Connected Airports Using IoT and AI/ML

Build a smart, connected airport that uses IoT and AI/ML to generate real-time data for aircraft movement, gate turns, baggage tracking, queue depth, and passenger traffic, and to implement compliance measures like social distancing and security.

1. **Leverage AWS IoT Greengrass Core** to connect, publish, and subscribe to data using open standard MQTT protocol with IoT devices running on FreeRTOS and other OSs.

2. **Leverage AWS IoT Core** to maintain shadows of all IoT devices, connect to AWS cloud, manage devices, update over-the-air (OTA), and secure the devices.

3. Use purpose-built databases like Amazon DynamoDB and serverless architecture to store events, deliver microservices, and generate events for an operational data store.

4. **Build a real-time operational dashboard leveraging microservices and AWS AppSync**. Deliver alerts to multiple channels using Amazon Pinpoint.

5. **Build a data lake to store raw data and to create curated processed data in Amazon S3 using AWS Glue and Amazon EMR**.

6. Use **Amazon SageMaker** to build, train, and deploy inference models. Optionally, deploy edge models on AWS IoT Greengrass Core.

7. Use **Amazon Redshift**, **Amazon Athena**, and **Amazon QuickSight** for analytics. Optionally, build data marts in Amazon Redshift for heavily used analytics. For ad hoc requirements, publish the data catalog and use Amazon Athena for direct analysis using the data lake.

8. **Use the Aircraft Turn Tracking** solution to passively collect and use aircraft gate turn events.

9. Use the **Facilitate Social Distancing** and **Queue Depth Management** solutions for compliance and enhanced customer experience.