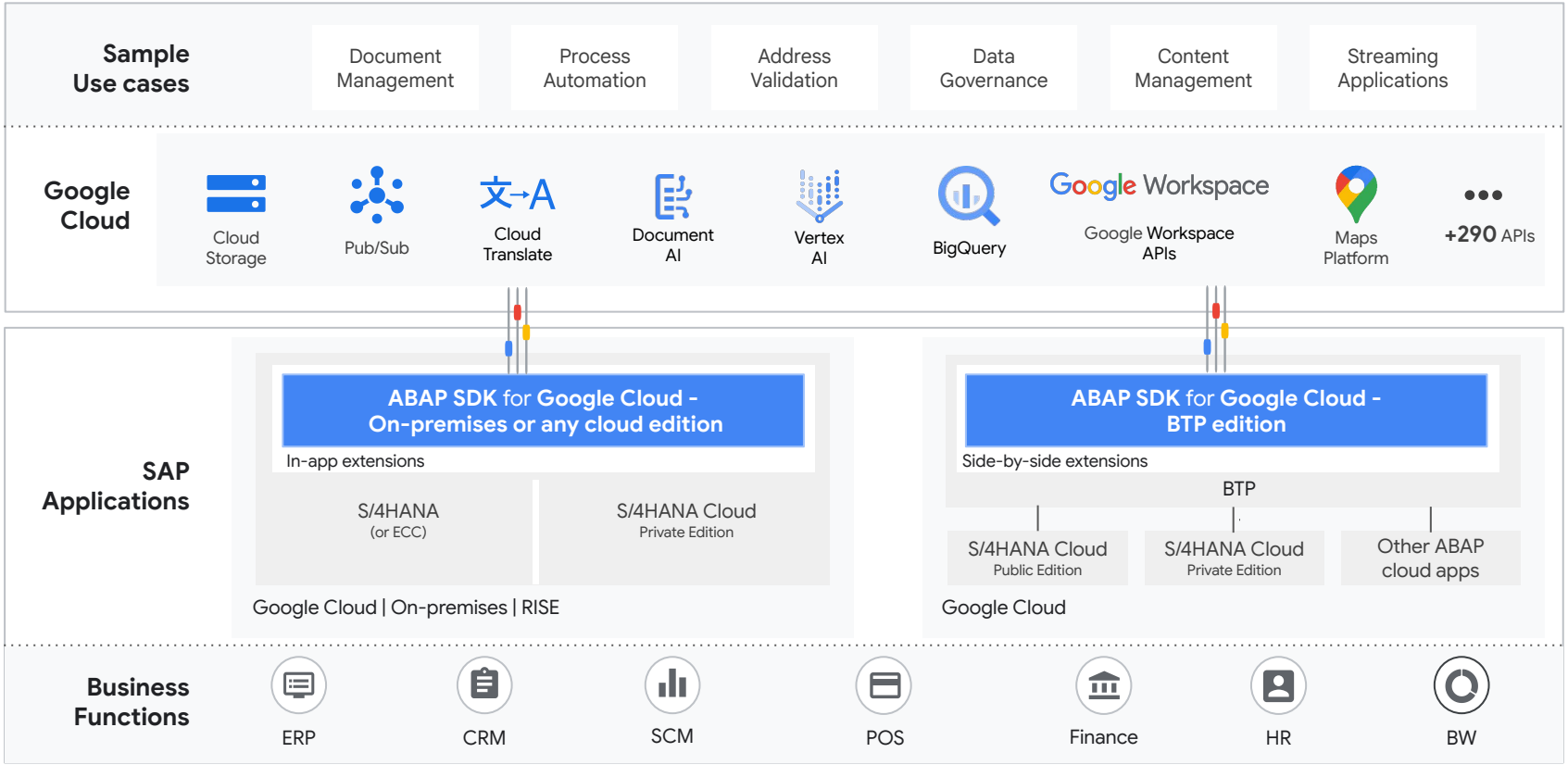
Where I need help

- Innovate with cloud native services
- Integrate with cloud native services
- Securely connect with cloud native services
- Build using AI/ML within the confines of my SAP application
- Use my strong ABAP skills to build modern applications
- Deliver innovations faster without having to learn a new programming language
- Be relevant in this new age of (Gen)AI

What Google Cloud offers



ABAP SDK for Google Cloud democratizes AI for SAP ABAP developers

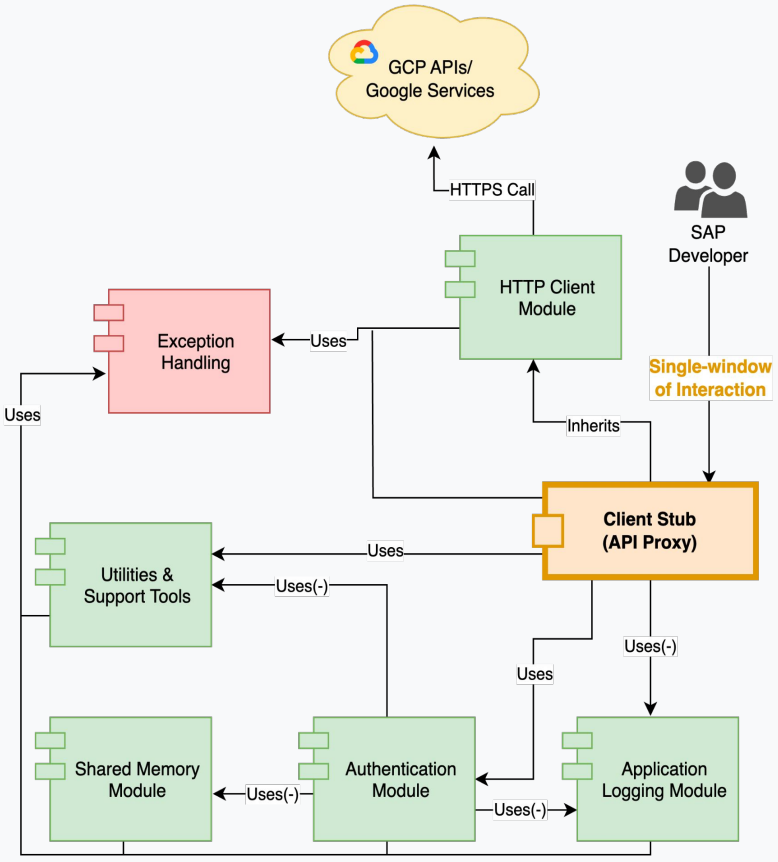


SAP | Google Cloud

Proprietary + Confidential

Technical Building Blocks

- Simplified interactions between SAP ABAP stack and GCP technologies
- Encapsulating the complexities of the integration with Google API's (Client Stubs) enabling a Single-window of interaction for ABAP developers.
- Google supported authentication - OAuth using IAM and gcloud CLI, JWT and API Keys, supporting on-GCP and off-GCP SAP deployments.
- Utilities & Support Tools: Configuration Validation, RFC helper, Code wizard and demo programs,



