Student Commute 2023 Analysis Report
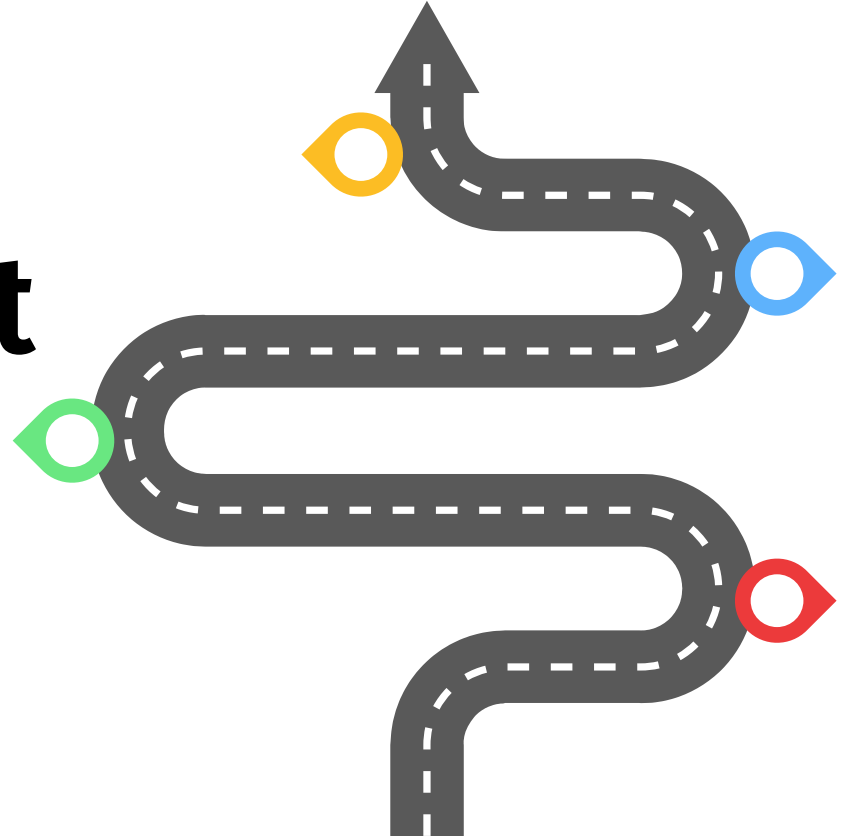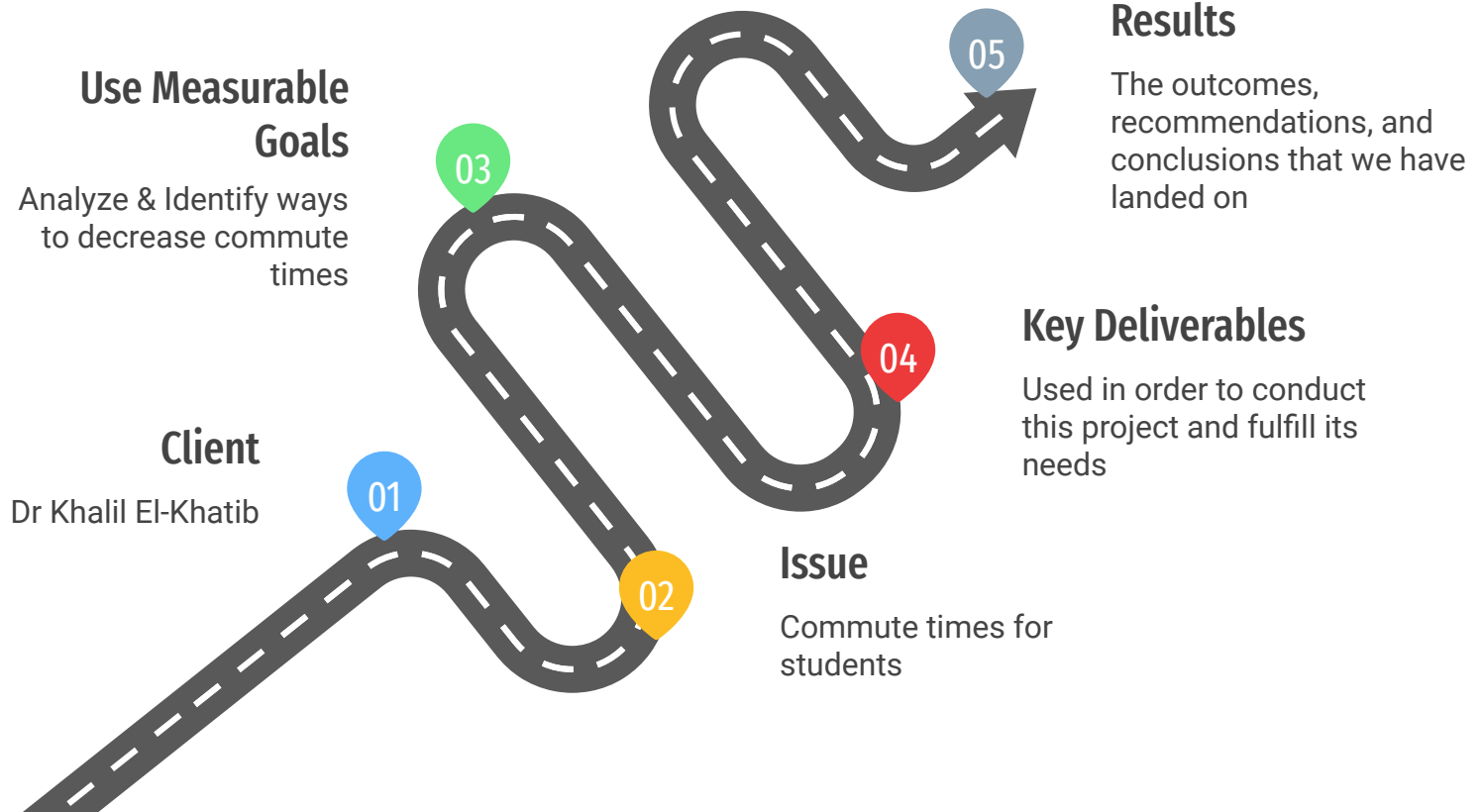
By: Nicholas Hughes, Franklin Muhuni, Matthew Denniston, Anoje Janathanan

