Project Plan

Data Visualisation of Crash Statistics Victoria

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Table of Contents

[1.0 Introduction 3](#_Toc46748287)

[1.1 Problem Background 3](#_Toc46748288)

[1.2 Scope 3](#_Toc46748289)

[1.3 Document contents 3](#_Toc46748290)

[2.0 Work Breakdown Structure 4](#_Toc46748291)

[3.0 Activity Definition & Estimation 5](#_Toc46748292)

[4.0 Gantt Chart 6](#_Toc46748293)

# Introduction

## Background

The Victoria State Accident DataSet 2015-2020 (VSADS) project aims to modernize and enhance the existing accident data collection system operated by VicRoads (regulatory body for construction, maintenance, policy and research of roads in Victoria prior to 2019) . This project seeks to extend the system's capabilities to provide a user-friendly interface with advanced analytical tools to gain valuable insights from the accident data.

The VSADS project holds paramount importance for the health and safety of the Victorian population, as it provides substantial benefits not only to VicRoads but also to the broader community. By improving the quality and accessibility of accident and crash statistical data, the project will enable more informed decision-making, better resource allocation, and enhanced public safety measures.

Building on the dataset collected by VicRoads in the years 2015-2020, the VSADS project aims to construct, test, and implement an initial release of an analysis tool with the following functionality:

* For a user-selected period, display the information of all accidents that happened in the period.
* For a user-selected period, produce a chart to show the number of accidents in each hour of the day (on average).
* For a user-selected period, retrieve all accidents caused by an accident type that contains a keyword (user entered), e.g. collision, pedestrian.
* Allow the user to analyze the impact of alcohol in accidents – ie: trends over time, accident types involving alcohol, etc.
* Geospatial Accident Visualization: The new analysis tool will incorporate geospatial data visualization capabilities, allowing users to visualize accidents on a state map for a user-selected period.

With these features implemented the VSADS 2015-2020 project seeks to revamp the existing accident data collection system and provide an advanced, user-friendly platform with analytical tools for gaining valuable insights from the accident data. With the aim to ensure the successful implementation of this analysis tool, we hope that it makes a positive impact on public health and safety across the state.

## Scope

### 1.2.1 Scoped Components

The emphasis of this document is to provide documentation to be utilised with the VSADS to ensure timely delivery and implementation. By outlining the project components to be produced, and those to be excluded the scope can be clearly defined. The process for these components will be explained in detail in other documentation.

|  |  |  |
| --- | --- | --- |
| Major components and items to be produced | Confidence Levels1 (1-5) | Responsible |
| Completion of the following documents in relation to the VSDAS:   * Project planning document. * Software design and framing document. * Activity and timeline analysis for VSDAS project. | 2 | All |
| To design, construct and complete unit and function testing of the VSADS as outlined in:   * This document (A001). * The technical requirements outlined in the design brief README.md file. | 1 | Testing |
| To support the use of the VSADS project by a Stakeholder or End User.   * Testing documentation and reporting. * User manual. | 2 | Testing/Documention |
| Implement the required collection and connection to the relevant data-set for the VSADS for the final version of the project   * To convert the Victorian State Accident Data-Set for years 2015-2020, to an interoperable format. * Show statistical trends accurately for the historical period of data-set. * Downloading the Dataset | 1 | Development/ UI |
| Reporting throughout the VSADS project life cycle.   * Version control logs. * Project phase reports. * Activity reports. | 2 | PM |

Confidence level for the solution scope component definition:   
1 = extremely confident, 2 = very confident, 3 = confident, 4 = less confident, 5 = not confident.

### 1.2.2 Excluded Components

The VSADS project will not be designing or producing the following:

* The installation or training on the use of the design.
* The technical or infrastructure modifications required to operate the design on other computer operating systems or hardware setups.
* Maintenance or redesign work upon final handover.
* Legal documentation for this designs use.
* Statistical analysis or interpretation of the data once visualised.

## Document contents

### 1.3.1 Background Information

Accurate and comprehensive data on road accidents is essential for effective road safety management and policy formulation. The existing accident data collection system operated by VicRoads has played a crucial role in providing valuable insights into accident trends and patterns. However, to address the evolving challenges of road safety and enhance data utilization, the VSADS project proposes a modernization and extension of the current system.

