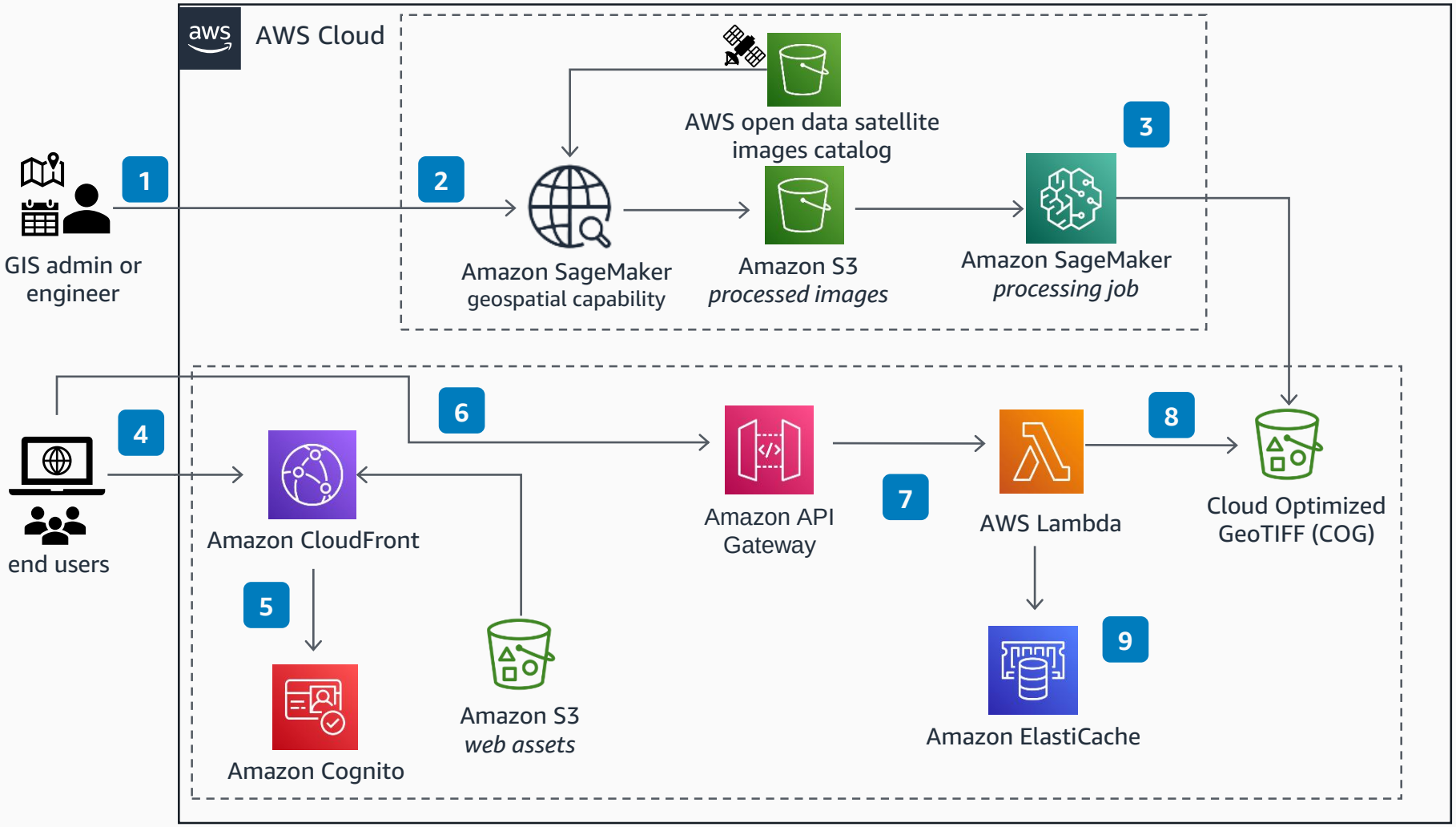
Guidance for Geospatial Data Enhancement for Agronomic Data Visualization on AWS

This architecture illustrates how to ingest, process, and visualize satellite images to monitor crop development and crop health.



1. Define an area of interest (AOI) and time range, then run an earth observation job (EOJ) on **Amazon SageMaker** geospatial capability to ingest true color, normalized difference vegetation index (NDVI), cloud cover, and land cover satellite images.
2. The EOJ searches the images from a Sentinel-2/LandSat8 catalog on AWS open data, processes the requested images, and stores them in **Amazon Simple Storage Service** (Amazon S3).
3. Run additional processing, like reprojection or clipping, using a **SageMaker** processing job and store the images in cloud optimized GeoTIFF (COG) format in **Amazon S3**.
4. Users navigate to a website to visualize satellite images. The website content is hosted on **Amazon S3** and is served using **Amazon CloudFront** distribution.
5. Users are first authenticated to the website using **Amazon Cognito.**
6. Users interact with the satellite images on a map; concurrent map view requests are sent to **Amazon API Gateway** to load the map at the selected location.
7. **API Gateway** forwards the requests to the **AWS Lambda** tile server to return the tiles matching the current view on the map.
8. The **Lambda** tile server retrieves the original GeoTIFF images from **Amazon S3** and generates small images corresponding to the current map view.
9. For subsequent map view requests on the same area, the images are pre-loaded from **Amazon ElastiCache** for a better user experience and faster response time.

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AWS Reference Architecture