Introduction

Client

Dr Khalil El-Khatib

Issue

Commute times for students

Use Measurable Goals

Analyze & Identify ways to decrease commute times

Key Deliverables

Used in order to conduct this project and fulfill its needs

Results

The outcomes, recommendations, and conclusions that we have landed on

01

02

03

04

05

Scope Definition

Research Method

Secondary & Primary Research

OTU & DRT

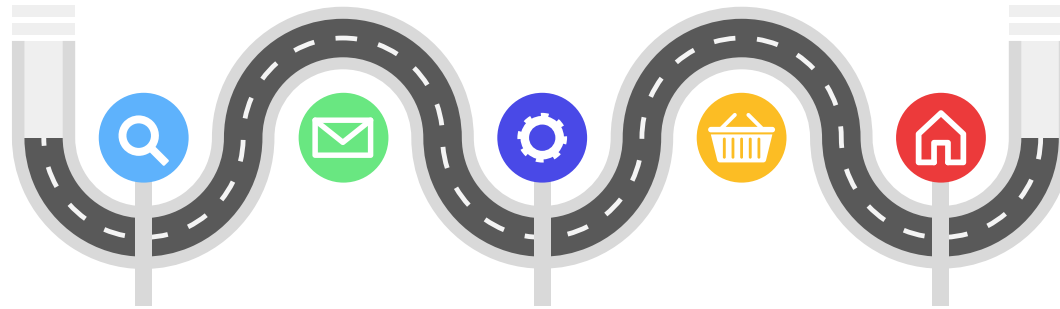Help these two institutes come up with a plan to fulfill the goals and purpose of this project

Goal

Make commuting easier, more efficient, and quicker for students

Purpose

Address the issue of long commute times to campus
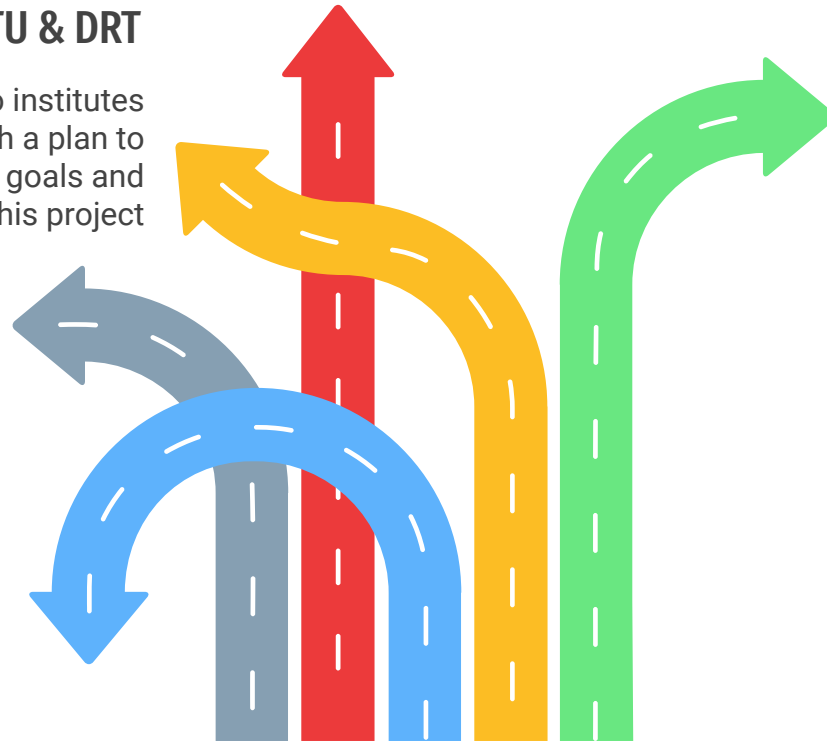
Research Methods

