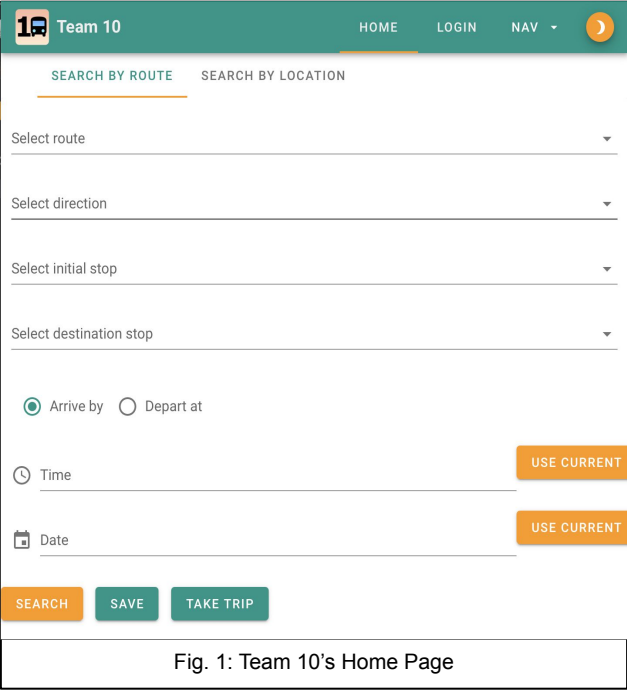


Dublin Bus App Relaunched



Team 10 - Team Members:

Daniel Danev	-	Coding Lead	-	Front-end Developer
Danning Zhan	-	Maintenance Lead	-	Data Analyst
Turlough Hannon	-	Coordination Lead	-	Full-stack Developer
Adam Ryan	-	Customer Lead	-	Back-end Developer

1. PROJECT SPECIFICATION

Project Specification:

Bus companies produce schedules which contain generic travel times. For example, in the Dublin Bus Schedule, the estimated travel time from Dun Laoghaire to the Phoenix Park is 61 minutes (<http://dublinbus.ie/Your-Journey1/Timetables/All-Timetables/46a-1/>). Of course, there are many variables which determine how long the actual journey will take. Traffic conditions which are affected by the time of day, the day of the week, the month of the year and the weather play an important role in determining how long the journey will take. These factors along with the dynamic nature of the events on the road network make it difficult to efficiently plan trips on public transport modes which interact with other traffic.

This project involves analysing historic Dublin Bus data and weather data in order to create dynamic travel time estimates. Based on data analysis of historic Dublin Bus data, a system which when presented with any bus route, departure time, the day of the week, current weather condition, produces an accurate estimate of travel time for the complete route and sections of the route.

Users should be able to interact with the system via a web-based interface which is optimised for mobile devices. When presented with any bus route, an origin stop and a destination stop, a time, a day of the week, current weather, the system should produce and display via the interface an accurate estimate of travel time for the selected journey

Fig. 2: The Project Specification

2. HOW DO I GET TO UCD?

- Existing Solutions Exist

- Not User Friendly
- Inaccurate or Generic Times
- Poorly Reviewed
- May not be focused solely on Dublin Bus (Moovit, Google)

39a

Buses from/to
From UCD Belfield Towards Ongar
Operative Date: 13/12/2020
Version: TT 20.1

From UCD Belfield Towards Ongar

View on Map



An Colliste Ollscoile Baile Átha Cliath, Scoil Shegúid (An Chonall Mhór), Droichead Uí Chonail, Bóthar na gCloch, Bóthar na hUaimhe, Baile an Aclaigh, Baile an Harlaigh, Ongar

Buses leave terminus at:

