

# FYP

# Final

# Presentation

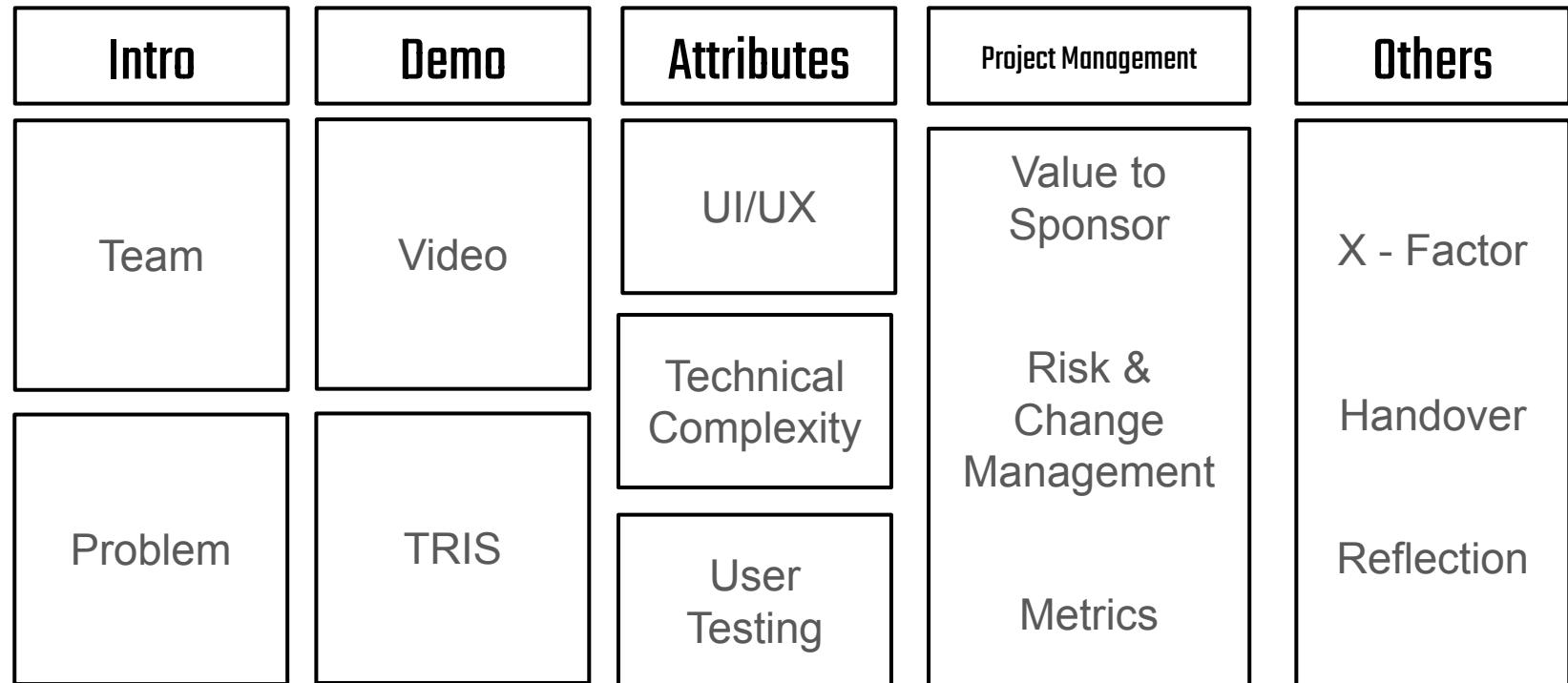
Project Ease





# Introduction

## Executive Summary





01

# Introduction



# Introduction

Team Project Ease



## Frances

Project Manager,  
Frontend



## Sun Kyu

UI/UX, Frontend  
Developer



## Jo Wann

Backend  
Developer



## Chi

Analyst, Backend  
Developer



## Jia Leng

Analyst, Backend  
Developer



## Sophia

Analyst, Backend  
Developer



# Introduction

## Project Overview - Problems

### About the Sponsor

SafeVR, a start-up established in 2021



Distributor of VR headsets



Aims to be the #1 software and hardware provider in Singapore



# Introduction

## Project Overview - Primary Research

### SafeVR's Pain Points



Lack of brand awareness



Lack of market knowledge to develop a marketing strategy



Time consuming market research process



# Introduction

## Project Overview - Problems

### As-Is

- 1 Time Intensive Research
