

FLEETO

-Android Application

Presenters-

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MOTIVATION

- One does not know exactly when to leave in order to reach the airport on time.
- Unavailability of various factors (like fastest route, climate, construction sites, future climate delay and road traffic) clubbed together in one single application.
- If all these factors can be assimilated in a appropriate manner then it can help in estimating the travel time.

INTRODUCTION

- The main motto of this android application is to aid the user to get to the airport within the scheduled departure time taking into account various factors like:
 - Current Climate
 - Future Climate
 - Roadway Traffic (includes delay due to constructions and incidents)

Current Apps Vs Our App

- Apps already present in Google Play for the flight statistics: *FlightStats*, *FlightAware*, etc
- It just tells us about the stats but nothing about how to get there on time depending on many factors.
- For the fastest route, separate apps needs to be used. (like Google Maps)
- To check the climate, again a separate app needs to be used! (like AccuWeather)

Current Apps Vs Our App

- What if everything is clubbed together and only one application suffices for all your need!!

FLEETO!!

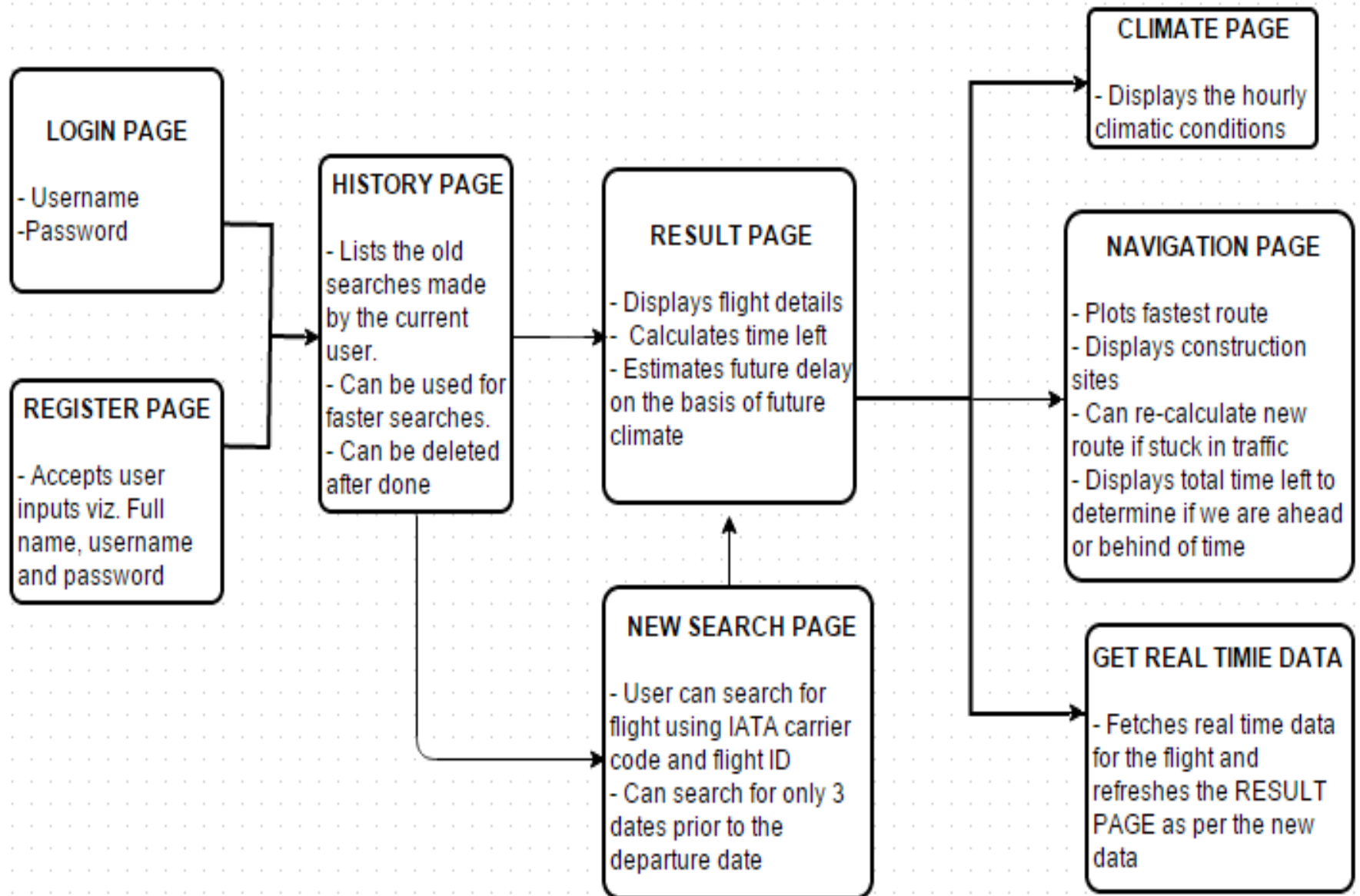
- Our app incorporates all of the mentioned services making use of some APIs available over the internet and provides data which is accurate and dynamic.