Monday to Friday					Saturday					Sunday				
04:00	04:30	05:00	05:30		04:00	04:30	05:00	05:30		04:00	04:30	05:00	05:30	
06:00	06:30	07:00	07:15		06:00	06:30	07:00	07:15		06:00	06:30	07:00	07:30	
07:30	07:40	07:50	08:00		07:30	07:45	08:00	08:15		08:00	08:20	08:40	08:50	
08:10	08:20	08:30	08:40		08:30	08:45	09:00	09:12		09:20	09:40	10:00	10:15	
08:50	09:00	09:10	09:20		09:24	09:36	09:48	10:00		10:30	10:45	11:00	11:15	
09:30	09:40	09:50	10:00		10:12	10:24	10:36	10:48		11:30	11:45	12:00	12:15	
10:10	10:20	10:30	10:40		11:00	11:12	11:24	11:36		12:30	12:45	13:00	13:15	
10:50	11:00	11:10	11:20		11:48	12:00	12:12	12:24		13:30	13:45	14:00	14:15	
11:30	11:40	11:50	12:00		12:36	12:48	13:00	13:12		14:30	14:45	15:00	15:15	
12:10	12:20	12:30	12:40		13:24	13:36	13:48	14:00		15:30	15:45	16:00	16:15	
12:50	13:00	13:10	13:20		14:12	14:24	14:36	14:48		16:30	16:45	17:00	17:15	
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14:10	14:20	14:30	14:40		15:48	16:00	16:12	16:24		18:30	18:45	19:00	19:15	
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15:30	15:40	15:50	16:00		17:24	17:36	17:48	18:00		20:30	20:45	21:00	21:15	
16:10	16:20	16:25	16:30		18:12	18:24	18:36	18:48		21:30	21:45	22:00	22:15	
16:35	16:40	16:45	16:50		19:00	19:15	19:30	19:45		22:30	22:45	23:00	23:15	
16:55	17:00	17:05	17:10		20:00	20:15	20:30	20:45		23:30	00:00	00:30	01:00	
17:20	17:30	17:40	17:50		21:00	21:15	21:30	21:45		01:30	02:00	02:30	03:00	
18:00	18:10	18:20	18:30		22:00	22:15	22:30	22:45		03:30				
18:40	18:50	19:00	19:15		23:00	23:15	23:30	00:00						
19:30	19:45	20:00	20:15		00:30	01:00	01:30	02:00						
20:30	20:45	21:00	21:15		02:30	03:00	03:30							

Fig. 3: Dublin Bus Timetable

Team 10

HOMELOGINNAV

SEARCH BY ROUTESearch by location

Select route

Select direction

Select initial stop

Select destination stop

☐ Arrive by☒ Depart at

Time

Date

USE CURRENTUSE CURRENT

SEARCHSAVETAKE TRIP

Fig. 4: Dublin Bus Timetable

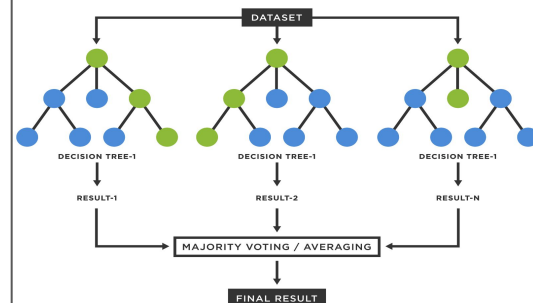


Fig. 5: Random Forest Models

- Our Solution

- Powered by Random Forest Models trained on Weather and Route History
- Intuitive UX with Quality of Life Features Powered by Vue Components
- First Irish Travel App with Gamification based on Sustainable points.

3. DEV PROCESS AND ARCHITECTURE

- Project preferences to areas of speciality
 - Chosen preferences had little bearing on work done
 - New preferences on Interest and Experience.
- Project management
 - GitHub, Jira, Confluence
 - Regular communication (standups, sprint plans)

