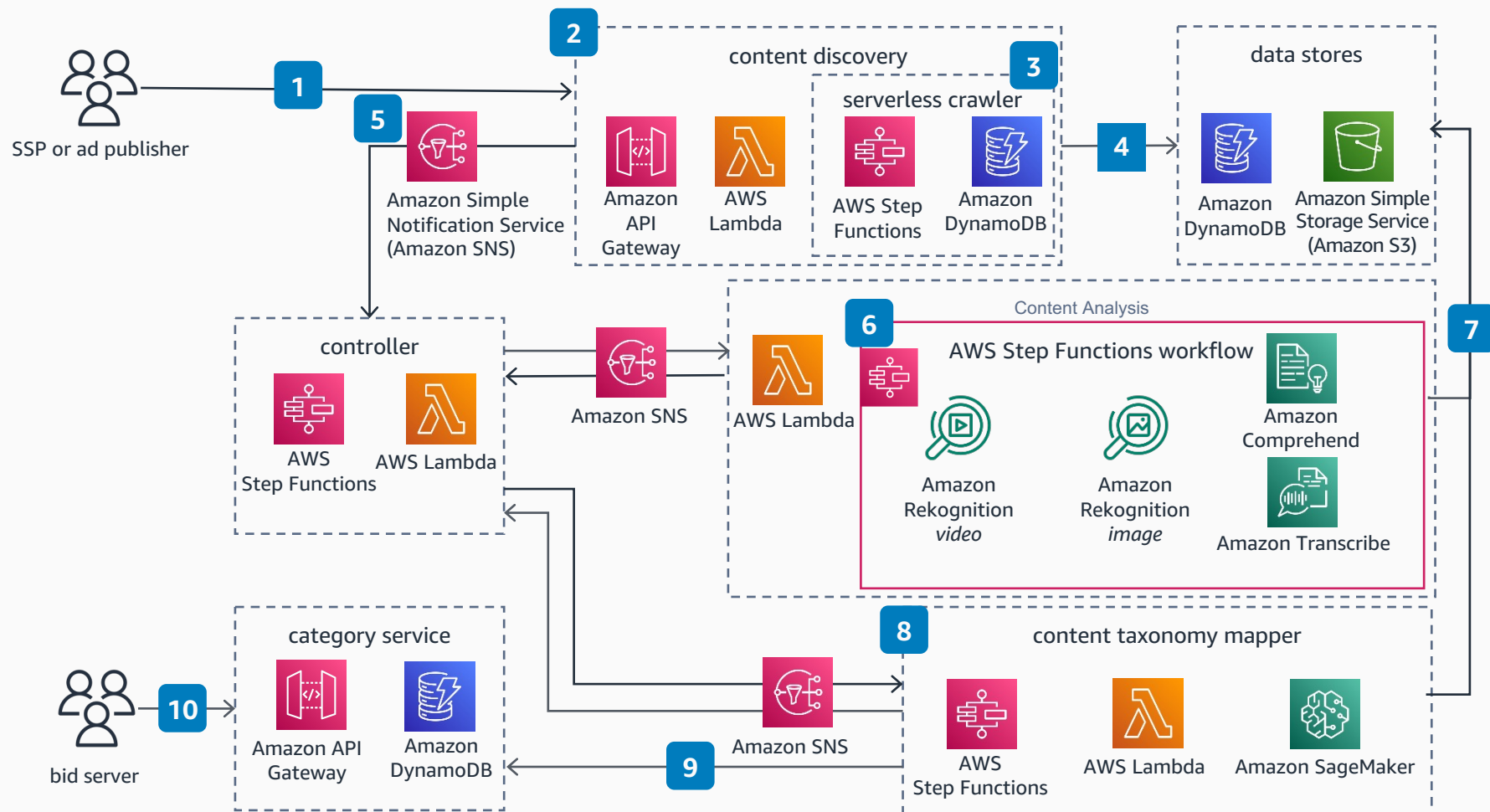


Contextual Intelligence Solution for Advertising

An event-driven serverless architecture for contextual advertising based on a highly scalable and cost optimized design. Contextual advertising enables advertisers to target an audience based on the content consumed by users. The architecture enables customers to build a contextual intelligence solution using AWS artificial intelligence (AI) and machine learning (ML) services to extract relevant metadata and map it to industry-standard taxonomy, which can be used to inform programmatic bidding.



- 1 Customers invoke an API on **Amazon API Gateway** to trigger content discovery to fetch text, images, audio, and video from the provided content.
- 2 Customers can use either a crawler or content management system API to extract different media types and store them in an **Amazon S3** bucket.
- 3 The [serverless crawler](#) is built on **AWS Step Functions** to orchestrate exploration and download of content. Ephemeral discovery data is stored in **Amazon DynamoDB**.
- 4 Content (text, image, video) is stored in **Amazon S3** and available metadata in **Amazon DynamoDB** for analysis.
- 5 Content discovery completion event starts controller orchestration built on **AWS Step Functions**, **AWS Lambda**, and **Amazon SNS**.
- 6 **Amazon SNS** events invoke **AWS Lambda** functions to start content analysis using **Amazon Comprehend**, **Amazon Rekognition**, and **Amazon Transcribe**.
- 7 **Amazon DynamoDB** stores topics, sentiment, and object labels from content analysis workflow.
- 8 Content Taxonomy Mapper (CTM) uses the [Bidirectional Encoder Representations from Transformers](#) (BERT) model deployed on **Amazon SageMaker**. CTM maps metadata in **Amazon DynamoDB** to an industry standard taxonomy such as [IAB Content Taxonomy](#).
- 9 The **AWS Lambda** function gets the mapping and stores it in **Amazon DynamoDB** within the category service.
- 10 Bidding servers invoke an API built on **Amazon API Gateway** to fetch categories from **Amazon DynamoDB** to create programmatic advertising bids with low latency.



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AWS Reference Architecture