DESIGN

- APIs used:
 - FlightStats – To get the flight details viz. Airline name, departure date and time, terminal, **DELAY**.
 - Wunderground – To get the hourly climatic conditions for the entire day.
 - Google Maps API v2 – For plotting travel route, displaying construction sites and incidents, traffic layer, customized navigation

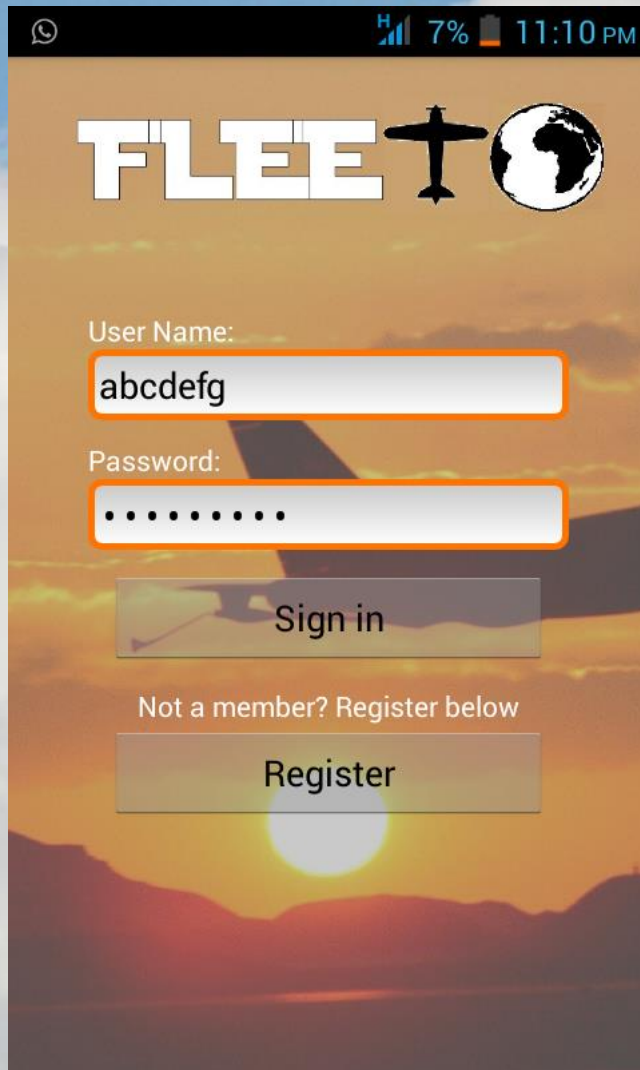
DESIGN

- MapQuest Traffic API – To get the list of details about the constructions and incidents happening in the vicinity.
- Google Directions API – To get the fastest route to the airport from the current location.
- Cloud Used:
To maintain the user information and the associated search history, we used AWS EC2 cloud