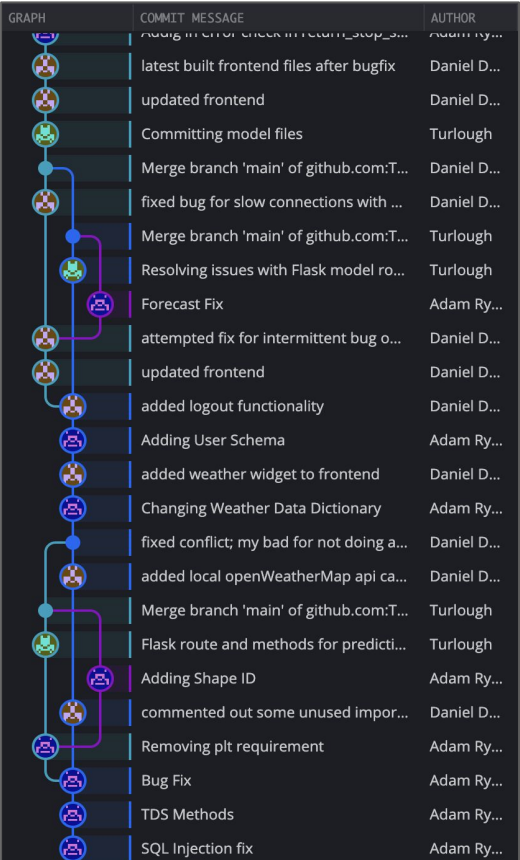
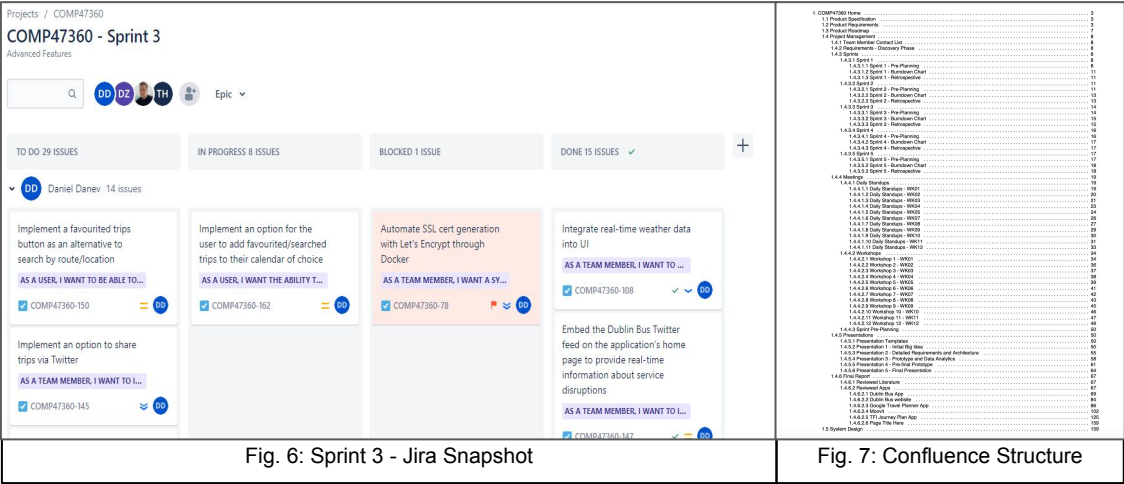
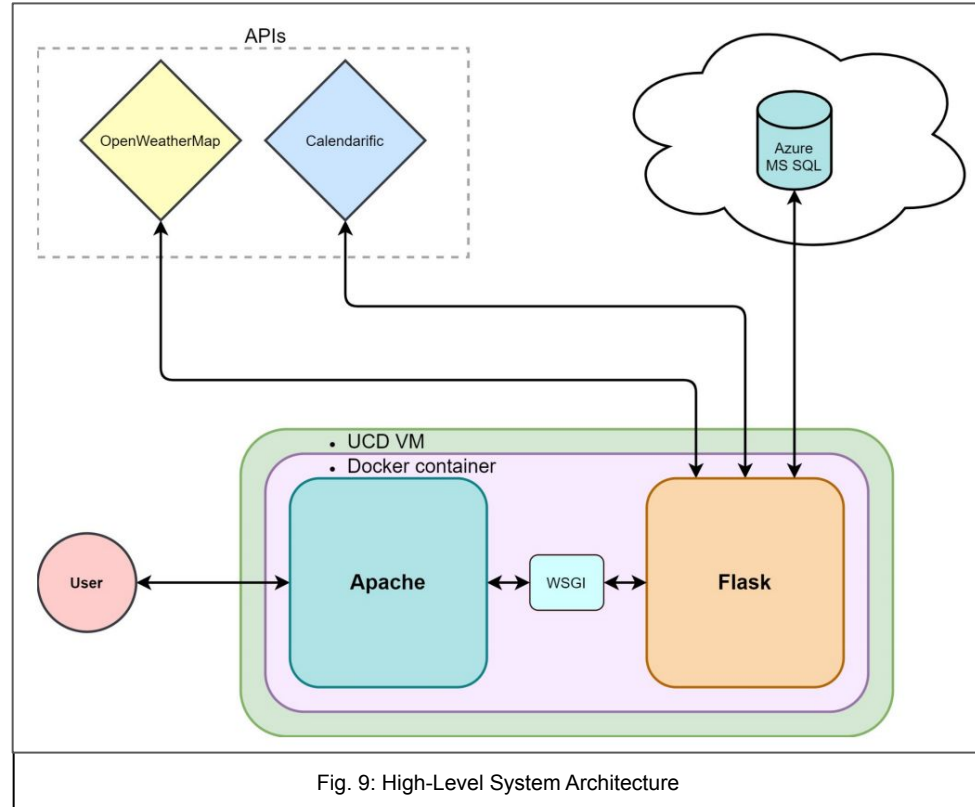