(-) Optional usage with toggle flag

Google Cloud

5 Simple steps to call any Google API from ABAP

Proprietary + Confidential

Developer actions

★ Code Wizard for faster development

SDK Implicit Features

```
4  DATA lv_p_projects_id TYPE string.
5  DATA lv_p_topics_id   TYPE string.
6  DATA ls_input         TYPE /goog/cl_pubsub_v1=>ty_023.
7
8  TRY.
9      " Open HTTP Connection
10     DATA(lo_pubsub) = NEW /goog/cl_pubsub_v1( iv_key_name = 'CLIENT_KEY' ).
11
12     " Populate the relevant input parameters
13     lv_p_topics_id = 'SAMPLE_TOPIC_01'.
14     lv_p_projects_id = lo_pubsub->gv_project_id.
15     APPEND VALUE #( data = cl_http_utility=>encode_base64( 'Hello World!' ) )
16                     TO ls_input-messages.
17
18     " Call the API method
19     lo_pubsub->publish_topics( EXPORTING iv_p_projects_id = lv_p_projects_id
20                                          iv_p_topics_id   = lv_p_topics_id
21                                          is_input         = ls_input
22                                IMPORTING es_output        = DATA(ls_output)
23                                          ev_ret_code      = DATA(lv_ret_code)
24                                          ev_err_text      = DATA(lv_err_text)
25                                          es_err_resp      = DATA(ls_err_resp) ).
26
27     " Handle the output
28     IF lo_pubsub->is_success( lv_ret_code ).
29       MESSAGE 'Message was published!' TYPE 'S'.
30     ELSE.
31       MESSAGE 'Message was not published!' TYPE 'E'.
32     ENDIF.
33
34     " Close the HTTP Connection
35     lo_pubsub->close( ).
36
37   CATCH /goog/cx_sdk INTO DATA(lo_exception).
38     MESSAGE lo_exception->get_text( ) TYPE 'E'.
39 ENDTRY.
```

1. Connect to API
2. Construct Input
3. Call API Method
4. Handle Errors
5. Read Response

ABAP SDK

- Authorization
- Authentication
- Data Serialization
- HTTPs Communication
- Error Handling
- Data Deserialization

ABAP SDK a foundation - SAP Enterprise Apps/CUJs powered by GCP

Use Case Patterns

- Agentic AI apps for SAP
- Real-time business decisions with BigQuery ML
- Business Process Automation using Document AI
- Real-time event driven system integration
- AI Infused Content Management
- Secure SAP system and Apps

Solutions/ Accelerators

Google Developed/Supported

- BigQuery toolkit
- BQ Connector with SLT
- Vertex AI SDK
- SAP Content repository on GCS
- SAP Archiving to GCS & BigQuery

Partner/Community

- SAP Dev Community
- Neptune Software

Customer Developed Solution

- Custom Dev Z Solutions using ABAP SDK

ABAP SDK for Google Cloud

- Connectivity
- Security
- Data Serialization
- Error Handling
- Code Wizard

SAP Applications

Google Cloud | On Prem | Any Cloud | BTP

ERP | CRM | BTP | POS | Finance | HR | BW

Google Cloud

- Cloud Storage
- Pub/Sub
- Cloud Translate
- Document AI
- Vertex AI
- BigQuery/ BQML
- Maps Platform
- 290+ APIs

Automating Order Entry in SAP using ABAP SDK

Purchase Order

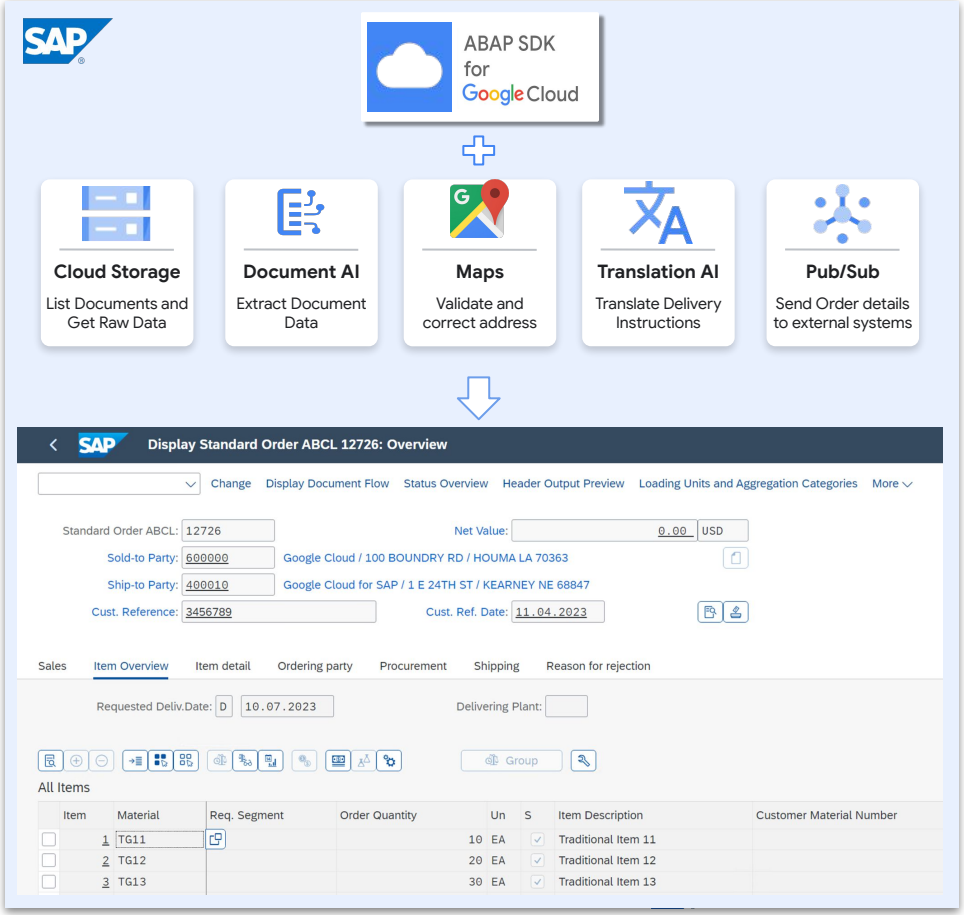
Purchase Order Date: 04/11/2023
Purchase Order Number: 3456789
Delivery Date: 07/04/2023