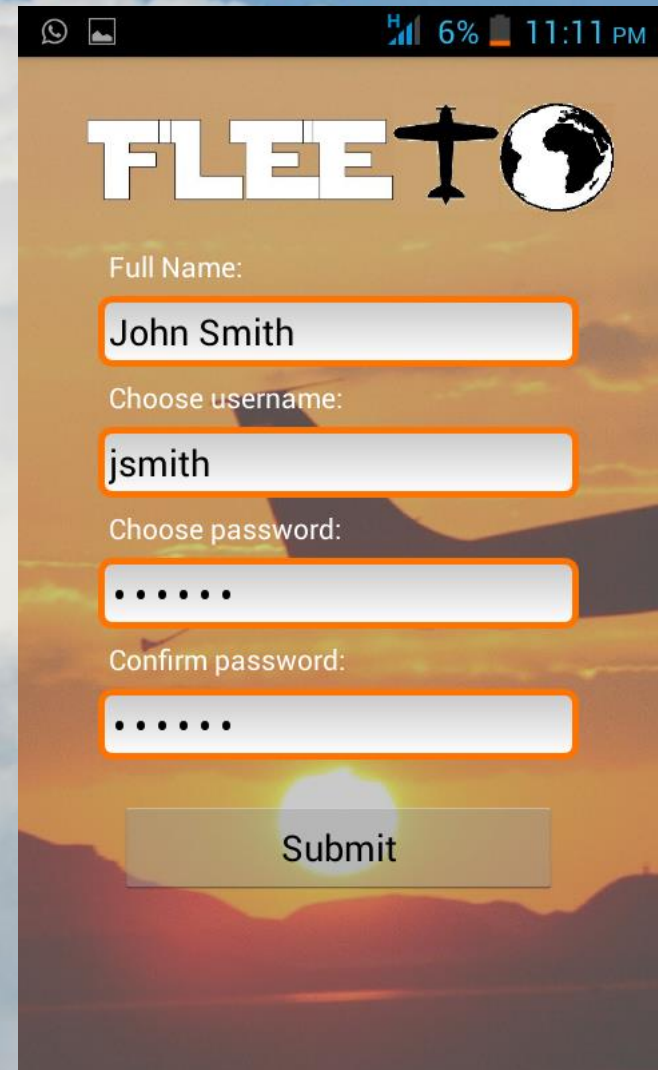
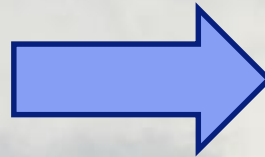
BLOCK DIAGRAM OF THE APPLICATION

FLOW OF THE APPLICATION



Mobile app login screen. The status bar at the top shows a signal icon, 7% battery, and 11:10 PM. The app logo "FLEE" is followed by an airplane icon and a globe icon. Below the logo, there are two input fields: "User Name:" with the text "abcdefg" and "Password:" with masked characters ".....". Below the password field is a "Sign in" button. At the bottom, there is a link "Not a member? Register below" and a "Register" button.

Register
Button
clicked



Mobile app registration screen. The status bar at the top shows a signal icon, 6% battery, and 11:11 PM. The app logo "FLEE" is followed by an airplane icon and a globe icon. Below the logo, there are four input fields: "Full Name:" with the text "John Smith", "Choose username:" with the text "jsmith", "Choose password:" with masked characters ".....", and "Confirm password:" with masked characters ".....". Below the password fields is a "Submit" button.

FLOW OF THE APPLICATION

WhatsApp icon, Camera icon, Signal strength, 6%, 11:12 PM

Flight: EK-208
Departure Date: 5-19-2015
Boarding Point: JFK

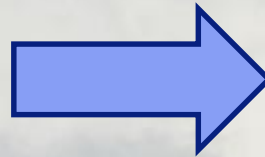
Flight: AI-102
Departure Date: 5-19-2015
Boarding Point: JFK

Flight: AI-102
Departure Date: 5-20-2015
Boarding Point: JFK



Flight: AI-102
Departure Date: 5-17-2015
Boarding Point: JFK

Start New Search

Start New
Search
Button



WhatsApp icon, Camera icon, Signal strength, 5%, 11:12 PM

FLYEE  

Enter Carrier IATA Code:

Enter Flight ID:

Choose the journey date:

SUBMIT

CLEAR

FLOW OF THE APPLICATION



 5%  11:13 PM

Summary of the trip



Flight Details:

Flight:

AI-102

Carrier:

Air India

Date:

5-20-2015

Airport:

John F. Kennedy International Airport

Scheduled Dept Time:

2015-05-20 at 15:10:00



Estimated Dept Time:



2015-05-20 at 15:10:00

Departure Terminal:


4

Delay Statistics



 5%  11:13 PM

Summary of the trip



Delayed by: 0 minutes

Time left:

00:15:57

(DD:HH:MM)

Forecasted Trip Delay Due To Future Climatic Conditions:

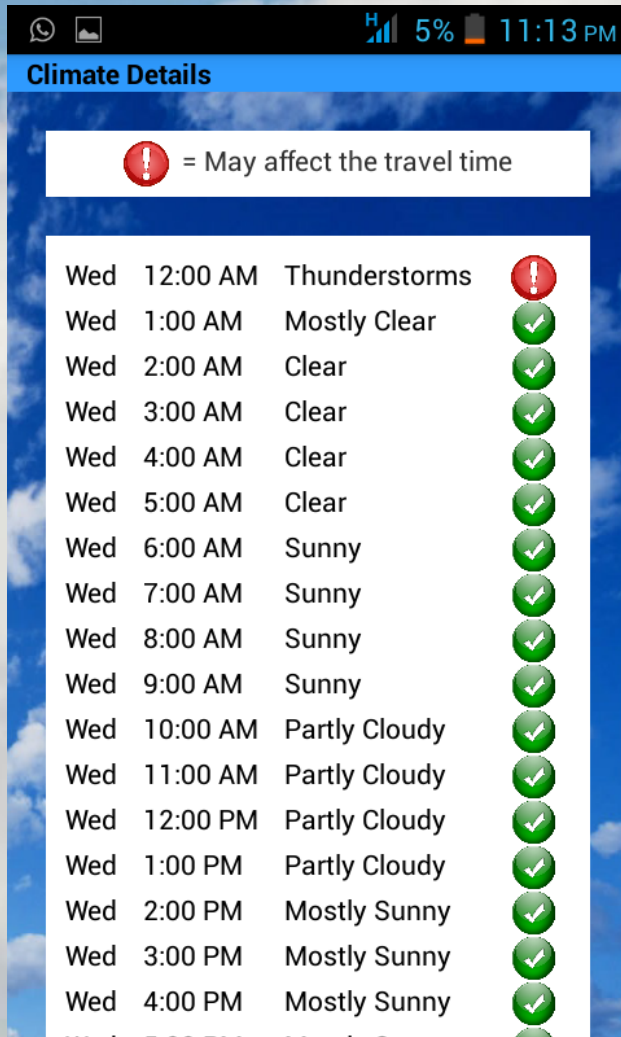
0 mins

Check Climate

Start Navigation

Get real-time data

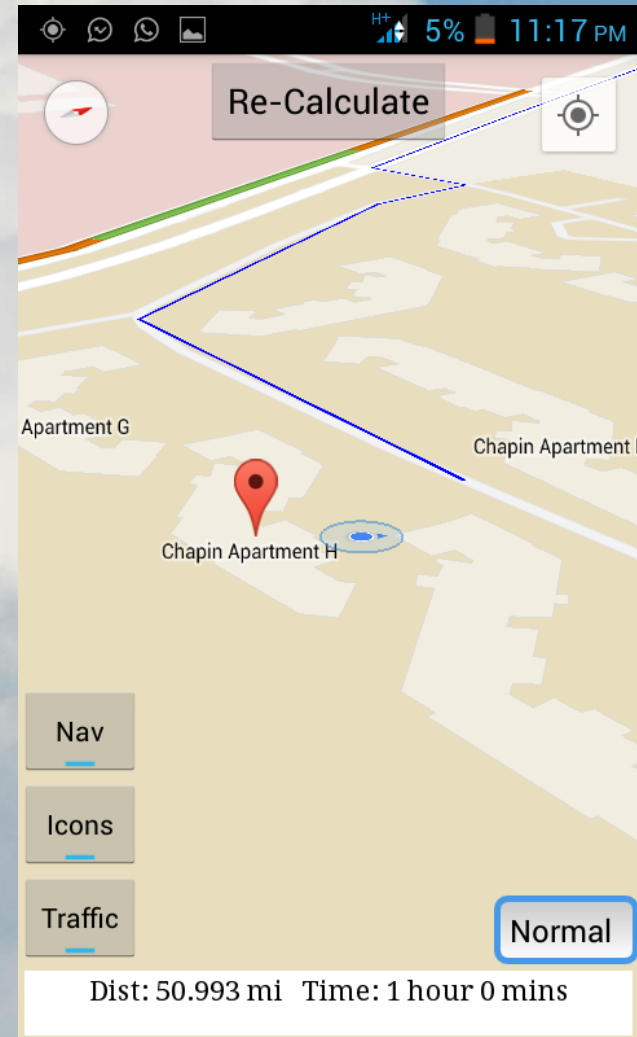
FLOW OF THE APPLICATION



Climate Details

! = May affect the travel time

Time	Weather	Status
Wed 12:00 AM	Thunderstorms	!
Wed 1:00 AM	Mostly Clear	✓
Wed 2:00 AM	Clear	✓
Wed 3:00 AM	Clear	✓
Wed 4:00 AM	Clear	✓
Wed 5:00 AM	Clear	✓
Wed 6:00 AM	Sunny	✓
Wed 7:00 AM	Sunny	✓
Wed 8:00 AM	Sunny	✓
Wed 9:00 AM	Sunny	✓
Wed 10:00 AM	Partly Cloudy	✓
Wed 11:00 AM	Partly Cloudy	✓
Wed 12:00 PM	Partly Cloudy	✓
Wed 1:00 PM	Partly Cloudy	✓
Wed 2:00 PM	Mostly Sunny	✓
Wed 3:00 PM	Mostly Sunny	✓
Wed 4:00 PM	Mostly Sunny	✓
Wed 5:00 PM	Mostly Sunny	✓



Re-Calculate

Apartment G

Chapin Apartment H

Chapin Apartment I

Nav

Icons

Traffic

Normal

Dist: 50.993 mi Time: 1 hour 0 mins

Future Delay Estimator (FDE)

- Created a module which can predict the future delay at the future location at the corresponding future time.
- The delay is assumed to be equal to the addition of quantitative precipitation factor (QPF) and the snow fall level.
- Needs to be calibrated on trial and error basis.

DESIGN OF FDE



Current Location

A

Current Time

X

DESIGN OF FDE



**Current Location
A**

**Current Time
X**



**Future Location
B**

**Future time
 $X + (\text{travel time} / 2)$**

DESIGN OF FDE



**Current Location
A**

**Current Time
X**



**Future Location
B**

**Future time
 $X + (\text{travel time} / 2)$**



