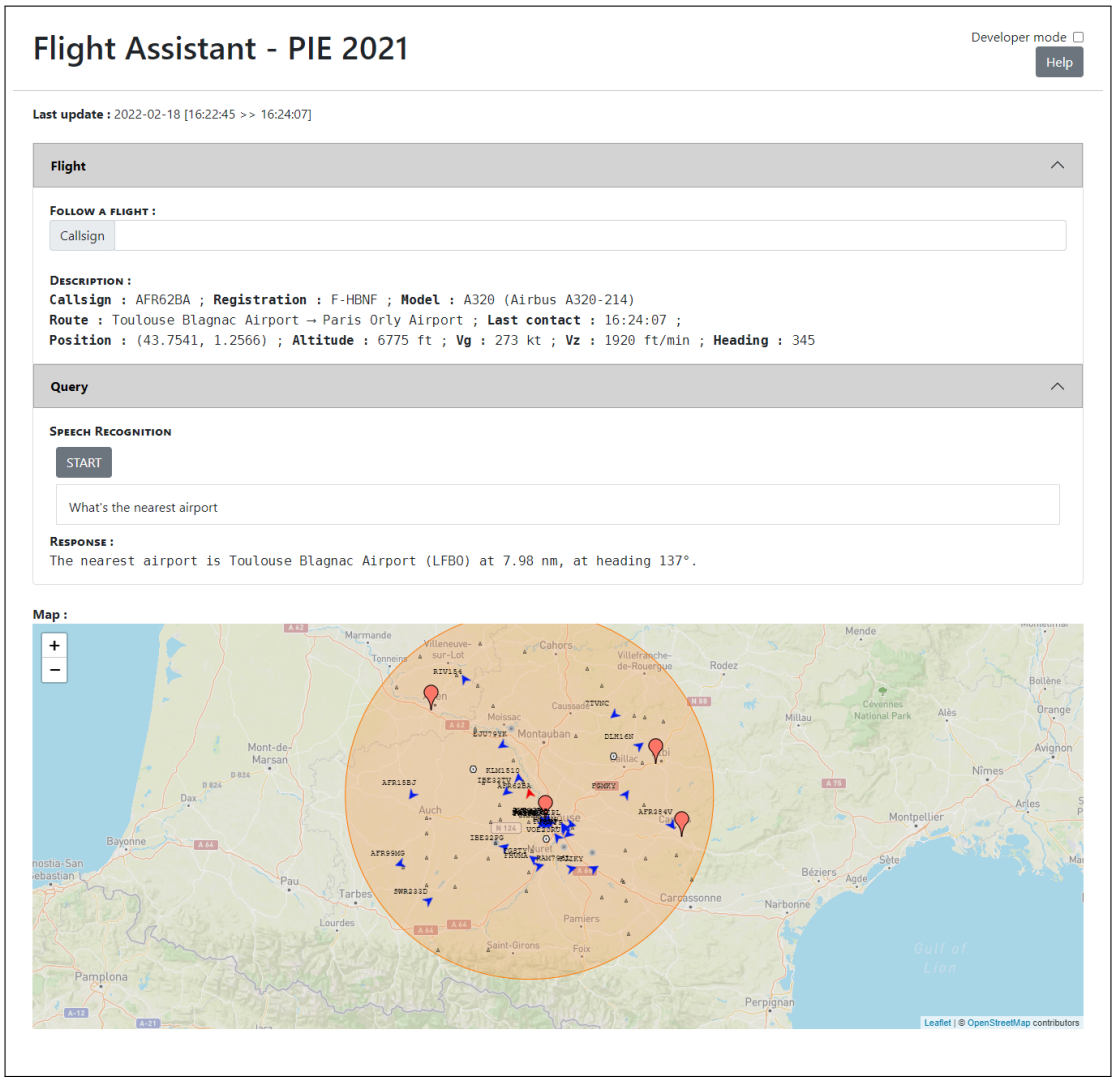
PIE Flight Assistant – Quick Start Guide

ISAE-SUPAERO

v. 2022-02



Introduction

This project is an implementation of a flight assistant prototype towards mono-pilot cockpits. The flight assistant aims at answering requests, eventually said in natural language by the pilot, about its current status, or about information on diverse locations. Data provided in this app are real-time data.