Sold To
Google Cloud for SAP 100 Bunodry Road Houma LA 70363

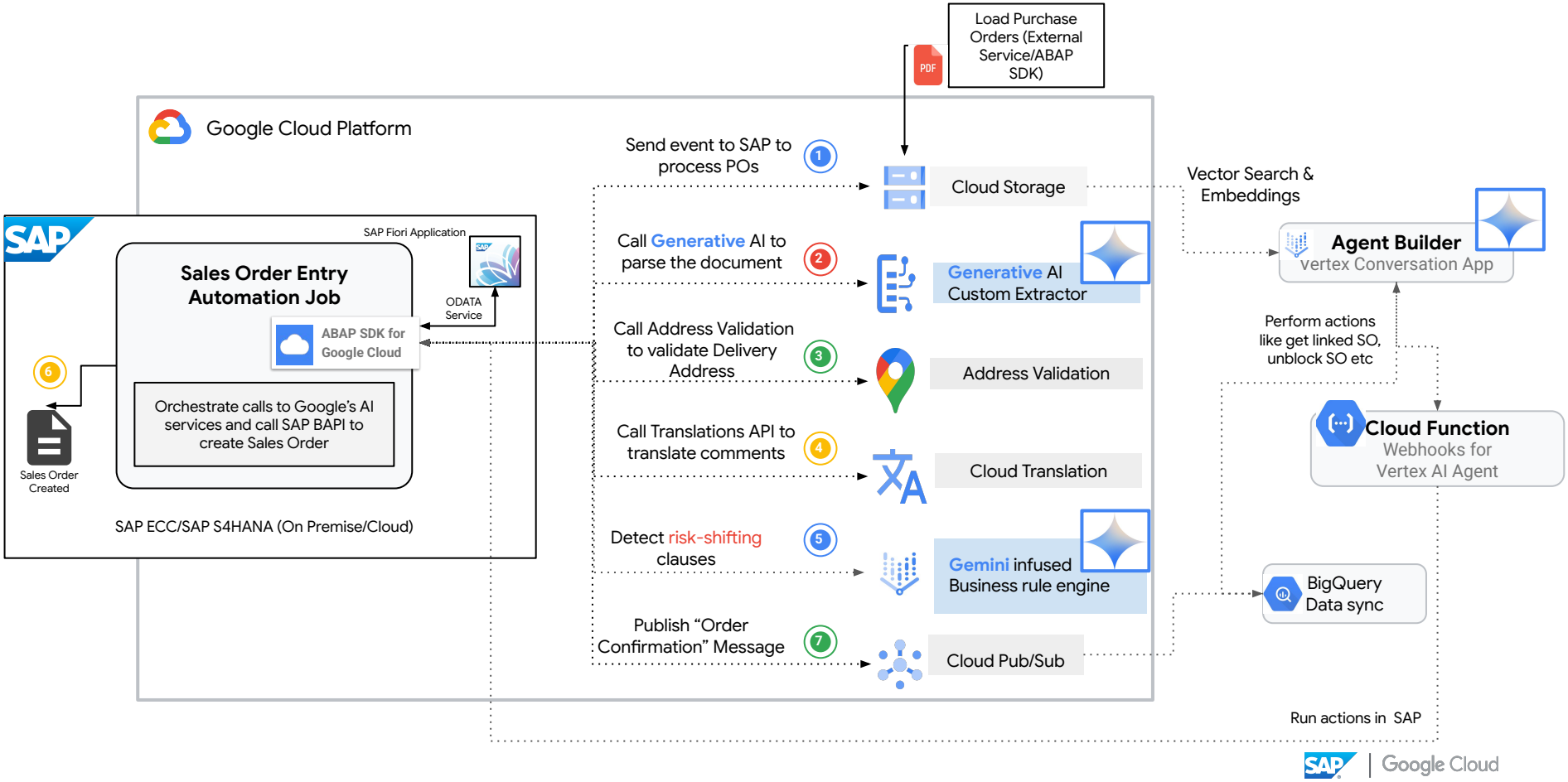
Ship To
Google Cloud 1 East 24th St Krney NE 68847

Item#	Product	Description	Qty	Unit Price	Total
1	TG11	Traditional Item 11	10	100.00	1,000.00
2	TG12	Traditional Item 12	20	100.00	2,000.00
3	TG13	Traditional Item 13	30	100.00	3,000.00
				Sub Total	6,000.00
				Tax	500..00
				Total	6,500.00

Delivery Comments
Send venligst varerne på tidligste leveringsdato og brug venligst genbrugs pakningsmateriale til forsendelsen. På forhånd tak!



AI infused architecture for order processing



Identify & mitigate Risk-Shifting clauses using Gemini

PURCHASE ORDER

Pinnacle Textiles
(321) 456-7890
pinnacle.textiles@example.com

DATE
04/01/2023

PURCHASE ORDER NO.
5002000027

VENDOR

Google Cloud for SAP
100 Bunodry Road
Houma LA 70363

SHIP TO

Google Cloud
1 East 24th St
Krney NE 68847

ITEM NO.	DESCRIPTION	QTY	UNIT PRICE	TOTAL
WD-PC-1001	Lead Pencils - Pack of 6	62	28,504.50	1,767,279.00
PP-CP-1012	Printer Paper - Dark Red - 250 Sheets	75	8,458.50	634,387.50
AR-T-1001	Paper Tray - Blue	64	23,000.32	1,472,020.48
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
		SUBTOTAL		3,873,686.98
		TAX	3.80%	147,200.11
		TOTAL(USD)		4,020,887.09

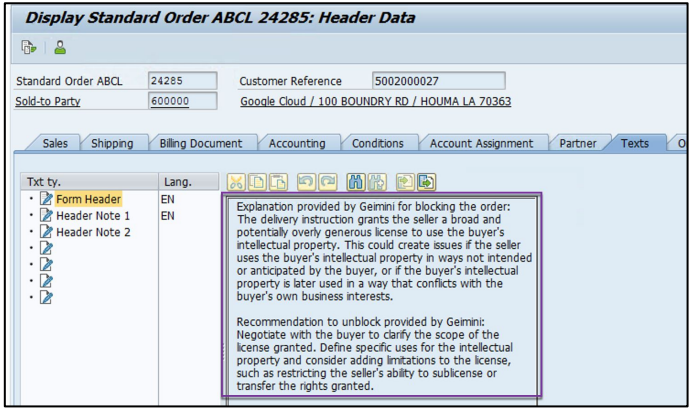
Delivery Comments

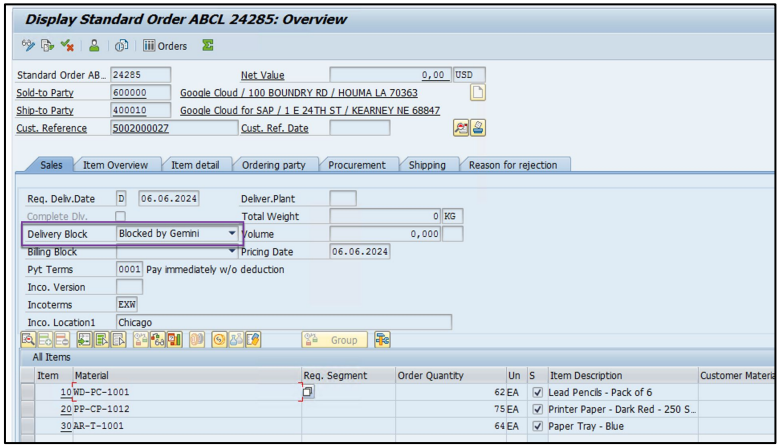
"Buyer grants seller a royalty-free, perpetual, irrevocable license to use any intellectual property developed in connection with the products."

