ATC App

James Treacy, Ahmed Sekhni, Billy Walsh

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# ATC App Product Vision

## Research on Similar Apps

When designing an ATC app that displays taxiways, runways, aircraft positions, and airport METAR information, I researched two similar apps:

### 1) Flightradar24

* **Good Features:**
* Real-time aircraft tracking with flight data.
* Interactive live map with different aircraft type filters.
* METAR/TAF weather integration for airports.
* **Bad Features:**
* Lacks detailed taxiway/runway mapping for airports.
* Not designed for ATC.
* **Features to Implement:**
* Real-time aircraft tracking.
* METAR/TAF weather integration.

### 2) Navigraph Charts

* **Good Features:**
* Provides detailed airport charts (including taxiways, runways, and SID/STAR routes).
* Intuitive, professional interface with layered data visualization.
* Works well for simulations.
* **Bad Features:**
* Primarily focused on flight simulation, not real-world ATC.
* No real-time aircraft tracking outside of the sim.
* **Features to Implement:**
* Airport layout with detailed taxiways/runways.
* Display METAR, NOTAMs, and aircraft positions.

## Product Vision Statement

### 1) FOR (Target Customer)

Air Traffic Controllers, ground controllers, and aviation professionals who need real-time situational awareness of airport movements.

### 2) WHO (Statement of the Need or Opportunity)

ATC professionals need a real-time airport monitoring tool that displays aircraft positions, taxiways, runways, and essential airport data (e.g., METAR, QNH, wind speed). Existing applications lack detailed ground movement tracking or are designed for flight tracking rather than ATC operations so may show delayed information which is not ideal for real world situations.

### 3) The (PRODUCT NAME) is a (Product Category)

The ATC App is both an air traffic & ground traffic management tool and displays airport information.

### 4) THAT (Key Benefit, Compelling Reason to Buy)

It provides real-time aircraft tracking, detailed taxiway/runway layouts, and live METAR updates to improve airport ground control efficiency and safety.

### 5) UNLIKE (Primary Competitive Alternative)

Unlike Flightradar24, which is mostly used by general aviation enthusiasts and lacks detailed airport taxiway/runway views, or Navigraph Charts, which is designed for flight simulation rather than real-world ATC.

### 6) OUR PRODUCT (Statement of Primary Differentiation)

Our product is specifically built for ATC professionals, offering detailed airport layouts, real-time aircraft tracking, and displays live METAR data in a user-friendly interface designed for professional use.

## Feature List

Core Features (Derived from Research & Product Vision)

* **Real-time Aircraft Tracking**
  + Live updates on aircraft positions with minimal delay
  + Display aircraft type, callsign, altitude, and speed
* **Detailed Airport Layouts**
  + High-resolution maps with taxiways, runways, gates, and holding points
  + Zoom and pan for better visualization
* **METAR/TAF Integration**
  + Live airport weather updates, including temperature, wind speed, QNH, and visibility
* **NOTAM Display**
  + Real-time NOTAM updates for airport closures, taxiway restrictions, and operational changes
* **Custom Alerts & Notifications**
  + Alerts for incoming/outgoing aircraft, runway incursions, and weather changes
* **User Customization & Filters**
  + Aircraft filtering by type, airline, and status (arrival, departure, taxiing)
  + Airport overlay settings for enhanced visibility
* **Multi-Airport Support**
  + Ability to switch between different airports
* **Multi-User Collaboration**
  + Shared views for different ATC teams (Ground Control, Tower, etc.)

## Personas

### 1. Ahmed – Ground Controller

* **Background:** Works in a busy international airport, responsible for guiding aircraft from gates to runways.
* **Needs:**
  + A clear visual of taxiways and aircraft movement
  + Instant alerts for aircraft conflicts
  + Quick weather updates
* **Pain Points:**
  + Existing solutions lack accurate taxiway mapping
  + Hard to track aircraft movements efficiently

### 2. James – Tower Controller

* **Background:** Manages take-offs, landings, and runway assignments.
* **Needs:**
  + Real-time aircraft positioning and sequencing
  + Runway occupancy status
  + Weather and NOTAM updates
* **Pain Points:**
  + Flight tracking apps have delays in updates
  + Hard to share real-time information with ground controllers

