Statement of Work

U6647717

Contents

About Transport Canberra and City Services (TCCS)

The vision for TCCS is "Making Canberra attractive, safe and easy to move". As per the Strategic Plan 2017-2020. The three business objectives are –

- Deliver Customer centric outcomes
- Improvement in safety and delivery
- Good governance and rewarding careers

TCCS aims to keep customers at the centre and work towards improving the attractiveness of public transport. One of the ways of doing this is by making the public transport system safer and try to become carbon neutral. In addition to the services provided to the people of Canberra, TCCS also wants to create a fulfilling work environment for their employee and move towards financial sustainability.

Background

On 19 November 2019, Transport Canberra (TC) introduced their new application Journey Planner. The Journey Planner application provides users with a set of options to travel from one location in Canberra to another. Few features of journey planner are –

1. Choosing modes – Bus, Light Rail, Bicycle, Walking
2. Journey Preferences – Fewest Transfers, Least walking
3. Special Services – Wheelchair accessibility, Bike racks

In addition to these, there are potential features which can be added in the future like live bus tracking etc.

In services like these, the opinion and suggestion of the public is of huge importance. These suggestions can help Journey Planner become a better application in the future. So, to capture these, the Survey Monkey form was released on 19 November 2019.

Scope

The scope of the project are as follows –

1. Creating a python script to analyse the user responses
2. Using the responses to analyse the sentiments of the users
3. Using the analysis to help create informed decisions.

Project Value

This project will provide valuable insights to TC on how people perceive the Journey Planner Application. The analysis of the sentiments will help TC to identify areas of improvement. Few examples of this could be the need for an Android or iOS app or need for better journey recommendations. These will help the different teams understand the pain point of the users and devise plans to mitigate the same. This will not only help bring positive changes to the web app but also help the people of Canberra plan journeys better.

Objective

The following have been identified as the objectives of the project –

- **Understanding customer behaviour**
  One of the main objectives is to understand the responses of the user after using the Journey Planner application. These reactions are captured via a form available online through survey monkey. This form contains questions on age group of the user, the ease of usage and other questions based on the overall experience of using the Journey Planner web application. The responses can then be used to –
     1. Find trends of the positive and negative sentiments.
     2. Extract suggestions for improvement.
  The responses collected so far should be compiled and analysed. This will help Transport Canberra understand the general sentiment of the users in a certain time frame. The web application also contains questions where the user is asked to give a suggestion. This data should also be compiled and presented in an easily consumable format.

- **Understanding what the customer is looking for.**
  This objective deals with understanding the positive and negative words used by the customers grouped by their age. This will not only help in understanding the sentiments of the users in a certain age group but will also help understand the phrases and words used by them. This will help Transport Canberra in understanding specific age groups for promoting Journey Planner and public transport via various social media platforms.

- **Understanding the positive and negative sentiments over time**
  This objective involves creating a trend graph of the sentiments since the launch. As sentiments can be positive, negative or neutral these labels will be used in the Y-axis and the months in the X-axis.

Stakeholders

- **Innovation, Data and Analytics Team (IDA Team)**

The IDA team is involved in providing data analytics services to directorate. This provides business intelligence services, helps business units predict and plan for the future. They also develop apps to collect data and work towards automating data collection. Within the IDA team, Selva Murugesan will be the Project Owner and Nathan Urban will be the Project Manager.

- **Customer Experience Team**

The CX team handles the customer side of the operation. Most of their work deals with talking to customer and trying to solve their problems. This team directs customer problems to different teams in the directorate. E.g. If Canberrans complain that a tree has fallen and is blocking the road then they can direct the complain to the appropriate team to resolve the issue.

- **Research School of Computer Science, Australian National University (ANU)**

This stakeholder is involved in providing support to the developer to help complete the project. Support is provided through, weekly tutorials on dealing with workplace issues, tools to help the developer complete the project.

- **Developer**

This stakeholder will be working directly on the project and will be responsible for managing the other stakeholder expectations.

For the responsibility assignment (RACI) matrix please refer to Appendix.

Project Milestones

The project has been divided into three milestones. These three milestones provide enough time to complete the tasks within each milestone and deliver a more complete product to the stakeholders.

The project schedule and milestone also consider the time required to set up in a new workplace and the teaching break from 2 September 2019 to 16 September 2019.