DELIVERY DATE	02/28/2025	AUTHORIZED SIGNATURE	Maeve Drake

For questions concerning this purchase order, please contact

Gemini

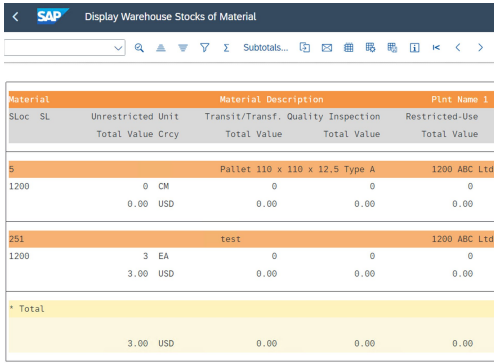




Enterprise search can be hard and time consuming

.. when your data is stored in multiple systems and in multiple formats

ERP



Material			Material Description		Plnt Name 1
SLoc SL	Unrestricted Unit		Transit/Transf.	Quality Inspection	Restricted-Use
	Total Value	Crcy	Total Value	Total Value	Total Value
5			Pallet 110 x 110 x 12,5 Type A		1200 ABC Ltd
1200	0	CM	0	0	0
	0.00	USD	0.00	0.00	0.00
251			test		1200 ABC Ltd
1200	3	EA	0	0	0
	3.00	USD	0.00	0.00	0.00
* Total					
	3.00	USD	0.00	0.00	0.00

Media

Text

Review 1: These multicolored sticky notes are a game changer. I love using different colors to organize my thoughts and projects. The adhesive is strong enough to stay put, but gentle enough to remove without damaging surfaces.

Review 2: I'm disappointed with the quality of these sticky notes. The colors are vibrant, but the paper is thin and flimsy. The adhesive doesn't hold well, especially on vertical surfaces.

Review 3: I'm so happy with my purchase of these multicolored sticky notes. They add a pop of color to my workspace and make it easy to keep track of my to-do list. The adhesive is reliable and re-stickable.

Review 4: These sticky notes are not worth the money. The adhesive is weak and the colors bleed when you write on them. I wouldn't recommend these to anyone.

Review 5: I love these multicolored sticky notes! They're perfect for jotting down quick notes, reminders, and ideas. The different colors help me stay organized and the adhesive keeps the notes securely in place.

Review 6: These sticky notes are a major disappointment. The colors are dull and the adhesive is so weak that the notes fall off within minutes. I wouldn't waste my money on these again.

Review 7: I'm obsessed with these multicolored sticky notes. They're not only functional but also visually appealing. The vibrant colors brighten up my workspace and the adhesive is strong enough to hold the notes in place.

For instance:

Amy, an Ad Campaign Manager for Cymbol Stores, wants to create a clearance sale for:

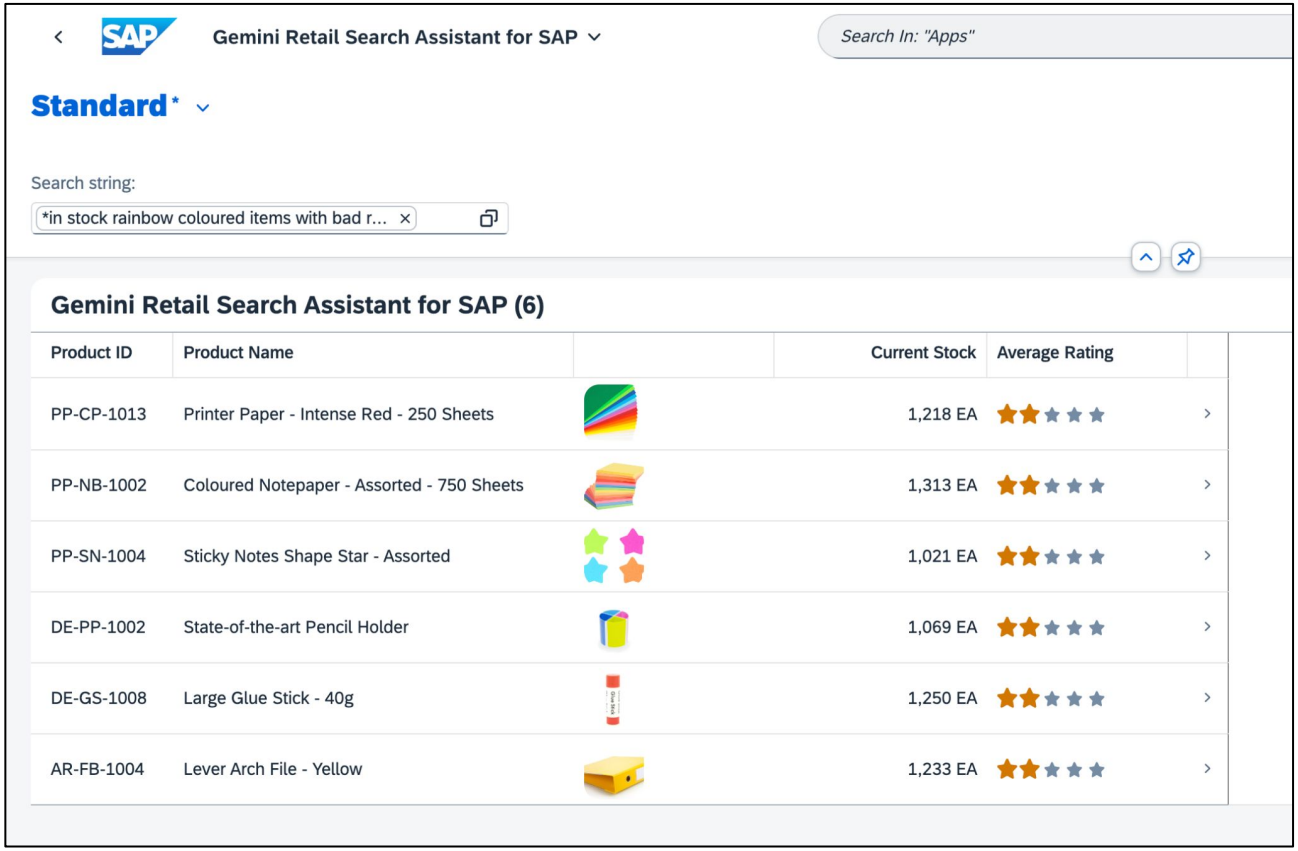
In stock Rainbow colored items with bad reviews

But, Amy finds it challenging to search through pages of images and free text to find the right product mix for the clearance campaign.

