Project Plan

Data Analysis on Australia NSW traffic penalty

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1. Introduction

1.1 Background

Road safety is an important aspect of governance, in NSW around 300 people have lost their lives on roads and over 10,000 have been seriously injured during a 12-month period (NSW Government, 2022a). Data gathered around this topic can help answer a variety of questions to educate people, open up new avenues of inquiry and help make educated decisions backed by statistics. However, further processing of datasets through interfaces are necessary to provide a more focused answer to queries, extrapolating graphical and other analysis.

Specifically:

- Graphical analysis of case distribution by offense code can provide a picture of the dominance of certain offenses and prompt more research into why that is the case and how to reduce violation instances.
- Information about cases captured by radar or camera can provide insight on the type of cases that are effectively recorded by technology
- Mobile phone usage is a serious and important aspect of traffic penalties. Road safety research has found handheld mobile phone use while driving significantly increases the risk of having a casualty crash by at least 4 times and texting increases the crash risk even further (NSW Government, 2022b). Data relating to phone usage penalties can determine its prevalence show if its being adequately addressed over time.
- Other insight: compare periods

1.2 Scope

The project uses a Kaggle database of traffic penalties to supply users with information pertaining to their time period search. Information provided include offense description, the legislation it violated, the method the infringement was recorded and the location of infringement. The project also generates graphical and statistical analysis of offenses based on description and capture category.

The scope is limited to the base data that only covers the period between 2011-2017 in the geographical constraints of NSW Australia.

1.3 Document contents

Statistical analysis of road safety can greatly aid governance. Under the scope of the 2011-2017 NSW traffic penalty database, users will be able to drill down to specified information and generate statistical and graphical analysis.

Project documents include project plan, software requirements and design, software testing cases and report, software user manual, and other project-related documents, will be delivered in this project. The project plan document contains a brief introduction of the project, work breakdown structure, activity definition and estimation and Gant chart, all aspects fluidly and concisely demonstrate the flow within the project. The software requirement and design document includes

system vision document, business requirements, software requirements, functional and component designs, and user interface designs. In the testing cases and report document, testing cases, bugs, solutions will be addressed and an overall of testing report will finally be presented to evaluate the quality of the software. A software user manual document, as one of project deliverables, will be written to assist users to operate the software easily and smoothly. Finally, other project-related documents will be delivered to the clients, such as project meeting notes, project risk control document, and project change management document etc.

2. Work Breakdown Structure

Figure 1 demonstrates the Work Breakdown Structure (WBS) for the NSW Traffic Penalty Data Analysis System Project, which focuses on the project initiating, planning, analysis, designing, building, testing, deploying, and control stages. John et al. (2015) state that the WBS divides the entire project deliverables into chunks to facilitate project team to estimate and manage individual tasks more effectively. The WBS diagram has covered the entire project scope.