**Future Location
C**

**Future Time
 $X + \text{travel time}$**

DESIGN OF FDE



**Current Location
A**

**Current Time
X**



**Future Location
B**

**Future time $Y =$
 $X + (\text{travel time} / 2)$**

**QPF and/or snow level
for Loc B at time Y**

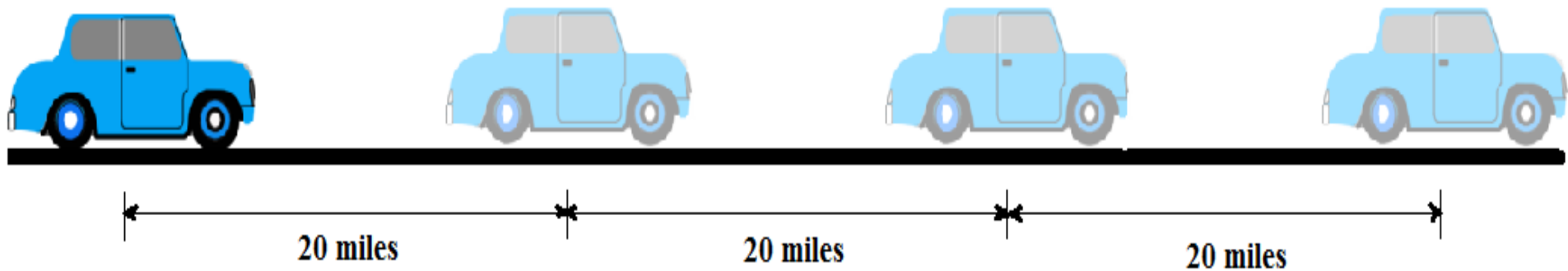


**Future Location
C**

**Future Time $Z =$
 $X + \text{travel time}$**

**QPF and/or snow level
for Loc C at time Z**

DESIGN OF FDE



TECHNICAL CHALLENGES

- Configuring Database instance on AWS
- Achieving Network to GPS Hand-Off while in Navigation Activity
- Thread-Safe programming
- Parsing nested XML with same tag names
- Future Delay Estimation on the basis of climatic conditions
- Decoding routing encrypted data



TAKE AWAY POINTS

- Be careful with the Activity Life Cycle!
- Always carry out internet related work (like calling APIs) on a separate thread.
- Never try to access UI components from a thread. Use “runOnUiThread” instead.
- Design a thread-safe program in order to avoid crashes at later stage.

FUTURE SCOPE

- To support different modes of transport.
- Voice guided navigation.
- Calibrate the FDE model to predict a more accurate delay time.
- Push notifications.

A large, fluffy white cumulus cloud dominates the center of the frame, set against a clear, vibrant blue sky. The cloud's texture is soft and billowy, with various shades of white and light grey. The word "QUESTIONS?" is superimposed on the lower part of the cloud.

QUESTIONS?