PixelPhraser - Commercetools Connector
Multilingual Product Description Generator

The PixelPhraser - Commercetools Connector automates product description creation by leveraging Google Cloud Vision AI and Generative AI to interpret product images and generate detailed, relevant descriptions. It includes a Custom Application within the Commercetools platform for easy review and management of these AI-generated descriptions.

Additionally, the connector supports translation of descriptions into multiple locales, which can be easily configured directly from the Commercetools Merchant Center.

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1. Introduction

The PixelPhraser - Commercetools Connector automates product description creation, leveraging Google Cloud Vision AI and Generative AI to analyze product images and generate detailed, engaging descriptions. This solution interprets images to identify objects, colors, and sentiments, transforming this data into informative and SEO-friendly descriptions. A custom application within the Commercetools platform allows customers to review and approve or reject these AI-generated descriptions, ensuring quality and consistency. This streamlines the description creation process, enhancing efficiency and improving the accuracy and engagement of product content, ultimately driving sales and boosting customer satisfaction.

Additionally, the connector supports translation of product descriptions into multiple locales. These translations can be easily configured and managed directly from the Commercetools Merchant Center, allowing businesses to effortlessly scale content across regions and languages.
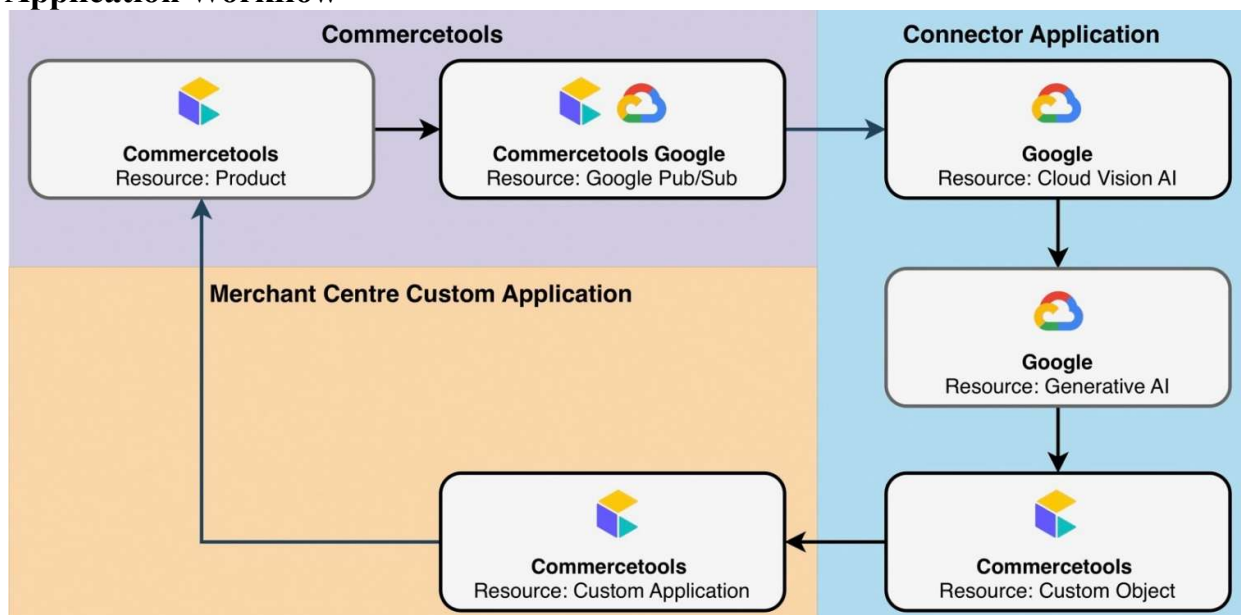
2. Features
- Automated Event-Driven Processing
- Advanced Image Analysis with Vision AI
- Generative AI-Powered Product Description Generation and Translation
- Temporary Storage Management using Custom Objects
- Custom Application for Review and configuration

3. Functional Overview

This connector is designed to automate the generation of product descriptions based on product creation events. Below is a step-by-step breakdown of its functionality:

- **Receiving Event Triggers:** The connector listens for product creation events to initiate the description generation process.

- **Checking Attribute:** It checks if the generateDescription attribute is set to true. If true, the connector proceeds with the description generation; if false, the process is skipped.

- **Analyzing Product Images:** The connector interprets product images using Vision AI. It captures various attributes such as labels, colors, text, objects, and web entities from the images.

- **Generating Descriptions:** High-quality, detailed descriptions are generated based on analyzed image data using Google Generative AI and seamlessly translated into the configured languages.