Enterprise search with Vertex AI Vector Search

Amy

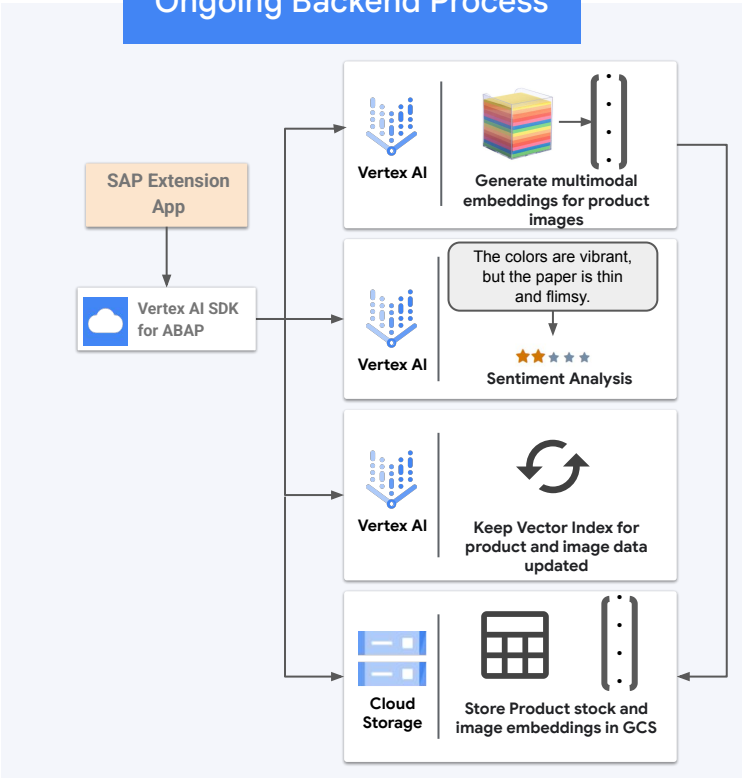
"In stock Rainbow colored items with bad reviews"