Step	Task Description	Start Date	End Date
Milestone 1	**Project Setup and Data Analysis**		
Purpose	This phase will help the developer get acquainted with the workplace and work on analysing the dataset		
1	Project Setup	22-Jul-19	28-Jul-19
2	Basic Data Analysis	29-Jul-19	11-Aug-19
3	Free Text Analysis	12-Aug-19	25-Aug-19
Deliverables			
1	Jupyter Notebook with analysis.		
Milestone 2	**Sentiment Analysis**		
Purpose	This phase will focus on the sentiment analysis of the data		
1	Sentiment Analysis	26-Aug-19	22-Sep-19
2	Visualizations	23-Sep-19	6-Oct-19
Deliverables			
1	Jupyter Notebook with analysis.		
Milestone 3	**Report and Documentation**		
Purpose	This phase will focus on documentation and report writing.		
1	Create Report	7-Oct-19	20-Oct-19
2	Documentation and Handover	21-Oct-19	27-Oct-19
Deliverables			
1	Final Jupyter Notebook with all the code and documentation		
2	Python script to generate the graphs		
3	Final Report		

Project Flow
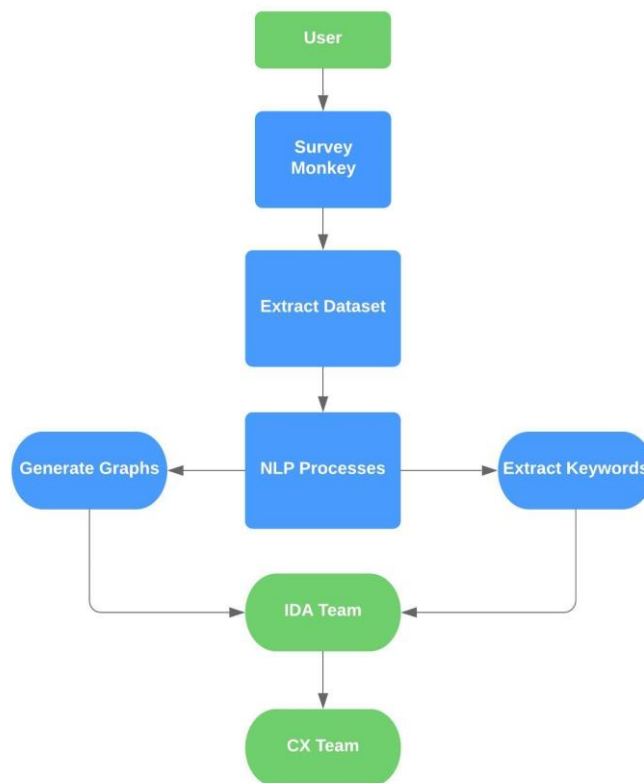
Success Criteria

Time - A lot of time can be saved provided that the project is successful. A human would take anywhere between up to 8[1] hours to read the responses and tabulate. In addition to the, for creating graphs based on the responses a human would need further up to 8[1] hours to finish. However, using python scripts, this time can be cut down to almost 30[1] mins. The success of this project will help save almost 2[1] workdays for a TC employee.

Financial - As a TC employee is not needed to spend manually reading the responses, He/she can work on other tasks. This will surely save a lot of taxpayer money which could be diverted to other areas.

Tooling

The following tools and libraries will be used in the project –

	Name	Comment
Language	Python 3.6	Suggested by stakeholder
Library	nltk, spacy	Standard NLP libraries which provide all the necessary functions
Library	scikit-learn	Implementing metrics and other functions
Library	matplotlib	Visualization
Other Visualization Tool	PowerBI	For creating Visualization Dashboards
Version Control	BitBucket	Standard version control service used by TC

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[1] Based on the amount of data

Content Management	Objective ECM	Standard document management software used by TC

Resources

Item	Availability	Comment
Equipment	Yes	Computer provided by TC
Software		No specialized software necessary. All software is open-source or licensed
Capital	No	No capital necessary as all the tools are available for free at TC
Human Resource	Yes	

Risks

Risk	Description
Time	As the time for completion for the project is fixed. There can be a possibility of non-completion
Data Inconsistency	As there is no way of checking if the responses recorded are genuine, there may be a situation where users are spamming the Survey Monkey form
Change of Requirements	TC may want to change the requirements of the project during the project

For the risk assessment form and risk assessment matrix refer the Appendix.