- **Updating Custom Objects:** The generated descriptions are stored temporarily in Commercetools Custom Objects for customer review.

- **User Interface for Review and Configuration:** Customers can search for descriptions, view associated images, and accept or reject the generated descriptions through a user-friendly interface, also they can configure the languages for translation etc.

4. Application Workflow

5. Key Components

- **Event Listener:**
  Functionality: Listens for product publication events in CommerceTools. Receives the event payload, parses product details, and checks if the "generateDescription" flag is true. If the attribute is present and true, it triggers description generation; otherwise, it skips the process.

- **Image Analysis with Vision AI**
  Module: productAnalysis
  Functionality: Analyzes product image URLs, extracting key visual elements such as labels, objects, colors, text, and web entities.
  Outputs: Structured image data providing foundational information for description generation.

- **Description Generation and Translation with Generative AI**
  Module: generateProductDescription
  Functionality: Generates product descriptions based on the structured image data. Ensures descriptions are relevant and engaging for e-commerce use and then translate the description to configured languages.
  Outputs: Fully generated product description ready for integration in CommerceTools.

- **Temporary Storage in CommerceTools**
  Creation: Initializes a custom object with placeholder metadata and description data.
  Update: Finalizes the object by adding generated description and relevant metadata, preparing it for customer review.

- **User Interface for Review and Configuration**
  Functionality: Allows customers to review and approve or reject these AI-generated descriptions. Also allows them to configure the languages for description translation.

6. Prerequisites and Setup

6.1 Commercetools Account and API Keys

- Navigate to Settings > Developer settings > Create new API client.
- Capture the following details:
  - *CTP_PROJECT_KEY*
  - *CTP_CLIENT_SECRET*
  - *CTP_CLIENT_ID*
  - *CTP_AUTH_URL*
  - *CTP_API_URL*
  - *CTP_SCOPE*
  - *CTP_REGION*

6.2 Google Cloud Platform (GCP) Setup

- Create a project in GCP and enable Vision API and Generative AI.
- Required credentials:
  Base64-encoded Service Account: BASE64_ENCODED_GCP_SERVICE_ACCOUNT
  Generative AI API Key and Model: GENERATIVE_AI_API_KEY, GEMINI_MODEL

6.3 Environment Configuration

Configure your .env file with the following details:

```
# CommerceTools Credentials
CTP_PROJECT_KEY=Commercetools Composable Commerce project key
CTP_CLIENT_SECRET=Commercetools Composable Commerce client secret
CTP_CLIENT_ID=Commercetools Composable Commerce client ID
CTP_AUTH_URL=https://auth.commercetools.com/oauth/token
CTP_API_URL=https://api.commercetools.com
CTP_SCOPE=Commercetools Composable Commerce client scope
```

CTP_REGION=Commercetools Composable Commerce API region
CTP_EVENT_TRIGGER_NAME=Set the event trigger name. If there are multiple, separate them with commas. Supported triggers; [ProductVariantAdded, ProductImageAdded, ProductPublished]

Google Cloud Platform Credentials
BASE64_ENCODED_GCP_SERVICE_ACCOUNT=GCP Service Account in Base64 encoded format
GEMINI_MODEL=GEMINI_MODEL, example; [gemini-1.5-flash, gemini-2.0-pro]
GENERATIVE_AI_API_KEY=GENERATIVE AI API KEY to access Gemini

#Merchant Centre Custom Application
CUSTOM_APPLICATION_ID=The Custom Application ID from the Merchant Center
CLOUD_IDENTIFIER=The Cloud Identifier for the application
ENTRY_POINT_URI_PATH=The Application entry point URI path
ENABLE_NEW_JSX_TRANSFORM="true"
FAST_REFRESH="true"

7. Running the Application Locally
To set up and run PixelPhraser on your local machine:

- **Clone the Repository:**
  git clone https://github.com/amal-thomson/pixelphraser.git

- **Navigate to the Project Directory:**
  cd pixelphraser/event-pixelphraser #for event application
  or
  cd pixelphraser/mc-pixelphraser #for custom application