Road accidents have significant human and economic costs, impacting the health and well-being of individuals, families, and communities. In Victoria, there is an opportunity to leverage the dataset collected by VicRoads between 2015 and 2020 to further analyse with the assistance of visualisation.

### 1.3.2 Project Plan Contents

This document outlines the background information about the VSADS project, its scope, and the components to be included and excluded. It will contain detailed sections on the Work Breakdown Structure (section 2.0) and Activities Definition and Estimation (section 3.0) to provide comprehensive planning and execution of the project.

# Work Breakdown Structure

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| VSADS Project | | | | |
| Task ID | Task Description | Duration | Resources | Predecessor |
|  | | | | |
| 1 | INITIALISING | | | |
| 1.1 | Establish project group and communication model | 1 Day | Project Manager, Team Members |  |
| 1.2 | Analyse problem requirements | 2 Days | Business Analyst, Project Manager |  |
| 1.3 | Define project scope | 2 Days | Project Manager, Stakeholders | 1.2 |
| 1.4 | Define project milestones, deliverables | 1 Day | Project Manager, Team Members | 1.3 |
| 1.5 | Allocate resources | 1 Day | Project Manager,  Team Members | 1.4 |
|  | | | | |
| 2 | PLANNING | | | |
| 2.1 | Project Plan – detailed tasks, dependencies and timelines | 5 Days | Project Manager, Team Members | 1.4 |
| 2.2 | Risk Management | 2 Days | Project Manager, Risk Analyst | 2.1 |
| 2.3 | Plan the development language/libraries and environment. | 2 Days | Technical Lead, Developers | 2.1 |
| 2.4 | Plan system architecture and software database schema. | 3 Days | System Architect, Database Specialist | 2.1 |
| 2.5 | Define data source and integration | 1 Day | Data Specialist, Technical Lead | 2.1 |
| 2.6 | Outline software design and Software components. | 2 Days | Technical Lead, Designers | 2.1 |
|  | | | | |
| 3 | Execution | | | |
| 3.1 | Frontend | 5 Days |  |  |
| 3.1.1 | Install web application components | 1 Day | Frontend Developers | 2.3 |
| 3.1.2 | Establish web application environment | 1 Day | System Administrator, DevOps | 3.1.1 |
| 3.1.3 | Create main UI components | 3 Days | UI/UX Designers, Frontend Developers | 3.1.2 |
| 3.2 | Backend | 4 Days |  |  |
| 3.2.1 | Perform necessary cleaning and optimization of the database | 1 Day | Database Specialist | 2.4 |
| 3.2.2 | Create table structure and import data. | 2 Days | Database Specialist, Backend Developers | 3.2.1 |
| 3.2.3 | Establish link between database and middleware | 1 Day | Backend Developers, System Architect | 3.2.2 |
| 3.3 | Data Integration | 6 Days |  |  |
| 3.3.1 | Install SQL connector | 1 Day | Backend Developers, Data Specialist | 3.2.3 |
| 3.3.2 | Establish extraction, transformation and loading processes. | 3 Days | Data Engineers, Backend Developers | 3.3.1 |
| 3.3.3 | Establish a list of objects from the database and return to frontend | 2 Days | Backend Developers, Frontend Developers | 3.3.2 |
| 3.4 | CI/CD | 2 Days | DevOps, Backend Developers | 3.2.3, 3.3.3 |
| 3.5 | Documentation | 4 Days | Technical Writers, Developers | 3.1.3, 3.2.2 |
|  | | | | |
| 4 | Controlling | | | |
| 4.1 | Implement and enforce version control practices | 1 Day | Development Team, Project Manager | 3.5, 2.6, 3.4 |
| 4.2 | Track progress of project, referring back to established timelines | 1 Day | Project Manager, Development Team | 2.1, 3.1.3, 3.3.3 |
| 4.3 | Reviewing the project plan and software design document | 2 Days | Technical Lead, Project Manager | 2.1, 2.6, 4.2 |
| 4.4 | Concurrent unit and function testing and reporting | 5 Days | QA Team, Development Team | 3.1.3, 3.2.3 |
|  | | | | |
| 5 | Closing |  |  |  |
| 5.1 | Produce user documentation | 3 Days | Technical Writers, Developers | 3.5, 4.3, 4.4 |
| 5.2 | Produce version control logs | 1 Day | Development Team, Project Manager | 4.1 |
| 5.3 | Produce close out documentation | 3 Days | Project Manager, Technical Writers | 5.1, 5.2, 4.3 |



