Project Plan
Data Visualisation of Crash Statistics Victoria

Student Names

Samaar Bajwa s5254805
Christopher Burrell s5237645
Gauruv Grover s5320837

VSADS Project: A-001
Project Plan

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1.0 Introduction

1.1 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 importance for the health and safety of the Victorian population, as it provides substantial benefits to VicRoads and 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 – i.e.: 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 project seeks to revamp the existing accident data collection system and provide an advanced, user-friendly platform with visualisation tools for gaining insights from the accident data.

1.2 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 Levels[1] (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/ Documentation
Implement the required collection and connection to the relevant dataset for the VSADS for the definitive version of the project - To convert the Victorian State Accident Dataset for years 2015-2020, to an interoperable format. - Show statistical trends accurately for the historical period of dataset. - 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.

1.3 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.
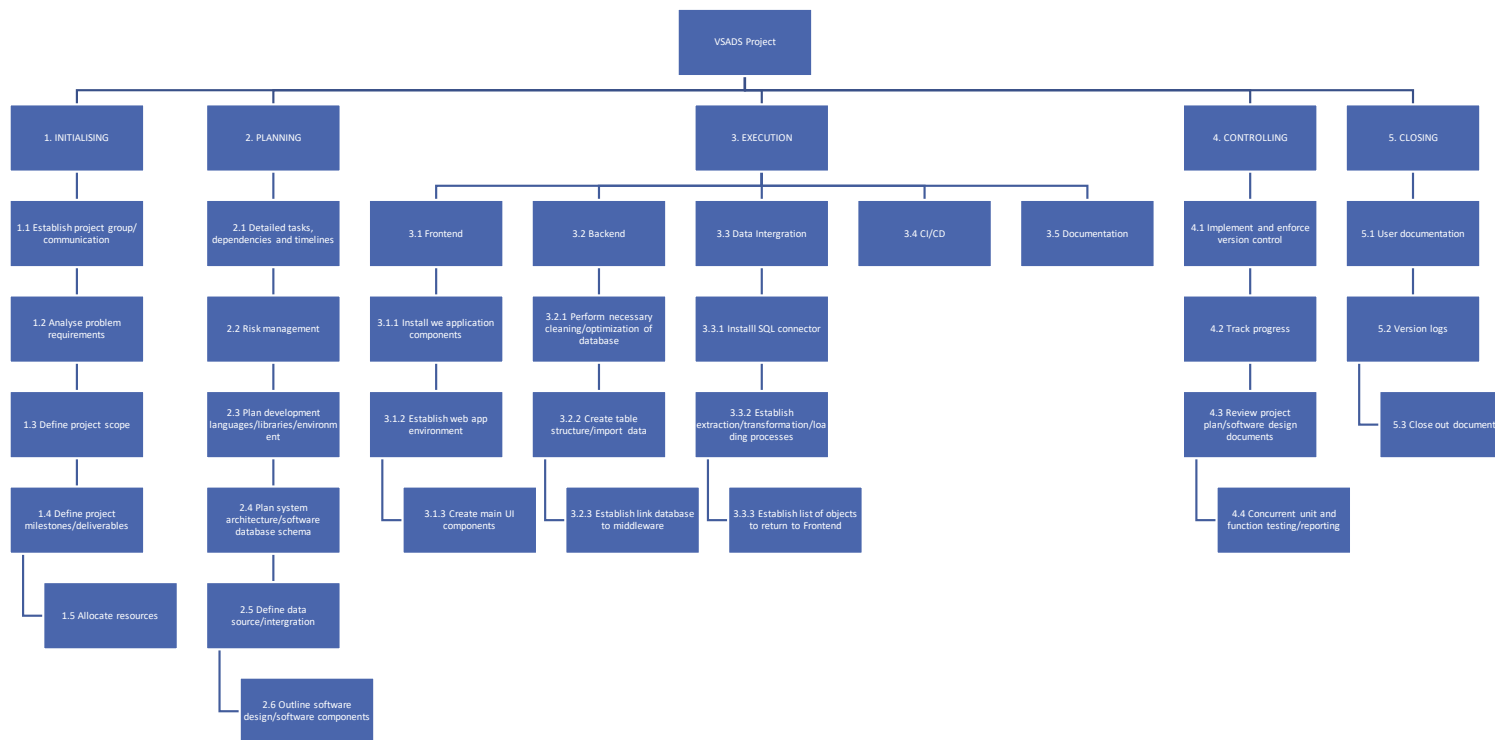
1.3.2 Project Plan Contents

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.