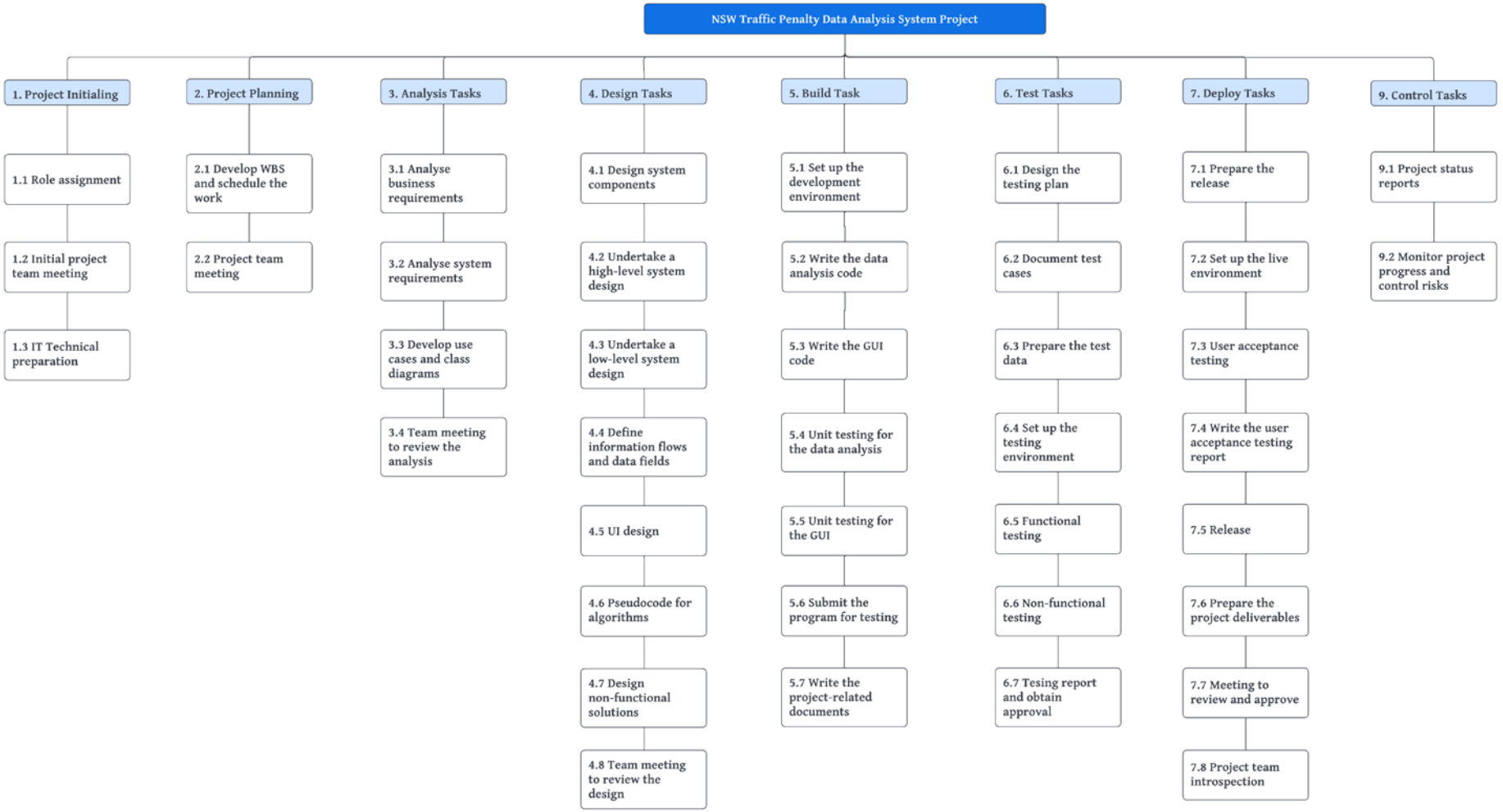

Figure 1. Work Breakdown Structure (WBS) for NSW Traffic Penalty Data Analysis System Project

3. Activity Definition & Estimation

It can be seen from the Table 1 that detailed activities and time estimations have been defined for the individual tasks in the WBS. The table below also illustrates the human resources and predecessors of the individual tasks. The project was estimated to have cost 132 hours to complete. As project team members could undertake some tasks concurrently, it seems that the actual completion time would be less than 132 hours.

Work Breakdown Structure – Activity Definition and Estimation NSW Traffic Penalty Data Analysis System				
Task ID	**Task Description**	**Duration**	**Resources**	**Predecessor**
1	**Project Initiating**			
1.1	Role assignment 5 Roles: Project Manager (PM), Business Analyst (BA), Developer #1 (D#1), Developer #2 (D#2), and Tester (T).	1 hr	Bozhao Li, jennifer-wei lin, Sakibul Islam	
1.2	Initial project team meeting	2 hrs	Bozhao Li, jennifer-wei lin, Sakibul Islam	1.1
1.3	IT Technical preparation To learn Python numpy, pandas, matplotlib, and Python GUI libraries.	15 hrs	Bozhao Li, jennifer-wei lin, Sakibul Islam	1.2
2	**Project Planning**			
2.1	Develop WBS and schedule the work	4 hrs	Bozhao Li, Jennifer-wei lin, Sakibul Islam	1.2
2.2	Project team meeting To review the WBS and project schedule, and to assign analysis tasks.	2 hrs	Bozhao Li, Jennifer-wei lin, Sakibul Islam	2.1
3	**Analysis Tasks**			
3.1	Analyse business requirements	6 hrs	Bozhao Li, Sakibul Islam	2.2