- **Install Dependencies:**
  yarn install

- **Configure Environment Variables:**
  Ensure the .env file is updated as described above.
- **Start the Application in Development Mode:**
  yarn start:dev #for event application
  or
  yarn start #for custom application
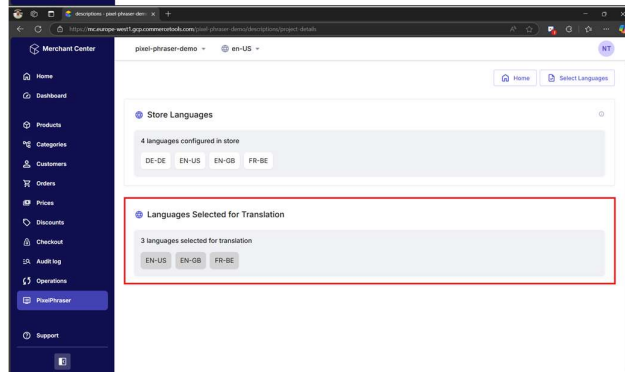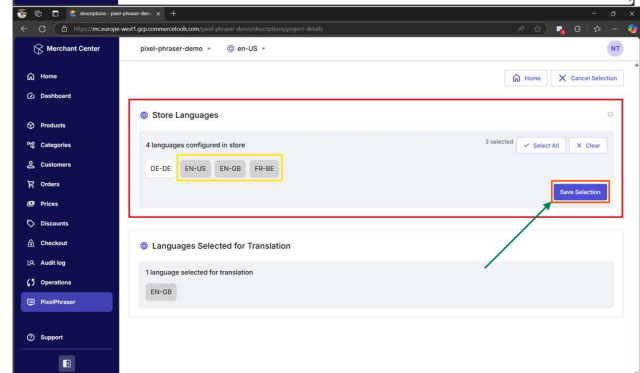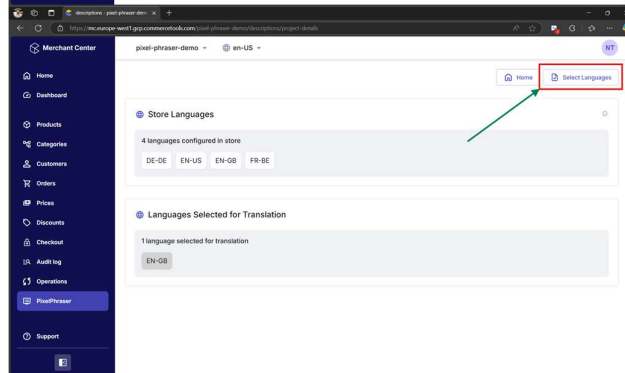
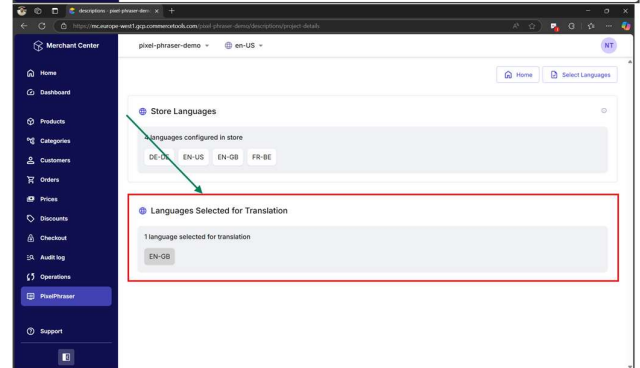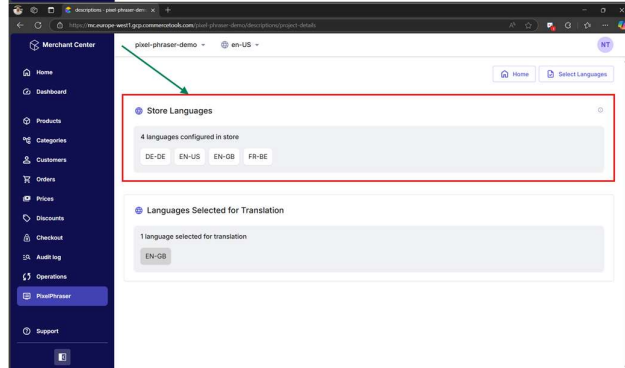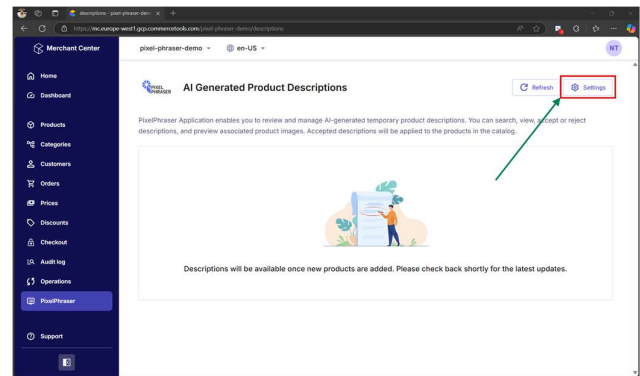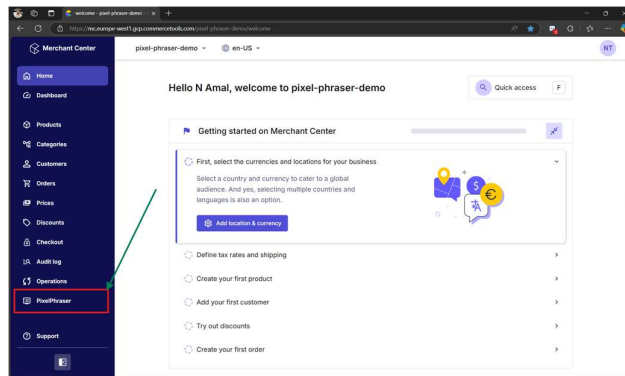## 8. Uninstalling the Connector