### 3. Billy – ATC Supervisor

* **Background:** Oversees all ATC operations and coordinates between departments.
* **Needs:**
  + A holistic view of airport traffic
  + Ability to monitor different airport zones
  + Custom alerts for critical situations
* **Pain Points:**
  + No single app consolidates real-time data effectively

## Scenarios

### Scenario 1: Managing Ground Traffic During Peak Hours

**Context:** Ahmed is guiding multiple aircraft to and from gates during a busy morning shift.  
 **How the App Helps:**

* Provides a real-time map with aircraft positions and taxiway occupancy.
* Alerts Ahmed about potential conflicts between two aircraft taxiing toward the same intersection.
* Displays METAR data, showing reduced visibility, helping Ahmed adjust instructions accordingly.

### Scenario 2: Avoiding a Runway Incursion

**Context:** James notices that an aircraft is approaching an active runway without clearance.  
 **How the App Helps:**

* Displays real-time aircraft movement, showing unauthorized taxiing.
* Send an automatic alert to James about the potential runway incursion.
* Highlights current runway usage status and occupied taxiways.

### Scenario 3: Responding to a Sudden Weather Change

**Context:** Billy, the ATC Supervisor, sees an unexpected thunderstorm approaching the airport.  
 **How the App Helps:**

* The app updates METAR/TAF in real time, showing a wind shift.
* Billy receives an alert about deteriorating visibility and crosswind conditions.
* He quickly relays changes to both tower and ground control using the app’s shared view.

## User Stories

### Real-time Aircraft Tracking

* **As a ground controller,** I want to see live aircraft positions on a detailed airport map so I can guide them safely.
* **As a tower controller,** I want to monitor departing aircraft and see which ones are holding short so that I can clear them for take-off in sequence.

### Detailed Airport Layouts

* **As an ATC supervisor,** I want to view the entire airport layout with labelled taxiways and runways to make it easier for me to monitor ground traffic efficiently.
* **As a controller,** I want to zoom into specific areas of the airport to manage taxi clearances more precisely.

### METAR/TAF Integration

* **As an ATC professional,** I want to receive real-time METAR updates to adjust my instructions based on current weather.

### Custom Alerts & Notifications

* **As a ground controller,** I want to receive an alert when an aircraft enters a restricted taxiway so I can take immediate action.

### Multi-Airport Support

* **As a controller,** I want to quickly switch between different airport views to manage traffic at multiple locations.

### Collaboration Tools

* **As an ATC team member,** I want to share my view with colleagues sowe can coordinate operations efficiently.

## Revised Feature List

### Essential Features

* Real-time aircraft tracking
* Detailed Airport layouts with taxiways & Runways
* Live Metar/TAF updates
* NOTAM alerts
* Custom alerts for aircraft conflicts & weather changes

### Nice-to-Have Features

* ATIS broadcast integration

## Prototype

A screenshot of a phone

AI-generated content may be incorrect.

Figure 1: Editable Version available here: <https://app.uizard.io/prototypes/9y05eQl6W8UVBym1byxw>

## A diagram of a group of people AI-generated content may be incorrect.Use Case Diagram

Figure 2: Editable Version available here: <https://lucid.app/lucidchart/e4f82712-b6c3-441b-8071-e7346cd50df6/edit?viewport_loc=-1065%2C-424%2C2486%2C1264%2C0_0&invitationId=inv_37b13e1c-3f39-4a7e-84db-d7a61b8ead2a>

## Activity Diagram

A diagram of a plane

AI-generated content may be incorrect.

Figure 3: Editable Version available here: <https://lucid.app/lucidchart/e4f82712-b6c3-441b-8071-e7346cd50df6/edit?viewport_loc=-1065%2C-424%2C2486%2C1264%2C0_0&invitationId=inv_37b13e1c-3f39-4a7e-84db-d7a61b8ead2a>

## Class Diagram

A diagram of a computer

AI-generated content may be incorrect.

Figure 4:Editable Version available here: <https://lucid.app/lucidchart/e4f82712-b6c3-441b-8071-e7346cd50df6/edit?viewport_loc=-1065%2C-424%2C2486%2C1264%2C0_0&invitationId=inv_37b13e1c-3f39-4a7e-84db-d7a61b8ead2a>