2.0 Work Breakdown Structure

The Work Breakdown Structure (WBS) presented here serves as a foundational framework for the successful execution of the VSADS project. A comprehensive representation of the project's scope, tasks, and deliverables, the WBS is designed to provide clarity, structure, and guidance to the project team.

Within these hierarchical tiers, each element of the project is separated into manageable components, outlining the activities required to achieve the projects goals. The WBS allows project managers, and team members to have a shared understanding of the project's intricacies, allowing for effective decision-making. The WBS shows the lifecycle of the VSADS project, from a higher vantage point, illustrating a structured, actionable plan, leading to the completion of the project.

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VSADS Project

- **1. INITIALISING**
  - 1.1 Establish project group/ communication
  - 1.2 Analyse problem requirements
  - 1.3 Define project scope
  - 1.4 Define project milestones/deliverables
  - 1.5 Allocate resources

- **2. PLANNING**
  - 2.1 Detailed tasks, dependencies and timelines
  - 2.2 Risk management
  - 2.3 Plan development languages/libraries/environment
  - 2.4 Plan system architecture/software database schema
  - 2.5 Define data source/intergration
  - 2.6 Outline software design/software components

- **3. EXECUTION**
  - **3.1 Frontend**
    - 3.1.1 Install we application components
    - 3.1.2 Establish web app environment
    - 3.1.3 Create main UI components
  - **3.2 Backend**
    - 3.2.1 Perform necessary cleaning/optimization of database
    - 3.2.2 Create table structure/import data
    - 3.2.3 Establish link database to middleware
  - **3.3 Data Intergration**
    - 3.3.1 Installl SQL connector
    - 3.3.2 Establish extraction/transformation/loading processes
    - 3.3.3 Establish list of objects to return to Frontend
  - **3.4 CI/CD**
  - **3.5 Documentation**

- **4. CONTROLLING**
  - 4.1 Implement and enforce version control
  - 4.2 Track progress
  - 4.3 Review project plan/software design documents
  - 4.4 Concurrent unit and function testing/reporting

- **5. CLOSING**
  - 5.1 User documentation
  - 5.2 Version logs
  - 5.3 Close out documents

3.0 Activity Definition & Estimation

This section outlines the key phases of the VSADS project, detailing the specific tasks and activities that characterize each phase's objectives. The project's success relies upon the careful execution of these phases, each contributing to the goal of the project, analysis through data visualisation techniques.

Task ID	Task Description	Duration (Days)	Description
			VSADS Project
1	INITIALISING		
1.1	Establish project group and communication model	1	This task is to establish a group, each roles the members will undertake and what means of communication is used for the project's lifecycle. Cloud based storage media established and communication method decided upon.
1.2	Analyse problem requirements	2	Analysis of the user and software and user requirements to provide an effective solution to the problem.
1.3	Define project scope	2	A detailed scope of the solutions offered. Scope describes the provided service at the completion of the project, and what will not be provided.
1.4	Define project milestones, deliverables	1	A detailed timeline corresponding to those actionable tasks that will establish expected milestones for the project, and those deliverables that are required to meet said milestones. Provided in the form of a Gantt chart.
1.5	Allocate resources	1	An allocation of available resources from the project team, along with the identification of outside resources if needed. Detailed in a Gantt chart.
2	PLANNING		
2.1	Project Plan – detailed tasks, dependencies and timelines	5	Project management principals and time estimations applied to create a detailed list of required tasks to be completed, the

Commented [CB1]: Add in user requirements if needed.