3.2	Analyse system requirements	6 hrs	Sakibul Islam, Bozhao Li, Jennifer-wei lin	3.1
3.3	Develop use cases and class diagrams	2 hrs	Sakibul Islam	3.2
3.4	Team meeting to review the analysis To review both business and system requirements and use cases diagrams, and to assign design tasks.	1 hr	Bozhao Li, Jennifer-wei lin, Sakibul Islam	3.3
4	**Design Tasks**			
4.1	Design system hierarchical structure and components	2 hrs	Bozhao Li	3.4
4.2	Undertake a high-level system design	3 hrs	PM, Sakibul Islam	3.4
4.3	Undertake a low-level system design	9 hrs	Sakibul Islam, Bozhao Li	4.1, 4.2
4.4	Define information flows and data fields	3 hrs	Jennifer-wei lin	4.1, 4.2
4.5	UI design	3 hrs	Jennifer-wei lin	4.4
4.6	Pseudocode for algorithms	3 hrs	Jennifer-wei lin	4.5
4.7	Design non-functional solutions FURPS+	1 hr	Sakibul Islam, Bozhao Li	4.3
4.8	Team meeting to review the design To review the system design including flow chart / block diagrams, functions, classes/data structures, algorithms, structural design and wireframes, and to assign build tasks.	2 hrs	Bozhao Li, Jennifer-wei lin, Sakibul Islam	4.6, 4.7
5	**Build Tasks**			
5.1	Set up the development environment Identify the development environment including developing tools, programming languages, libraries.	2 hrs	Bozhao Li, Jennifer-wei lin	4.2
5.2	Write the data analysis codes	9 hrs	Bozhao Li	5.1

5.3	Write the GUI codes	9 hrs	Jennifer-wei lin	5.1
5.4	Unit testing for the data analysis To undertake unit testings, manage bugs, fix the bugs, and approve.	3 hrs	Bozhao Li	5.2
5.5	Unit testing for the GUI To undertake unit testings, manage bugs, fix the bugs, and approve.	3 hrs	Jennifer-wei lin	5.3
5.6	Submit the program for testing	1 hr	Bozhao Li, Jennifer-wei lin	5.4, 5.5
5.7	Write the project-related documents Unit testing report, system operation manual, and system maintenance manual.	9 hrs	Bozhao Li, Jennifer-wei lin	5.6
6	**Test Tasks**			
6.1	Design the testing plan (including both functional and non-functional)	3 hrs	Sakibul Islam	4.8
6.2	Document test cases (including both functional and non-functional)	3 hrs	Sakibul Islam	6.1
6.3	Prepare test data (including both functional and non-functional)	3 hrs	Sakibul Islam	6.2
6.4	Set up the testing environment	1 hr	Jennifer-wei lin, Sakibul Islam	5.6, 6.3
6.5	Functional testing To undertake unit testings, manage bugs, fix the bugs, and approve.	2 hrs	Sakibul Islam	6.4
6.6	Non-functional testing To undertake unit testings, manage bugs, fix the bugs, and approve.	1 hr	Sakibul Islam	6.5
6.7	Write the testing report and obtain approve	2 hrs	Bozhao Li, Sakibul Islam	6.5, 6.6
7	**Deployment Tasks**			

7.1	Prepare the release	1 hr	Bozhao Li, Jennifer-wei lin	6.7
7.2	Set up the live environment	1 hr	Bozhao Li, Jennifer-wei lin	7.1
7.3	User acceptance testing To undertake unit testings, manage bugs, fix the bugs, and approve.	3 hrs	Bozhao Li, Jennifer-wei lin, Sakibul Islam	7.2
7.4	Write user acceptance testing report	2 hrs	Bozhao Li, Sakibul Islam	7.3
7.5	Release	1 hr	Bozhao Li, Jennifer-wei lin	7.4
7.6	Prepare the project deliverables	1 hr	Bozhao Li	7.5
7.7	Meeting to review and approve	1 hr	Bozhao Li, Sakibul Islam	7.6
7.8	Project team introspection	1 hr	Bozhao Li, Jennifer-wei lin, Sakibul Islam	7.7
8	**Control Tasks**			
8.1	Project status reports Weekly project meeting reports.	2.5 hrs	Bozhao Li	1.2
8.2	Monitor project progress and control risks Monitor project progress using the Gantt chart, and manage risks.	2.5 hrs	Bozhao Li	1.2

Table 1. Work Breakdown Structure – Activity Definition and Estimation

4. Gantt Chart

Based on the activities identified in the WBS, the Gantt chart has been generated and shown in the Figure 2. Considering that the project team will work 4 days per week and 3 hours per day, the project completion time has been estimated at 27 days (almost 7 weeks). Apart from the visual view of each task shown in the Gantt chart, the project manager can identify a critical path from the Gantt chart. While the tasks in the critical path are going to be delayed, the project manager can identify risks and proactively manage the risks.