OnTech Website

We looked on the OnTech website for initial bus recommendations.

Google Maps

We queried Google Maps API to get bus routes by ZIP codes.

Experience

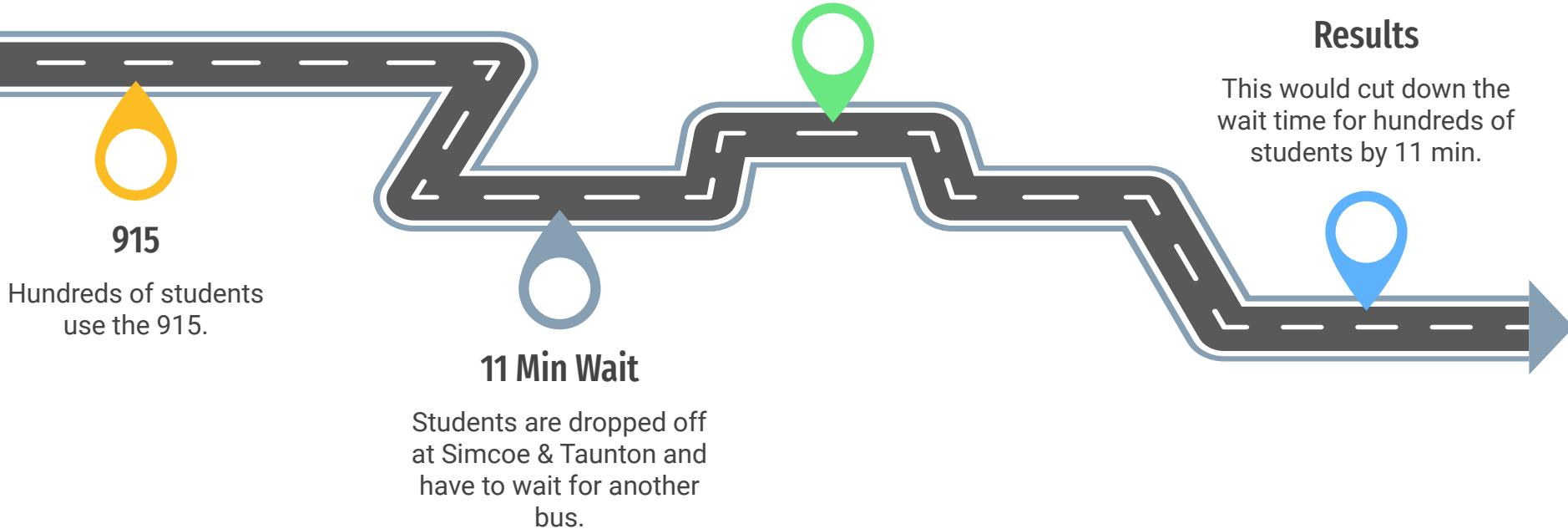After taking the bus we can verify that the API results are correct.

