Aircraft Maintenance and Compliance Tracking System Workflow with AWS Integration

System Users
- Maintenance Engineers
- Supervisors
- Inventory Managers
- Compliance Officers
- Pilots/Operators

System Workflow - Main Path

AWS Services Utilized
- AWS Lambda for calculations and triggers
- AWS SNS/SES for alerts and notifications
- AWS Step Functions for process orchestration
- AWS API Gateway for procurement integration
- AWS AppSync for real-time updates
- Amazon QuickSight and AWS Glue for reporting

Step 1: Aircraft Data Entry
- Input aircraft details and history
- Link to FAA regulations and schedules
- Automatic calculations via AWS Lambda

Step 2: Inspection and Maintenance Scheduling
- AWS Lambda calculates due dates
- AWS SNS/SES sends alerts to engineers
- Engineers conduct inspections

Step 3: Defect Identification and Work Order Creation
- Identification of widespread fatigue damage or other defects
- AWS Step Functions orchestrate the process
- System generates work order
- Assigns work to engineer
- Notifies inventory managers

Step 4: Parts & Tool Management
- Amazon DynamoDB checks part availability
- If parts unavailable
  - Trigger procurement request via AWS API Gateway to supplier
- If parts available
  - Proceed to maintenance execution

Step 5: Maintenance Execution & Tracking
- Engineers follow maintenance procedures
- AWS AppSync provides real-time progress updates
- Supervisors monitor via dashboard powered by Amazon S3/DynamoDB

Step 6: Quality Control & Approval
- Senior engineer performs quality control
- Supervisors approve work order via AWS Lambda trigger

Step 7: Compliance Documentation & Reporting
- System logs actions in Amazon S3 for durability
- Generates reports using Amazon QuickSight and AWS Glue
- Sends FAA notifications via Amazon SES

Step 8: Aircraft Release & Functional Check
- Aircraft status updated in Amazon DynamoDB/RDS
- Pilots/Operators confirm safety
- System updates status to "Ready"