			hierarchy of these tasks, and the reasonable timeframes for these to be achieved, within the project's lifecycle.
2.2	Risk Management	2	Risks to the project's completion and quality are identified, and quantified, with redundancies and failsafe. Integrated into the project plan.
2.3	Plan the development language/libraries and environment.	2	Project group identify and establish the language and library requirement for the project's completion. Allowances for changes identified.
2.4	Plan system architecture and software database schema.	3	How the proposed solution will provide data from a static database to the GUI. Query languages identified and how data will be stored. Completed understanding on how system components will interact, and a well-defined database structure determined.
2.5	Define data source and integration	1	This task focuses on defining the sources of data that the system will integrate. It entails identifying and specifying the various data sources that the VSADS tool will access and utilize.
2.6	Outline software design and Software components.	2	In this task, the software design and components of the VSADS tool are outlined. It involves defining the high-level structure of the software, including its various components and their interactions.
3	Execution		
3.1	Frontend	5	This task focuses on the frontend development of the VSADS tool, including the user interface (UI) and user experience (UX) design.
3.1.1	Install application components	1	During this sub-task, the necessary application components are installed to set up the frontend environment.
3.1.2	Establish application environment	1	This sub-task involves establishing the application environment, ensuring it's properly configured and ready for frontend development.
3.1.3	Create main UI components	3	Within this sub-task, the main UI components of the VSADS tool are designed and developed, providing the user-friendly interface for interactions. Wireframes/Story Boards -> Completed code. **See Document A-002 R2.2.1**
3.2	Backend	4	This task focuses on the backend development of the VSADS tool, including database-related operations and middleware setup.
3.2.1	Perform necessary cleaning and	1	In this sub-task, the database undergoes cleaning and optimization processes to ensure data quality and efficiency. **See Document A-002 R2.2.8**

	optimization of the database		
3.2.2	Create table structure and import data.	2	During this sub-task, the table structure for the database is created, and relevant data is imported into the database. **See Document A-002 R2.2.4 - R2.2.7**
3.2.3	Establish link between database and middleware	1	This sub-task involves establishing a connection between the database and the middleware, ensuring seamless data flow.
3.3	Data Integration	6	This task involves the integration of data sources into the VSADS system.
3.3.1	Install SQL connector	1	In this subtask, an SQL connector is installed to facilitate data integration from the SQL database into the system.
3.3.2	Establish extraction, transformation and loading processes.	3	This subtask focuses on the establishment of processes for extracting, transforming, and loading data from various sources into the system.
3.3.3	Establish a list of objects from the database and return to frontend	2	Here, a list of objects is established, and data is returned to the frontend for display and interaction. **See Document A-002 R2.2.2 – R2.2.6**
3.4	CI/CD (Continuous Integration and Continuous Deployment)	2	This task involves setting up continuous integration and continuous deployment practices to ensure efficient software development.
3.5	Documentation	4	In this task, comprehensive documentation for the VSADS system is created to facilitate understanding and future maintenance.
4	**Controlling**		
4.1	Implement and enforce version control practices	1	In this subtask, version control practices are implemented and enforced to manage changes to the software code effectively.
4.2	Track progress of project, referring back to established timelines	1	This subtask involves tracking the project's progress and ensuring that it aligns with the established timelines and milestones.
4.3	Reviewing the project plan and software design document	2	This subtask focuses on reviewing the project plan and software design documents to ensure they remain accurate and up-to-date.

4.4	Concurrent unit and function testing and reporting	5	Here, concurrent unit and function testing are conducted to verify the system's functionality, and the results are reported.
5	**Closing**		
5.1	Produce user documentation	3	In this subtask, user documentation is produced to provide guidance on using the VSADS system.
5.2	Produce version control logs	1	Version logs are produced to keep a record of changes made during the project, ensuring transparency and accountability.
5.3	Produce close out documentation	3	The final subtask involves producing close-out documentation to summarize the project's outcomes and deliverables.

4.0 Gantt Chart

The Gantt chart provided (*see document A0003 Gantt Chart*) serves as a visual representation of the planned activities outlined in *Section 3* of this document. With a focus on clarity and execution, the Gantt chart illustrates the interdependencies between tasks and presents a comprehensive timeline for the completion of each milestone. By adhering to a cascading structure of predecessor tasks, the aim is to ensure a progression of activities and provide effective project management.

The Gantt chart shows the strategic approach taken in the planning and execution of the VSADS project, mapping out the visualisation of the road safety analysis through data visualization techniques. As the chart shows the tasks, milestones, and their interconnections, this roadmap guides the project team towards achieving the project's goals efficiently and collaboratively.