In the context of this prototype, you will be asked to select a flight and ask requests as if you were the pilot of this flight. The app is available here:

`https://pie2021-flightassistant-v19.herokuapp.com/`

Contents

1 Quick start

1.1 Required tools

- **Chrome** web browser is needed
- Microphone

1.2 App launch

- Go to the following webpage :

  `https://pie2021-flightassistant-v19.herokuapp.com/`

  You might wait for about 1 minute when you launch the app for the first time
- Allow access to the microphone

1.3 Flight following

- Select a flight to follow it. The easiest way is to click on one of the blue cursors representing the flights on the map (Figure 2). Else, you can search a flight by its callsign in the "Follow a flight" field (Figure 1). *To get better results, you should select a flight with well-defined info (i.e. with its departure and arrival airports available).*

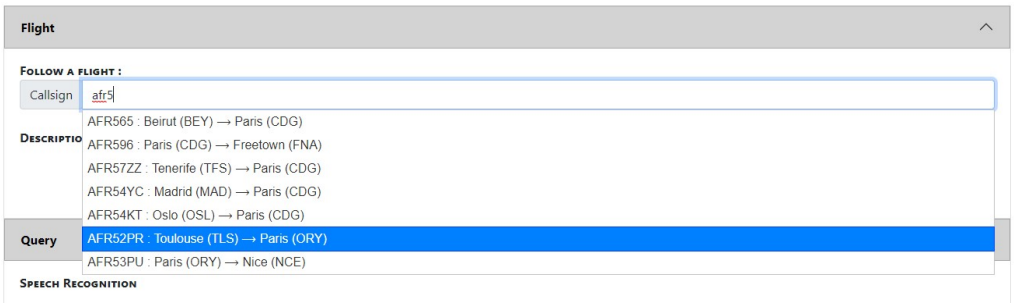


Figure 1: Flight search by callsign

- On the map you may see that the orange zone in the map is centered on the selected flight
- The "START" button in the Speech Recognition section is also activated.

1.4 Queries

Once a flight is selected, you can ask queries to the flight assistant using the push-to-talk button, set to the '1' key of the character keys on your keyboard ('&' key on an AZERTY keyboard). Queries can be asked either in natural language with plain sentences, or with sequence of specific words.

- Push the push-to-talk button ('1' key) and maintain it.
- Ask your question. A transcript is also displayed in real-time.
- Release the push-to-talk button to send your query.

An exhaustive list of implemented queries with a list of possible questions are available at the "Available queries" section of this document and indications on queries are provided in the following section.