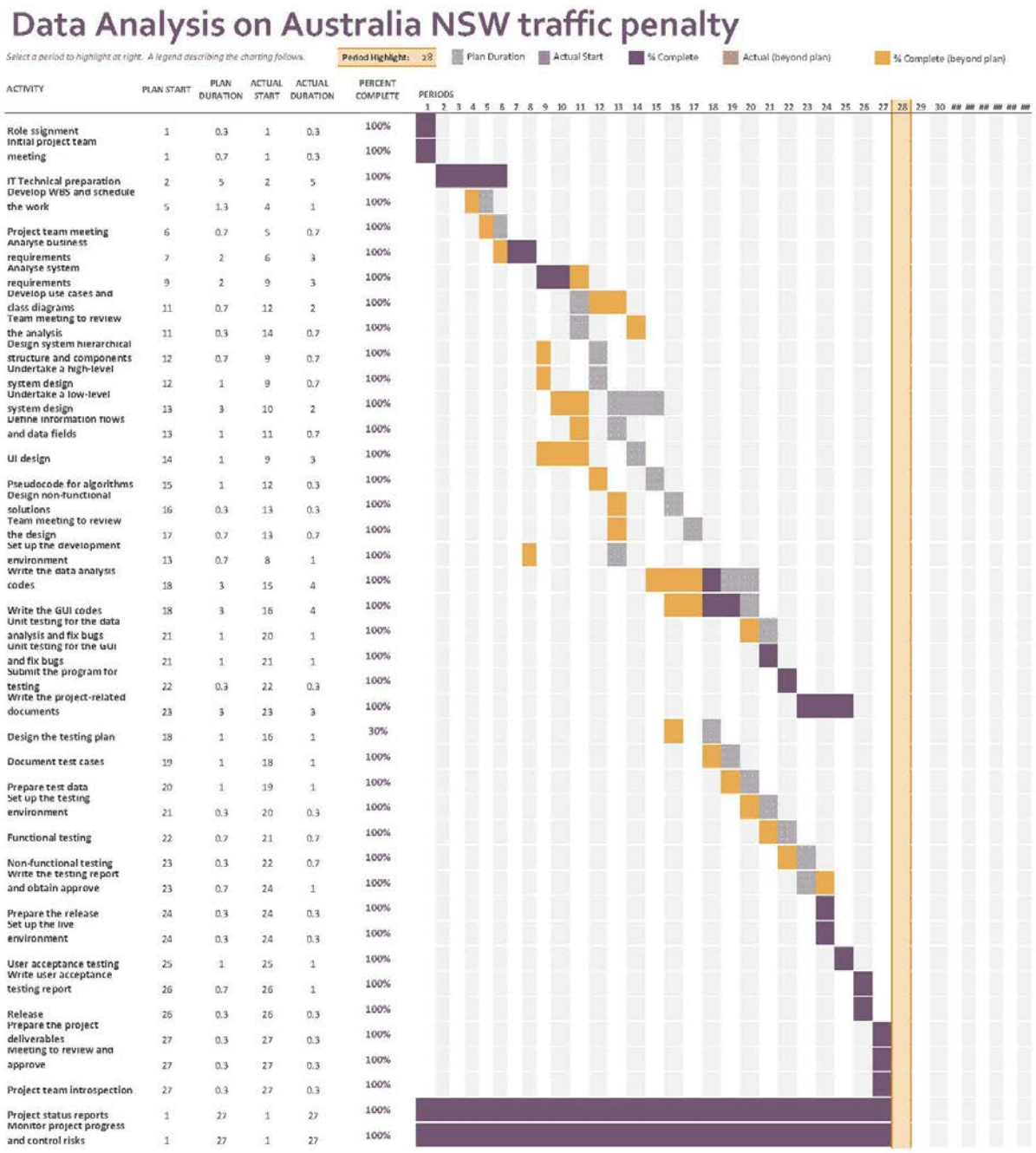

Figure 2. Gantt Chart

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