Cost

The project will use tools which are open source, or which are already licensed to Transport Canberra. Tools and libraries like nltk, spacy, matplotlib are available for free to everyone. Whereas other tools and software like PowerBI, Objective ECM and Bitbucket are already licensed to Transport Canberra and are used on a regular basis by the IDA team.

Total Development Cost = $0

Constraints

One constraint has been identified for the project –

Time - This is a major constraint in the project as work needs to be completed in 12 weeks with 15 hours of work per week. This requires good time management from all the stakeholders in order
to ensure that the project gets completed with the necessary time frame.

Deliverables

At the end of the project, the following will be delivered to the IDA team and TC as a minimal viable product –

- Python code used for the analysis of the data provided with documentation.
- A report detailing the findings and trends observed.

In addition to the MVP the following will be delivered as a secondary deliverable –
- PowerBI dashboard for easy access to the analysis.

Appendix

1.1   Acronyms

- TCCS - Transport Canberra and City Services
- TC - Transport Canberra
- MVP - Minimum Viable Product
- IDA - Innovation, Data and Analytics Team
- CX - Customer Experience Team
- NLP - Natural Language Processing

1.2   RACI Matrix

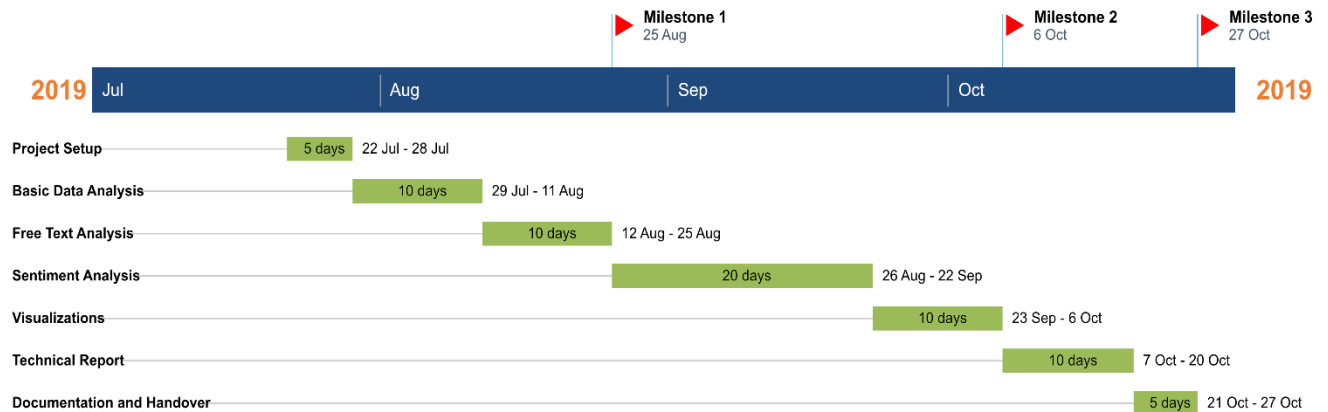| Tasks	Stakeholders				
	Developer	ANU	Project Manager (IDA Team)	Project Owner (IDA Team)	Customer Experience Team
Understanding of the tools and dataset involved	R+A	C	C	I	
Text and data analysis	R+A	C	C	C	
Sentiment Analysis	R+A	C	C	C	
Visualizations and Dashboards	R+A	C	C	C	C
Report and Documentations	R+A	C	C	C	C

Legend –

R – Responsible

A – Accountable

C – Consulted

I - Informed

1.3   Gantt Chart

1.4   Risk Assessment Form

Risk	Likelihood	Severity	Action
Time	1	C	The stakeholders have agreed to split the project to an MVP and secondary tasks.
Data Inconsistency	1	B	The developer should be wary of such entries and try to identify and flag if such anomalies are observed.
Change of Requirements	3	C	In such a situation all the stakeholders will need to be in the same page and should also consider if the changes can be handled in the time frame.

1.5   Risk Assessment Matrix

	SCALE OF SEVERITY		
	MINOR (A)	MODERATE (B)	MAJOR (C)
NOT LIKELY (1)		DATA INCONSISTENCY	TIME
POSSIBLE (2)			
NOT LIKELY (3)			CHANGE OF REQUIREMENTS

Color Codes –

1. Green – Acceptable

2. Yellow – Tolerable

3. Red – Generally Unacceptable