Research Results

Solution

Reroute the 915 to North Campus.
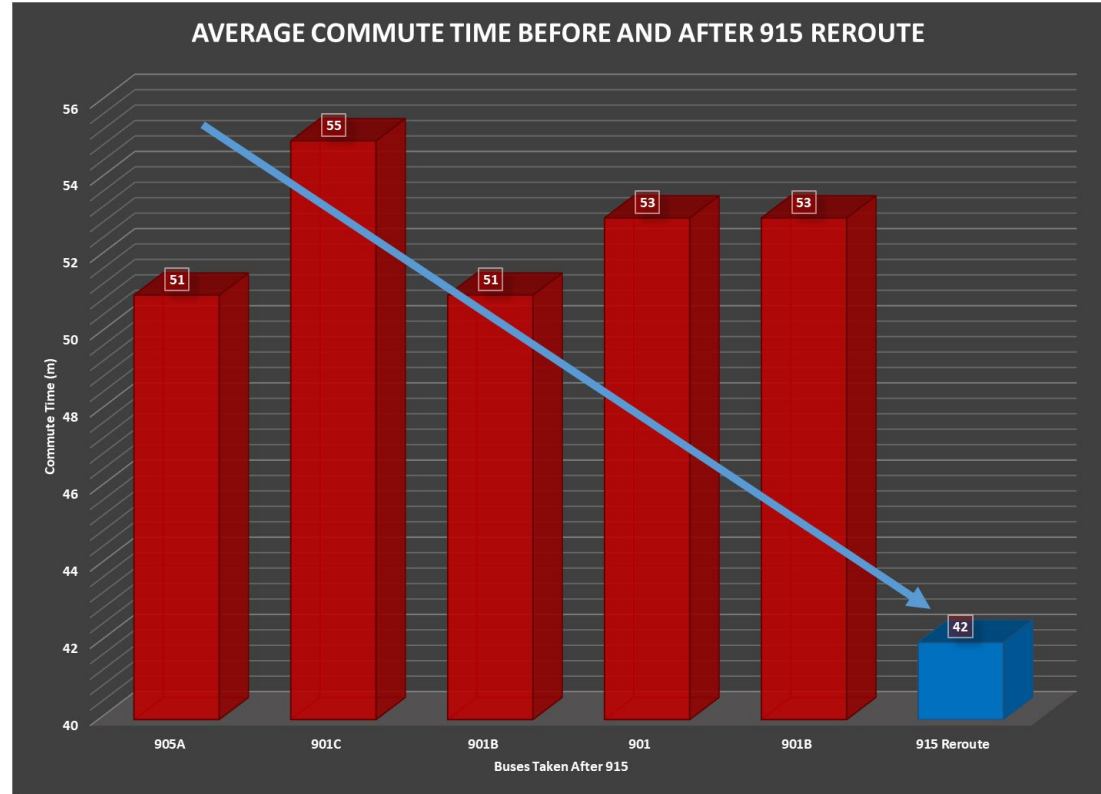
Results

This would cut down the wait time for hundreds of students by 11 min.

915

Hundreds of students use the 915.

11 Min Wait

Students are dropped off at Simcoe & Taunton and have to wait for another bus.

Recommendation: 915 Reroute Benefits

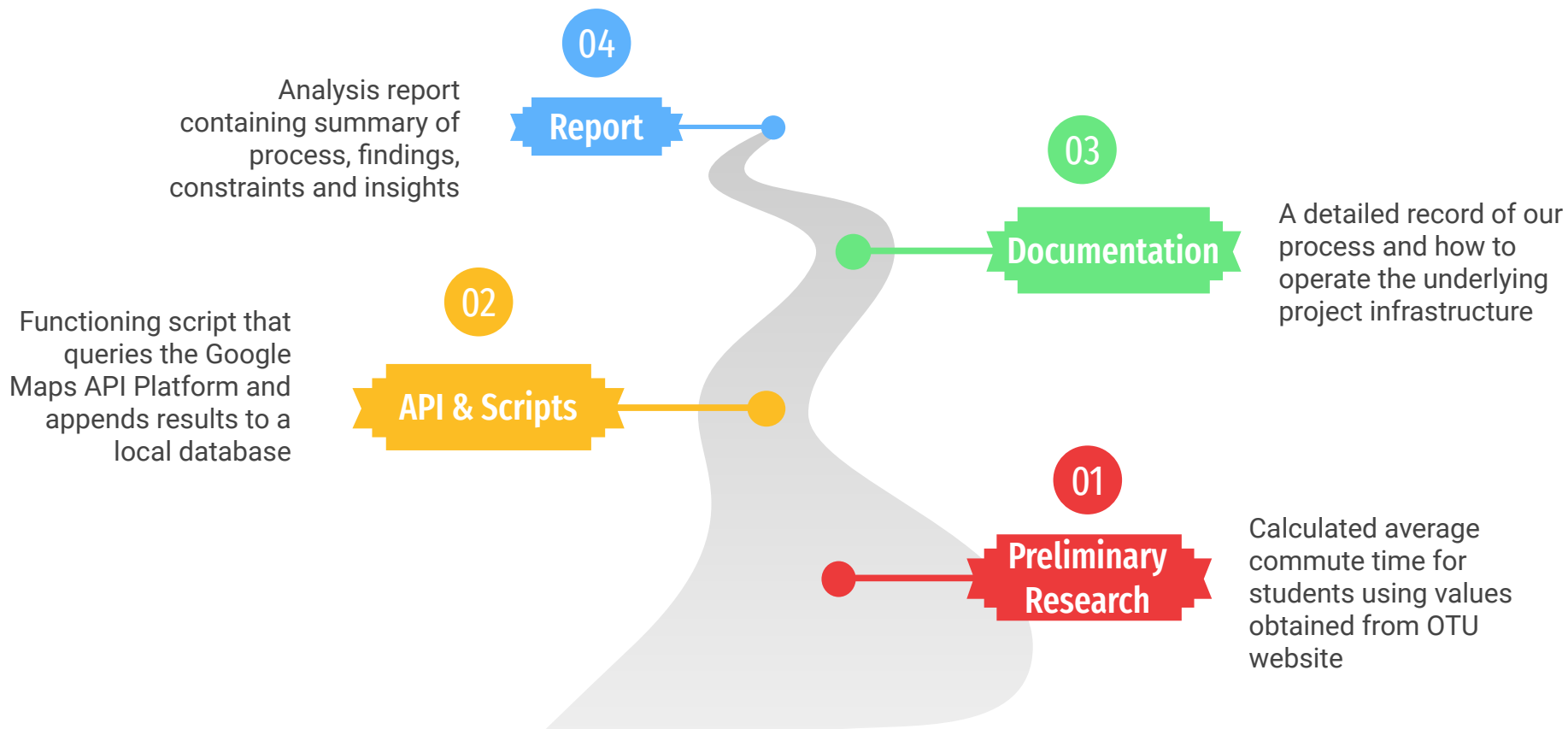- Saved total of 1920 bus transfers for students.
- Student wait time is cut by an average of 11 minutes.
- Increased safety on the bus.
- Increased student satisfaction.