List of products to start the clearance campaign

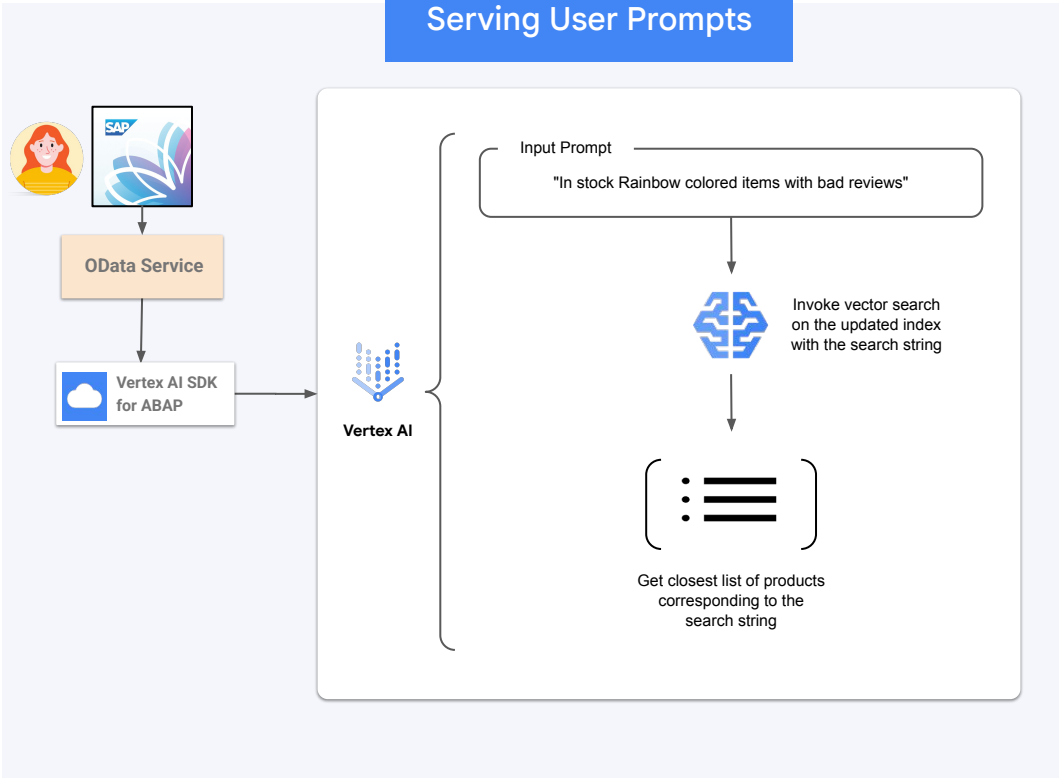
Technical Flow - Detailed View

Ongoing Backend Process



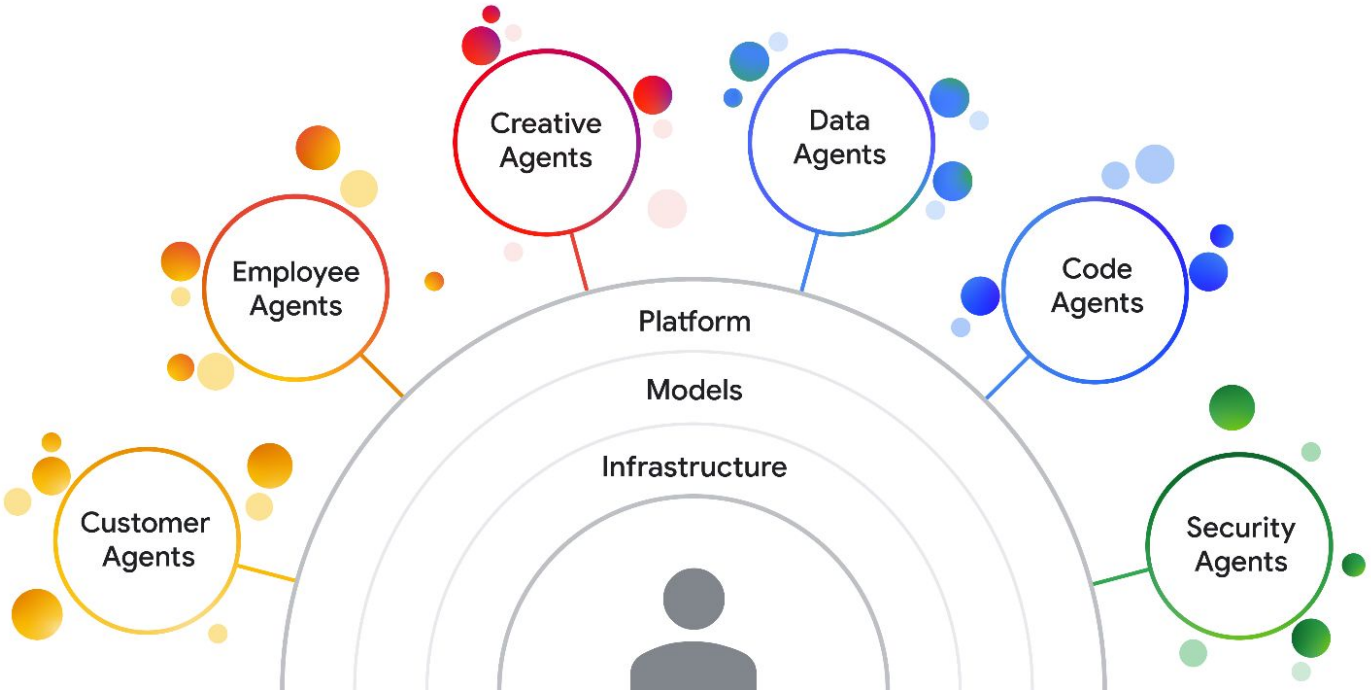
- Load Product Image data to GCS
- Generate multimodal embeddings for Product Images
- Generate numerical rating for product reviews
- Store Product Stock and image embeddings in GCS

Serving User Prompts



- Input a natural language based prompt
- Internally convert the prompt to semantic vector representation (text embeddings)
- Perform Vector Search based on the embeddings
- Return back closest product matches and list on the UI5 application

Agents present the biggest opportunity to drive business impact with AI

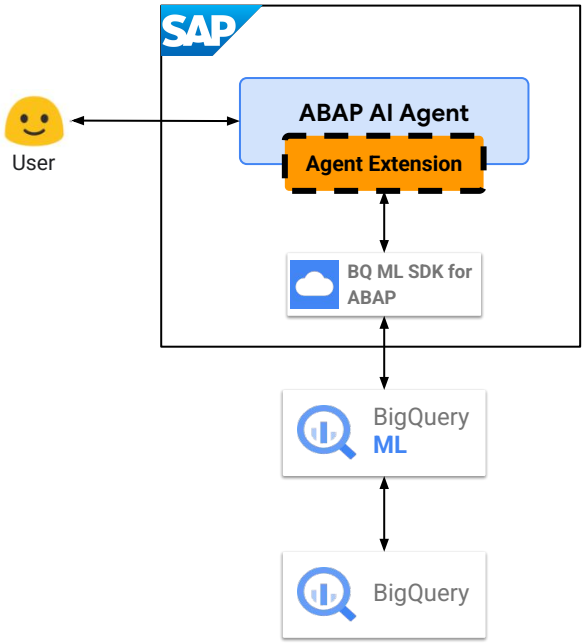


Develop intelligent ABAP AI Agents with BigQuery AI/ML

Key Impact: *An agent developed in SAP can now use **BigQuery AI/ML capabilities** to achieve its goals*

Tools in the SDK enable the Agent to:

- Orchestrate **Gemini** driven insight on enterprise data stored in BigQuery.
- **Manage embeddings** in Low Cost BigQuery Vector DB
  - Generate embeddings for the data replicated by BQ SLT Connector or BQ Toolkit,
  - Store/update embeddings in BQ datasets up to date with recent SAP data.
- Build BigQuery **Vector Search** agent extension for capabilities like,
  - Performing vector similarity search,
  - Retrieving data from BigQuery for RAG (Fine Tuning).



Building Blocks to enable above impacts

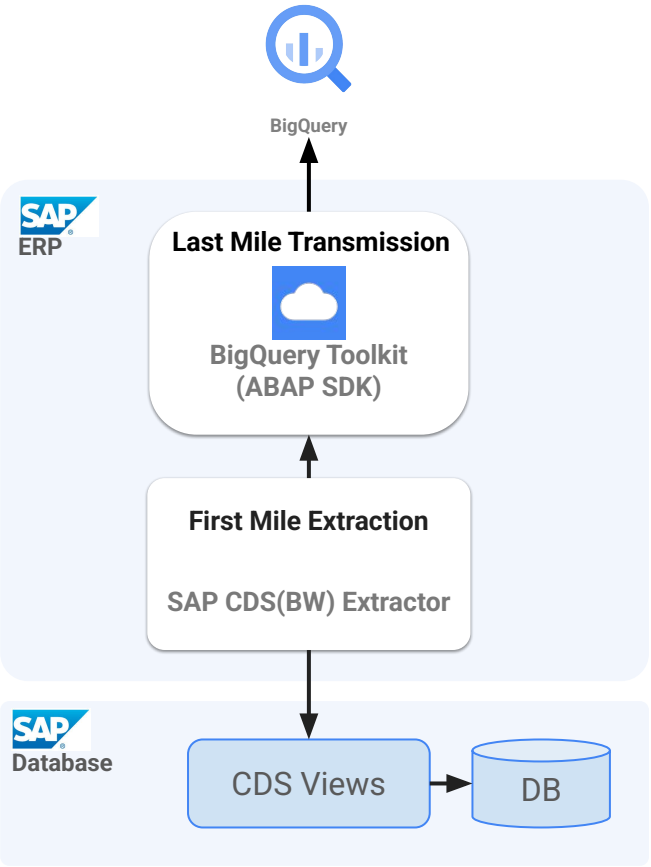
- Provide **opinionated request and response** for ABAP Agent to invoke extensions and drive Agent actions.
- Provide **configurable and developer-friendly approach** to unlock the full potential AI/ML capabilities on BigQuery.

