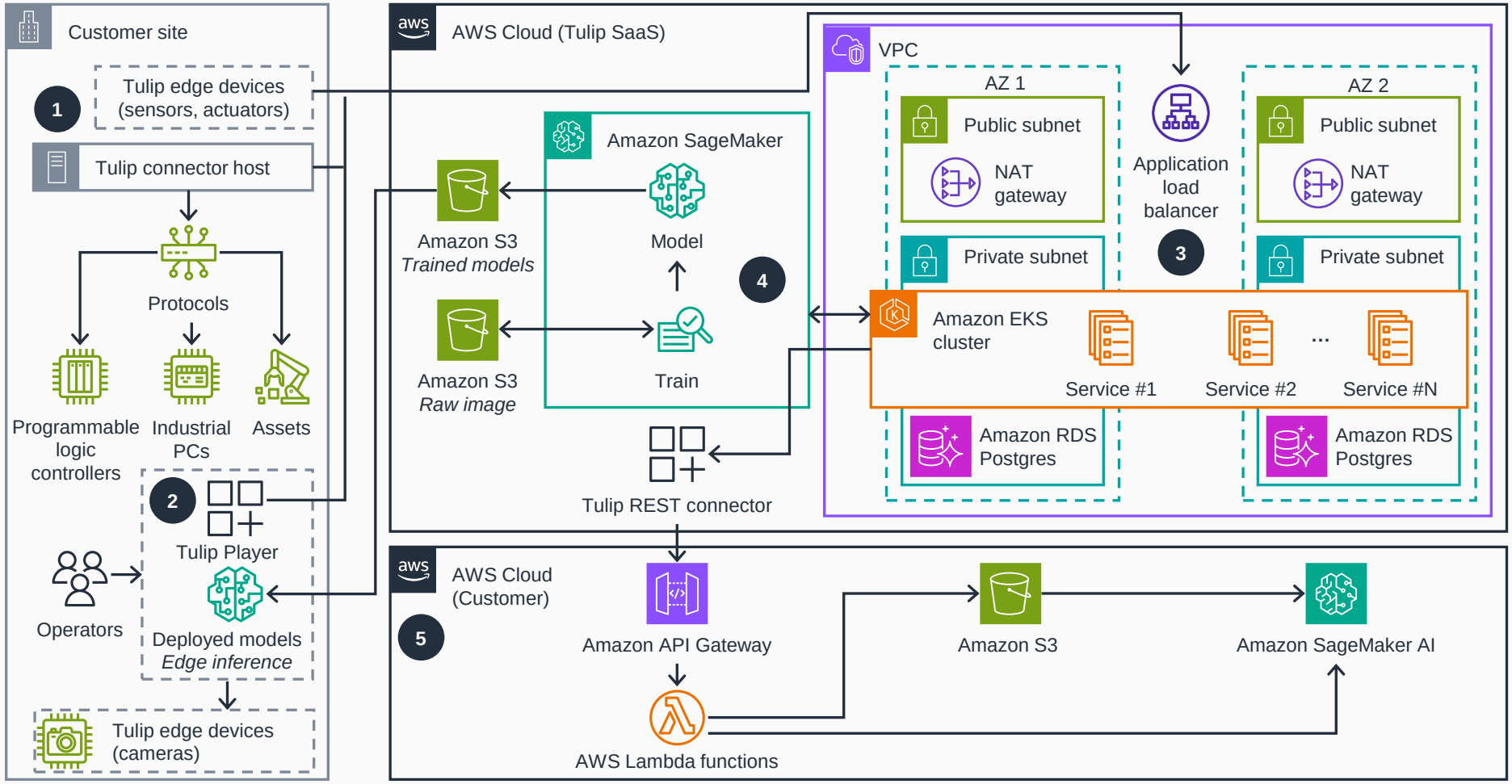
Guidance for Computer Vision Quality Insights with Tulip Vision on AWS

This architecture diagram shows how to effectively support quality inspection workflows using the user-friendly, no-code Tulip Vision platform on AWS, enabling you to guide, measure, and improve product and operations quality.



1. Tulip's Edge IO device provides connectivity to many devices, such as barcode scanners, Andon systems, torque drivers, cameras, printers, pick-to-light systems, and scales. The Tulip connector host enables Tulip connectors to be located on premises for connection to local devices.

2. Tulip Player captures product images and connects them to the production system. The edge inference engine processes these images using an ML model, trained on AWS, to identify product defects and classify them as pass or fail. Operators receive real-time results through the edge interface.

3. Tulip's multitenant Software as a Service (SaaS) platform on AWS uses **Amazon Elastic Kubernetes Service (Amazon EKS)** across Availability Zones (AZs) within a virtual private cloud (VPC), with **Application Load Balancer** routing traffic to Kubernetes services. Customer isolation is achieved through dedicated Kubernetes namespaces and **Amazon Simple Storage Service (Amazon S3)** buckets with unique **AWS Identity and Access Management (IAM)** credentials, while **Amazon Relational Database Service (Amazon RDS) for PostgreSQL** handles application data.

4. Images ingested into Tulip's SaaS platform are processed using **Amazon SageMaker AI** to build and test ML models. Once they meet customer accuracy requirements, models are stored in **Amazon S3** and can be deployed either to Tulip Player at the edge or **SageMaker** for inference in the cloud.

5. To address additional ML and generative AI use cases, connect to **SageMaker** through Tulip's REST connector, **Amazon API Gateway**, and **AWS Lambda** functions. You can load images directly to **Amazon S3** buckets or export them from Tulip tables.

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AWS Reference Architecture