AVERAGE COMMUTE TIME BEFORE AND AFTER 915 REROUTE

Commute Time (m)

905A	901C	901B	901	901B	915 Reroute
51	55	51	53	53	42

Buses Taken After 915

Key Deliverables

04

Analysis report containing summary of process, findings, constraints and insights

Report

03

Documentation

A detailed record of our process and how to operate the underlying project infrastructure

02

Functioning script that queries the Google Maps API Platform and appends results to a local database

API & Scripts

01

Preliminary Research

Calculated average commute time for students using values obtained from OTU website

Deliverable Outcome and Recommendations

- The data aggregation process takes time.
- Script processes an extremely large amount of data
- Optimize script performance.
  - Asynchronous functions
  - Multi-threading/processing

Conclusions and Summary

Research Methods

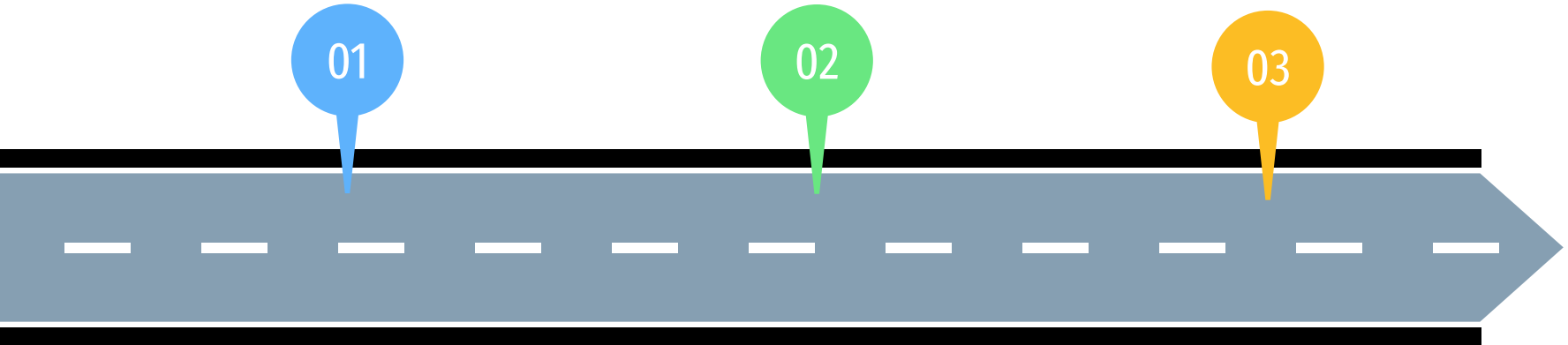Website Verification & Google API Querying

Research Results

Results show that the 915 bus currently poses a slight bottleneck

Final Thought

Rerouting the 915 Bus as a probable solution

01

02

03

~ Fin ~

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