BQ Toolkit - Solution Overview

SAP Native Data Replication solution that works with ERP systems deployed On-prem / Any Cloud

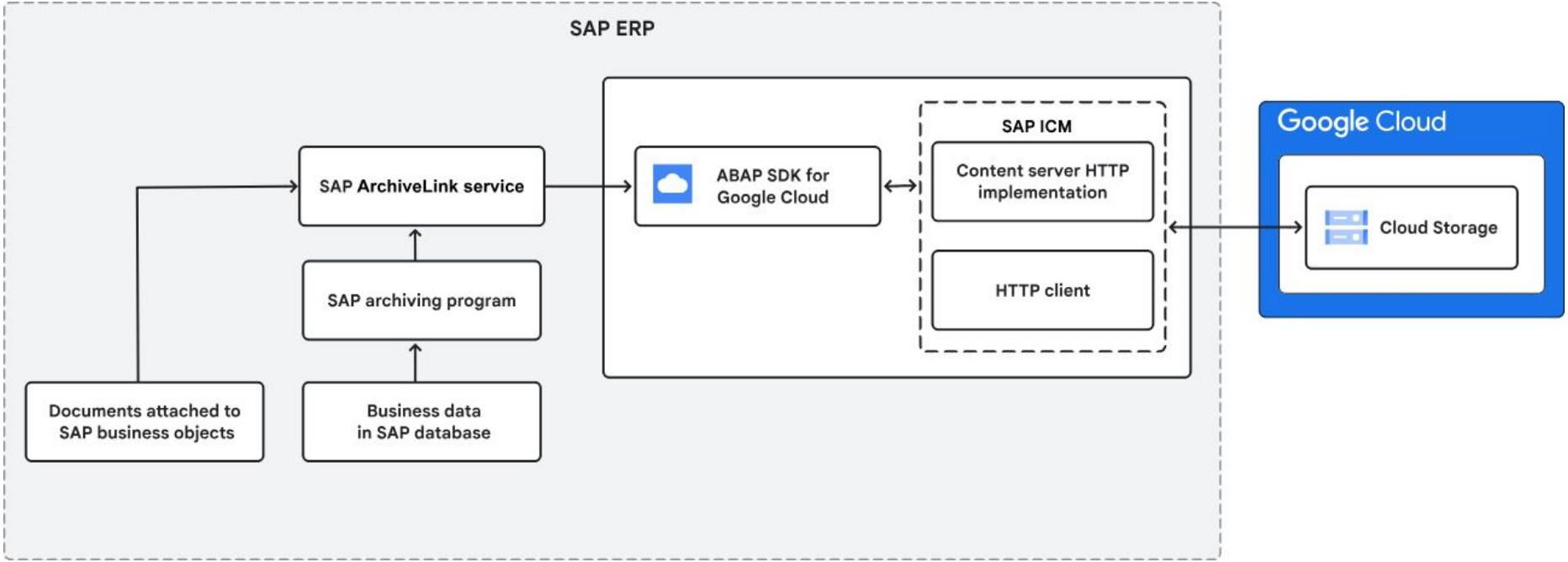
ABAP SDK BigQuery Toolkit provides **Last Mile Transmission** to BigQuery with the same controls and capabilities as BigQuery (SLT) Connector

SAP CDS(BW) Extractor provides the **First Mile Extraction** capabilities including Initial Load, Change Data Capture (CDC), Error & Retry Handling, Parallel Processing etc.



SAP | Google Cloud

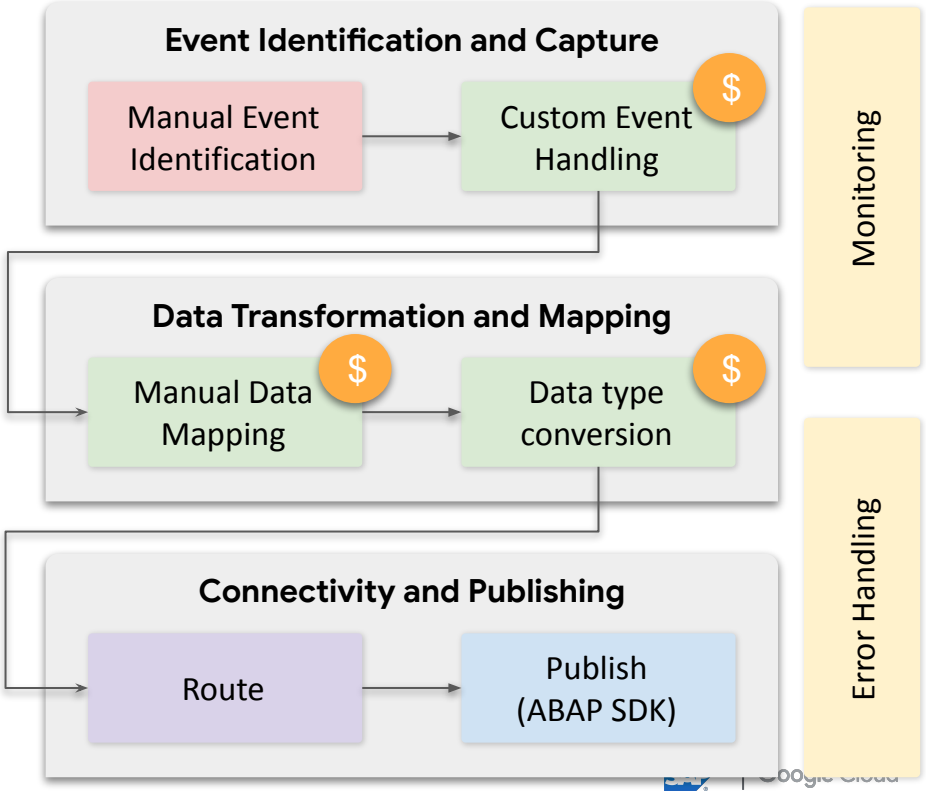
Leverage Cloud Storage as a Scalable SAP Content Repository



Need for Simplification of SAP Events

Connecting SAP: 5 Key Challenges

01	SAP systems are event-driven, but complex
02	Specialized Skills Gap
03	Custom development is costly and time-consuming
04	Lack of standardized event formats for cloud integration
05	Need to Reduce Middleware Dependency due to high cost



Business Eventing Toolkit for SAP

Universal Adapter for SAP Events

Connect to Any SAP Event:

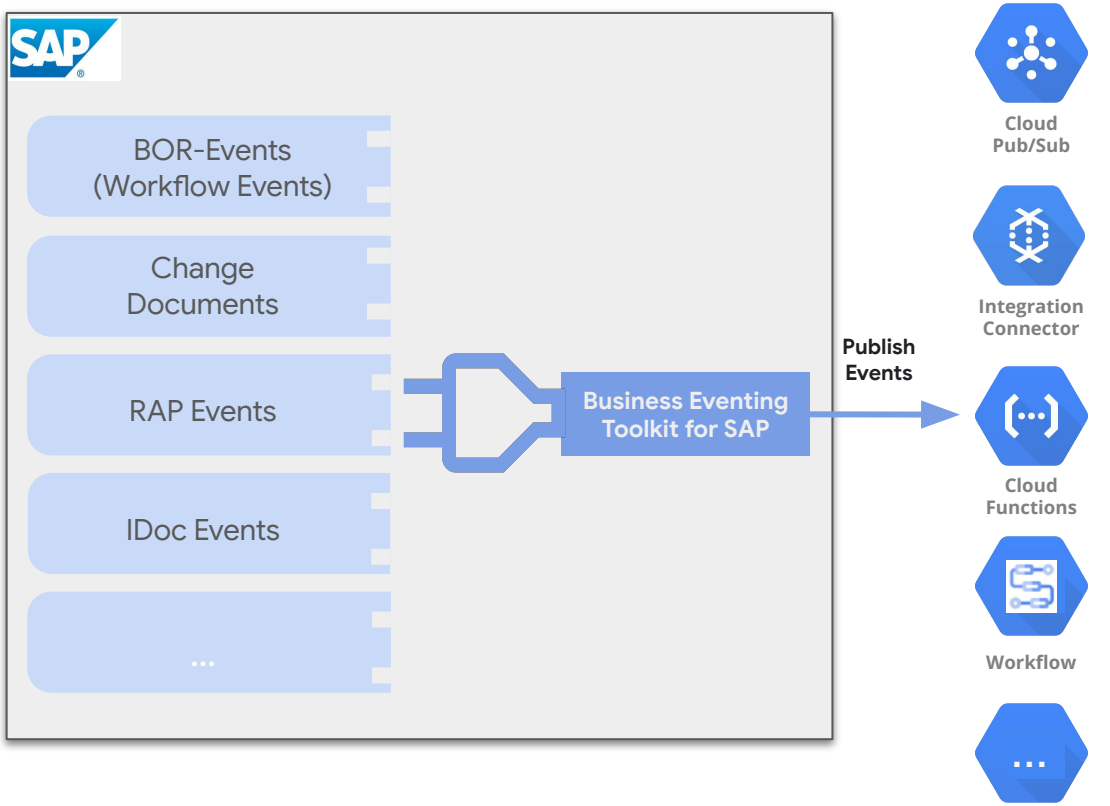
- Pre-built connectors for Workflows Events, Change documents, RAP Events etc..
- Easily extend to support custom events.

Publish to Any Google Cloud Service:

- Seamless integration with Pub/Sub, Cloud Functions, and other Google Cloud services.
- Flexibility to route events to the right destination for processing and analysis.

Simplified Configuration:

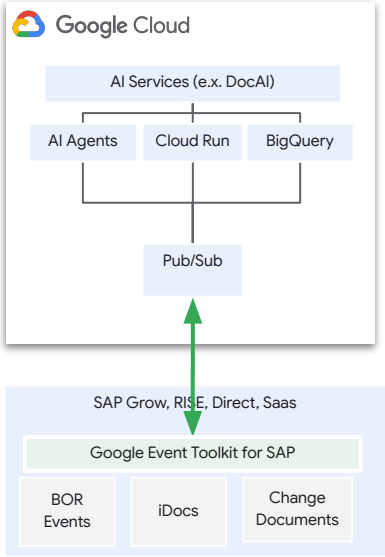
- User-friendly interface for managing event flows.
- No need to write complex code or understand intricate SAP event mechanisms.



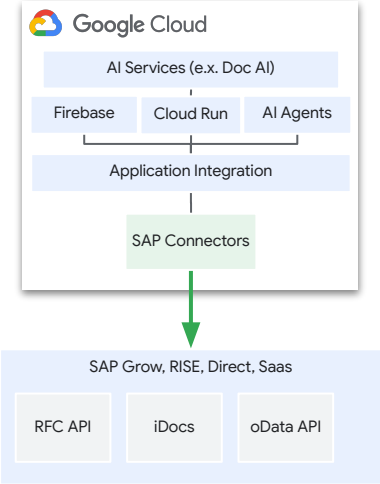
SAP | Google Cloud

Any Kind of SAP Integration is natively supported by Google

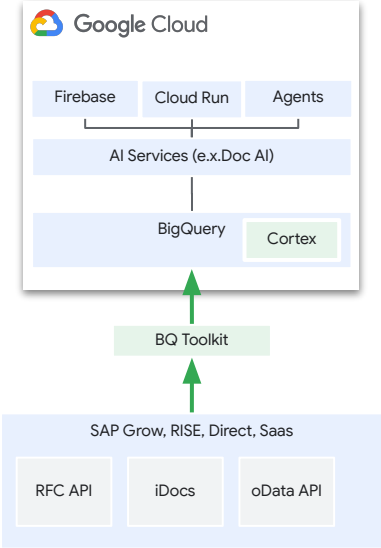
Event-Driven Integration



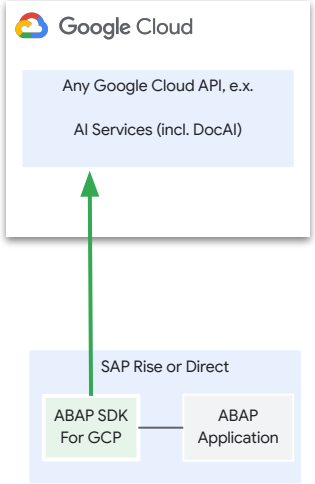
Call SAP API from Google Application



Data-rich applications

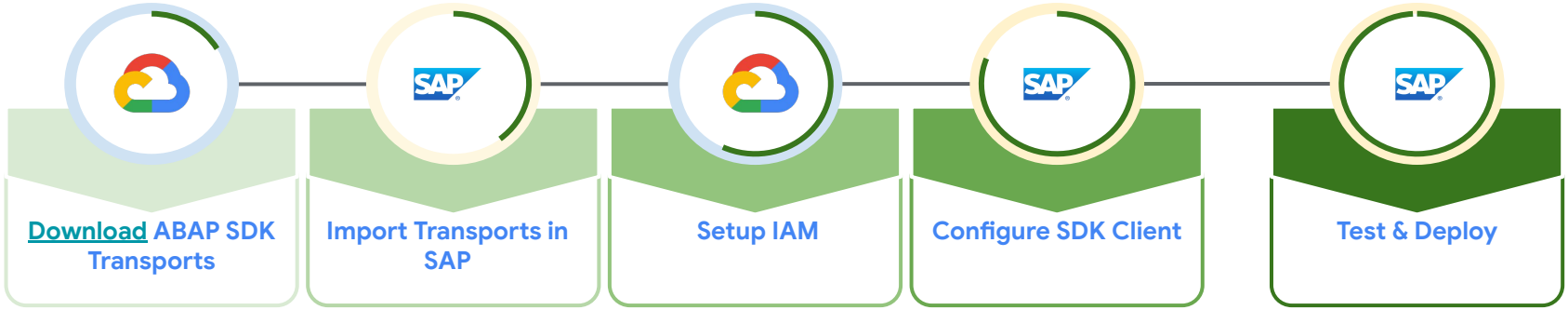


Call any Google API from SAP Application



SAP | Google Cloud

Onboarding the SDK takes ~1 hour



Basis Administrator

Basis Administrator

Cloud Administrator

Basis Administrator & SAP Developer

SAP Developer