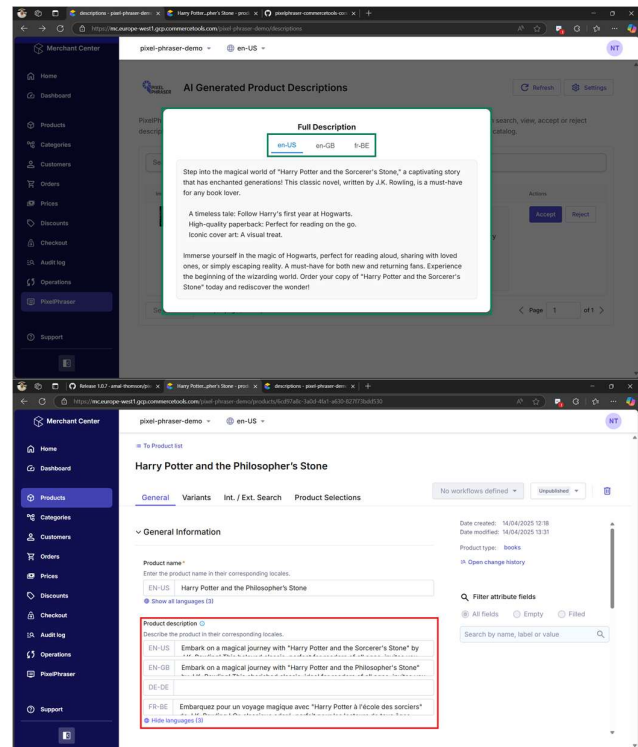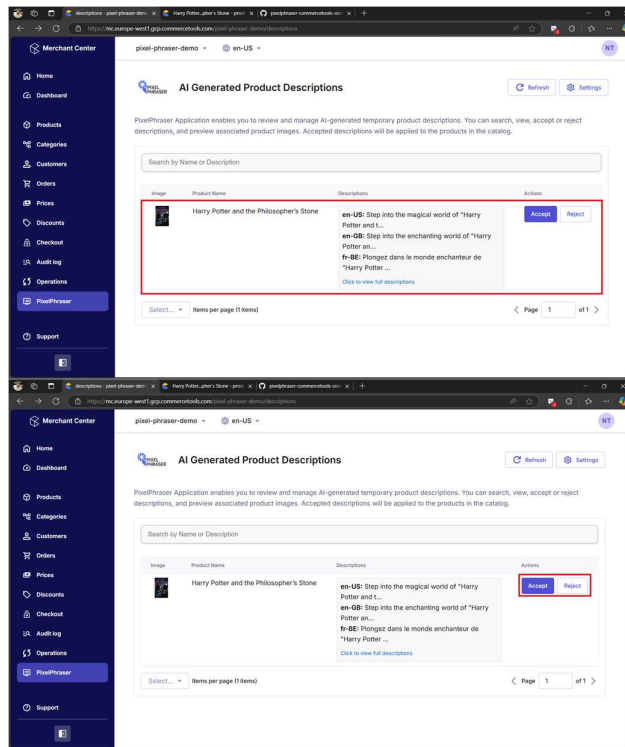To uninstall the PixelPhraser Connector from your Commercetools project:

- **Method 1: Using the Commercetools API**
  Send a DELETE request to the Custom Object's API endpoint. Refer to the API Documentation for DELETE Requests.

- **Method 2: Through Merchant Center**
  Navigate to Settings > Developer settings and remove the API client associated with PixelPhraser.

9. References
- Commercetools Documentation
- Google Cloud Documentation

10. Demonstration

This documentation provides a structured guide for setting up, operating, and uninstalling the PixelPhraser Connector for efficient product description automation in CommerceTools.