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# Project Planning and Organisation

This project took place over several months which meant that if time was not managed carefully important tasks may have been left incomplete. From this need a project plan was developed.

# Research

Before any development work could begin several key questions had to be answered about how the project should proceed: Would the application provide static or dynamic routing to the user? How would the Application be developed? How would the shortest path be found?

## Static or Dynamic Routing

To determine whether the application should provide static or dynamic routing it is first important to understand what both involve.

### Static Routing

For the purposes of this report Static Routing will be defined as routing between two fixed points with the whole route available for the user to view. A popular example of this is google maps which can be seen in Figure 1 Static Routing Example.

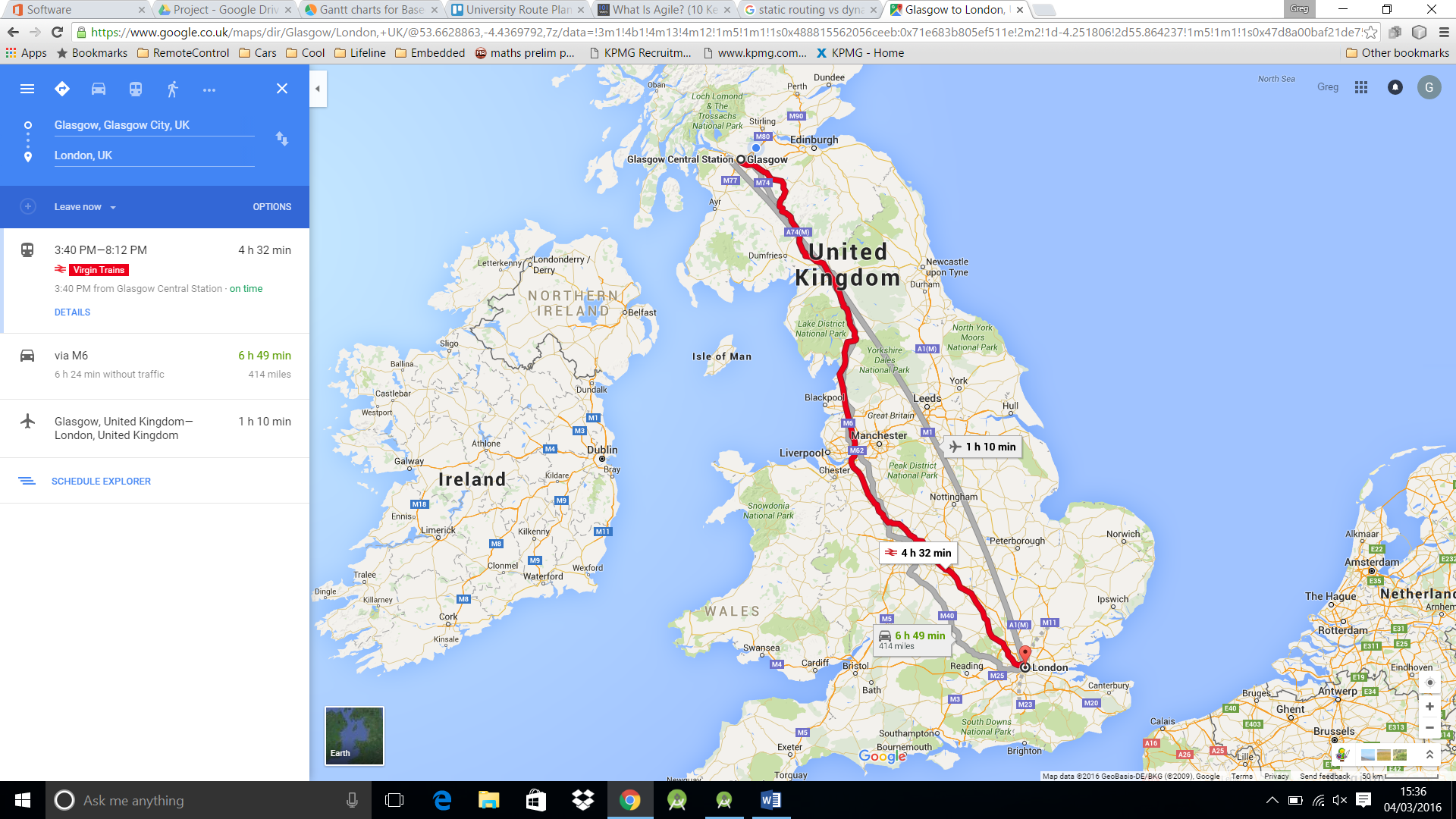


Figure 1 Static Routing Example [1]

### Dynamic Routing

By comparison Dynamic Routing will be defined as routing from the user’s changing location to a fixed endpoint. This means as the user moves the route will automatically adjust to their new location. This is the type of routing used in Satellite Navigation systems or Google Navigation which can be viewed below in

TODO

It is also common for the display to be more restricted showing only a short section of the route at a time i.e. where the user is to go next.

## Location Services

The main difference between the two types of routing is whether or not they the user’s location is utilised to improve the user interface or not. In order to decide between them then it is important to determine whether this is possible.

There are three main technologies which could be used to determine the user location: Global Positioning Service, Cellular Positioning and Wi-Fi.

### Global Positioning Service (GPS)

This was devised as a system to enable users worldwide to calculate their current location. The system comprises of twenty-four satellites continuously producing signals that tell a user where a satellite is and highly accurate timing information about when this signal was produced. All twenty-four satellites communicate on the same two frequencies however use Code Division Multiple Access in order to avoid collisions. By listening to the signals generated by at least four of the satellites to discover their locations and calculating the time it has taken to reach the user and hence how far away they are from each the users own location can be calculated. [2]

### Dynamic Routing Field Test

## Application type

## Routing

### Routing Information

### Path Finding

# Design

## Initial Design

## Final Design

## Reason for changes

## Software patterns

# References

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| [1] | 4 March 2016. [Online]. Available: https://www.google.co.uk/maps/dir/Glasgow/London,+UK/@53.6628863,-4.4369792,7z/data=!3m1!4b1!4m13!4m12!1m5!1m1!1s0x488815562056ceeb:0x71e683b805ef511e!2m2!1d-4.251806!2d55.864237!1m5!1m1!1s0x47d8a00baf21de75:0x52963a5addd52a99!2m2!1d-0.1277583!2d51.507350. |
| [2] | E. K. a. C. Hegarty, “GPS Overview,” in *Understanding GPS: Principles and Applications*, Artech House, 2005, pp. 3-4. |