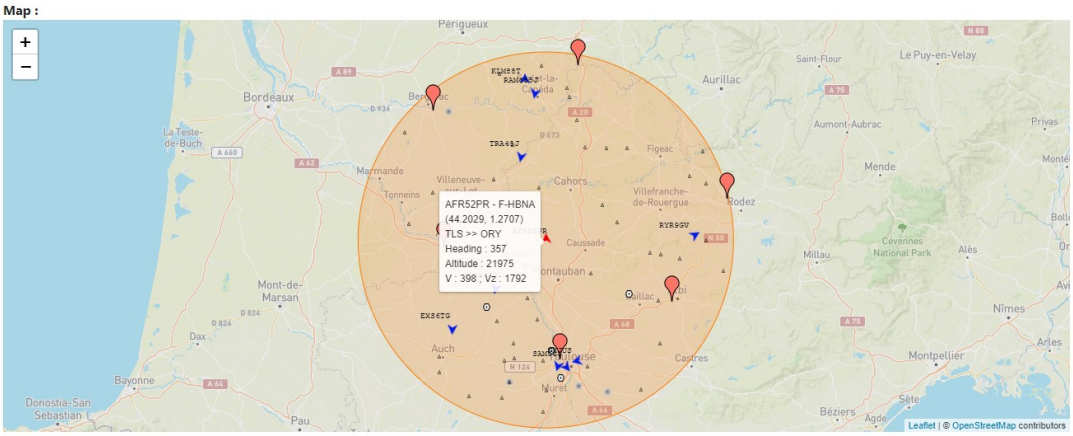


Figure 2: Map after flight selection

2 Queries

2.1 Static and dynamic queries

Static queries For a selected flight, some data will not change. By asking for your departure or arrival airport, the answer will remain the same for the duration of the flight. In the same way, asking for information about an airport will return you the same answer.

Dynamic queries For this type of query, depending on your position, the evolution of the air traffic and the weather, you will receive different answers during the flight.

For these two types of queries, you only need to press the push-to-talk button, ask orally your request and the flight assistant will answer you on the interface and orally.

2.2 Checklists

Checklists queries have been partially implemented. These queries are only for test purposes.

- Request one of the available checklists orally using the push-to-talk button.
- A pop-up (Figure 3) must appear, and an item is announced.
- **Without using again the push-to-talk button**, say the corresponding answer.
- If it is correct, the answer will be colored in green and the next item will be asked.