*This section should include the work breakdown structure for the whole project. The elements from the WBS should be used to generate your activity definition and those activities should then be scheduled in the Gantt Chart. Remember to consider ALL project activities – anything you do or will need to do should be included in the WBS*

*WBS’s are usually presented as some kind of hierarchical diagram/chart etc. The details what is involved each work unit should be provided in section 3:* ***Activity Definition***

*You do NOT need to do a WBS Dictionary for this project – the activity definition (whilst slightly different) will suffice. The WBS is focussed on SCOPE. The Activity definition is focussed on TIME.*

# Activity Definition & Estimation

* 1. **Initialising**
     1. The initialising phase focuses on developing a team, assigning roles, understanding and analysing problem requirements, defining the project scope and project milestones and deliverables, and allocating resources. Under task 1.1, the project begins with the "Establishment of the Project Group and Communication Model." This task is set to take a day as it will take no less than one meeting to establish a group, each roles the members will take and what means of communication is needed. Following this, task 1.2 involves the Business Analyst and the Project Manager who will spend two days to "Analyze Problem Requirements." Then, task 1.3 encompasses a two-day duration allocated for "Defining the Project Scope". Task 1.4 sees the Project Manager and Team Members collaborating over a day to "Define Project Milestones and Deliverables." Wrapping up this phase, task 1.5 focuses on "Resource Allocation" over a day.
  2. **Planning**
     1. The planning phase focuses on creating a project plan, risk management, deciding the development language, system architecture foundation, defining data sources and outlining software design. Task 2.1 starts with creating a "Project Plan". The project plan is an elaborate blueprint comprising of tasks, dependencies, and timelines. It is estimated to take about five days to complete. Task 2.2 focuses on "Risk Management" over two days, and task 2.3 looks at deciding the "Development Language/Libraries and Environment" in a similar timeframe. Task 2.4 addresses the system's architectural foundation over three days. Task 2.5 involves the Data Specialist and Technical Lead working over a day to "Define Data Source and Integration." Finally, task 2.6 allots two days for the outline of software design and components.
  3. **Execution**
     1. The execution phase focuses on frontend and backend tasks. The frontend tasks under 3.1 begin with 3.1.1, installing web application components. It is estimated to take one day to complete. Then, task 3.1.2 allows the System Administrator and DevOps to set up the web application environment the next day. Task 3.1.3 provides three days for designers to create the main UI components. On the backend, task 3.2.1 initiates with a day for database cleaning and optimization. Task 3.2.2 will take an estimated two days to complete table structure and importation of data. Task 3.2.3 will take one day to establishing a link between the database and middleware. Data integration, under task 3.3, spans over six days, focusing on SQL connectors, ETL processes, and object lists. Task 3.4 dedicates two days for CI/CD practices, and 3.5 allocates four days for documentation.
  4. **Controlling**
     1. The controlling phase focuses on implementing control practices, tracking project progression, reviewing the project plan and function testing and reporting. Task 4.1 starts with implementing and enforcing version control practices over a day. Task 4.2 is designated for tracking project progression the subsequent day. Task 4.3 is two days of conducting a thorough review of the project plan and software design documentation. Lastly, task 4.4 reserves a five-day span for concurrent unit and function testing.
  5. **Closing**
     1. The closing phase focuses on user documentation, crafting control logs and the close-out documentation. Task 5.1 dedicates three days to producing user documentation. Task 5.2, crafting version control logs, takes up a day. The project's conclusion is marked by task 5.3, which focuses on the production of close-out documentation over the final three days.

*From your WBS, define the activities required for your project. You will revise this document and add more detail for part B as you discover more about the project.*

*Each activity should be clearly identified by a number and should match up to your Gantt chart. You should provide some estimations for the time you think each activity will take. This should make it easy to prepare your Gantt chart.*

# Gantt Chart

*This section should contain your Gantt chart. The items in the Gantt chart should match the activity definition from section 3. You should also submit your Gantt chart file separately.*