Fig. 8: Centralised Git Repo Structure

- Architecture grew out of group strengths and knowledge

3. DEV PROCESS AND ARCHITECTURE

- Modern Tech Stack
 - Vue
 - Apache
 - Flask
 - Docker
 - Azure
- Lightweight Stack
- Flexibility in Development
- Aligned with Team Experience and Project Preferences.

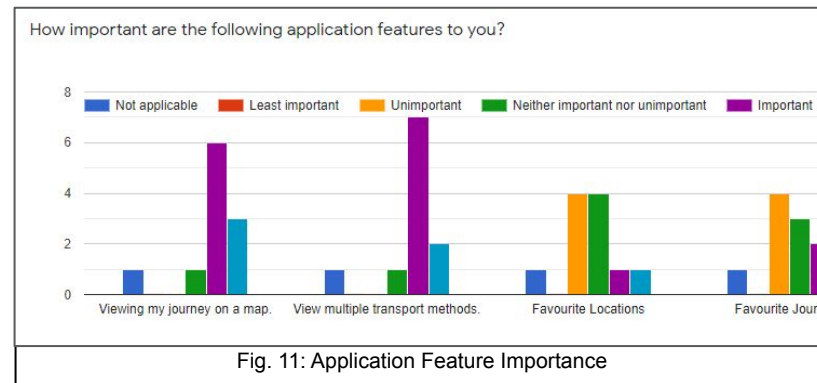
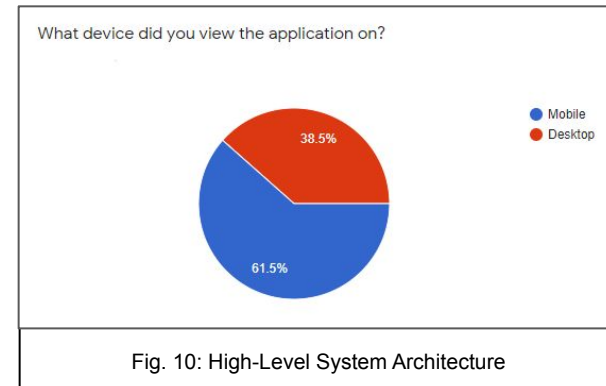


4. INITIAL FEEDBACK FROM SURVEYS

- A focused group of responders provided valuable feedback
 - Most feedback was positive
 - Our incorporated features were generally positively-viewed
 - Feedback on possible future features gathered
 - Valuable suggestions put forward regarding site layout

- Future work

- Development of backlogged features
 - Admin Dashboard
 - Google Analytics Integration
 - Embedded Survey Form
 - A/B Testing
- A continuous cycle of improvement
 - Recording of Model Outputs
- Refinements and bugfixes
 - Model Expansion
 - Additional Error Handling



6. Questions and Answers

- Thank you for your time.
- All questions are welcomed.