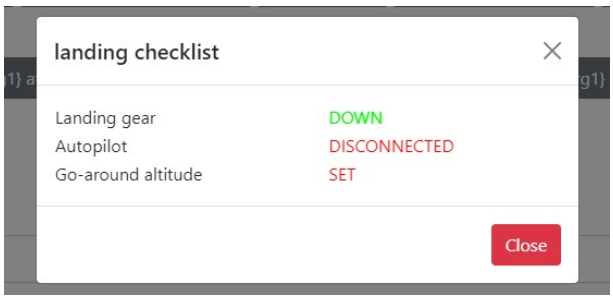


Figure 3: Checklist pop-up

Overview of the user interface

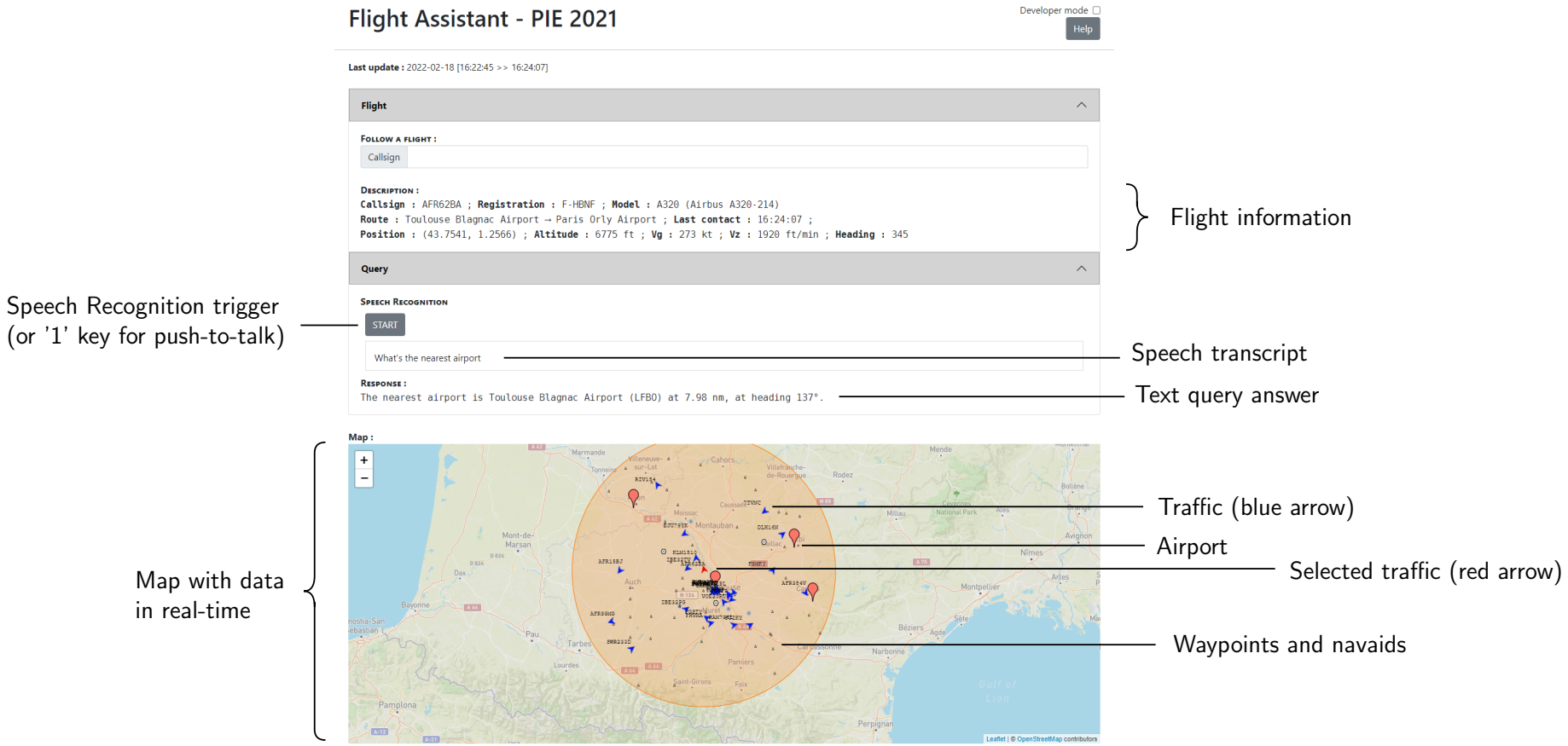


Figure 4: User interface

Available queries

Words between brackets can be changed. Available parameters (flight, weather, frequencies) are described in the next page.

Intent	Description	Examples
Static queries (that will not change during the flight)		
Departure / Arrival airport	Returns the name and the ICAO of the departure / arrival airport	"What is the arrival airport ?"
Runways at an airport	Returns the list of runways at the an airport	"What are the runways at [Toulouse Blagnac]* ?"
Frequency at an airport	Returns the frequency value of a frequency channel at an airport	"[TWR] frequency at [Toulouse Blagnac]*"
Dynamic queries (that may change during the flight)		
Current flight parameters	Returns a current flight parameter (speed, altitude, Vz, heading...)	"What is my [altitude] ?"
Nearest airport	Returns the nearest airport from the current position	"What is the nearest airport ?"
Nearest trafic	Returns the nearest trafic from the current position	"Where is the nearest trafic ?"
Nearest runways	Returns the list of runways at the nearest airport	"What are the nearest runways ?"
Length of the nearest runway	Returns the length of the longest nearest runway	"What is the length of the nearest runway ?"
Estimated time of arrival	Returns the ETA	"Estimated time of arrival"
Weather queries		
Weather at airport	Returns a global status of the weather or a specific parameter at an airport	"What is the weather at [Toulouse Blagnac]* ? "What is the [visibility] at [Toulouse Blagnac]* ?"
Weather at location	Returns a global status of the weather or a specific parameter at a location	"Give me the weather at [Toulouse] ?" "[Temperature] at [Paris]"
Checklists		
Approach checklist	Returns the approach checklist	"Give me the approach checklist"
Landing checklist	Returns the landing checklist	"Landing checklist"

* The airport can also be [arrival] or [departure]. **Current available airport names are French and English airports in this version.**

Available frequencies

(Depending on the airport) TWR (Tower), APP (Approach), GND (Ground), INFO, AFIS, ATIS

Available flight parameters

Heading, Speed, Altitude, Vertical speed, Latitude, Longitude, Callsign, Registration

Available weather parameters

Temperature, Pressure, Wind, Gust, Clouds, Visibility, Rain, METAR