- 2 Content Research
- 3 Content Publishing

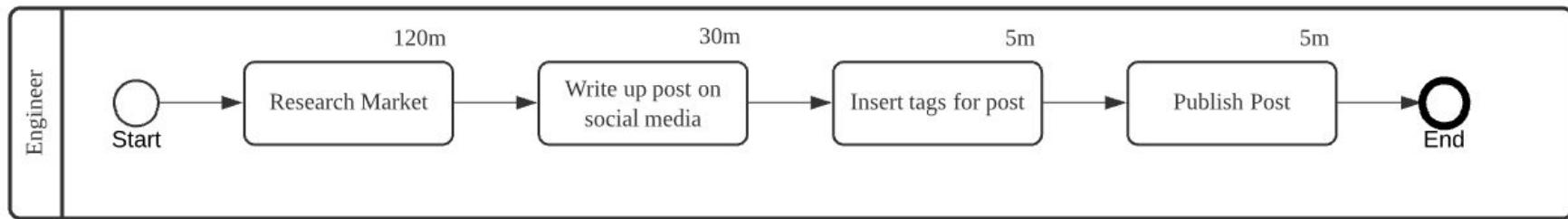


# Introduction



## Project Overview - Problems

### As-Is Workflow



# Introduction

## Project Overview - Problems

### To-Be



One click solution that conducts and displays

- automatic data acquisition
- sentiment mining
- topic extraction
- social network analysis
- price trend analysis



Allows for a faster planning & execution of marketing campaigns

- Time consumed to be reduced by 75%

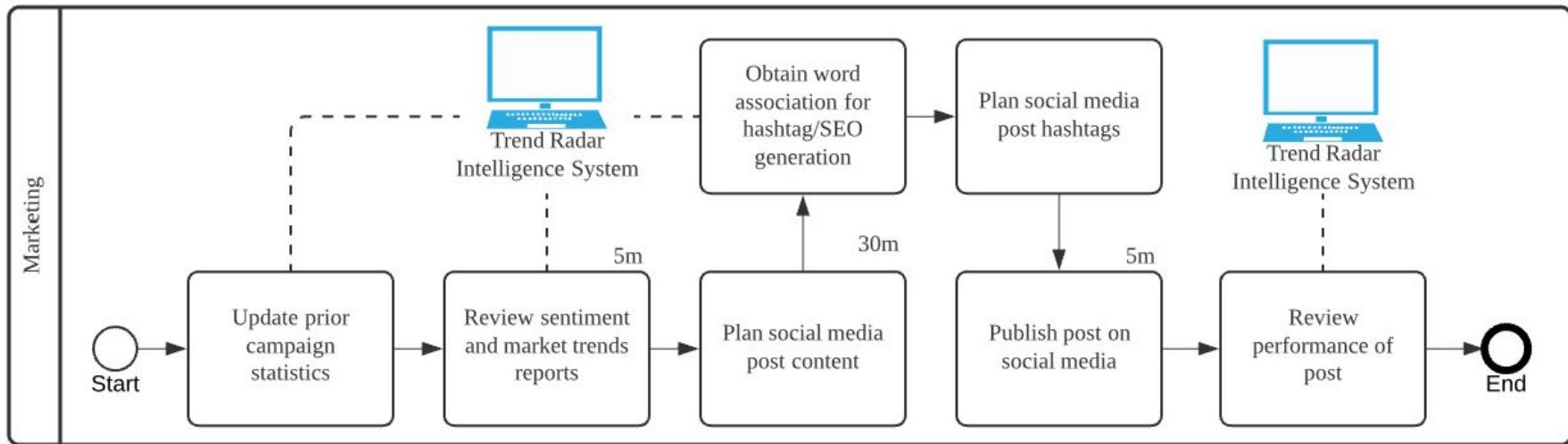


# Introduction



## Project Overview - Problems

### To-Be Workflow



# Introduction



## Project Overview - Social Media Comparison

Ability to scrape data					
User Based Opinion					
Topic Identification					
Product Reviews					



# Introduction



## Project Overview - Market Research

	 Brandwatch	KANTAR MARKETPLACE	
Customised Keywords			
Variety of social media sources			
Data Control			
Pay as you go			



# 02

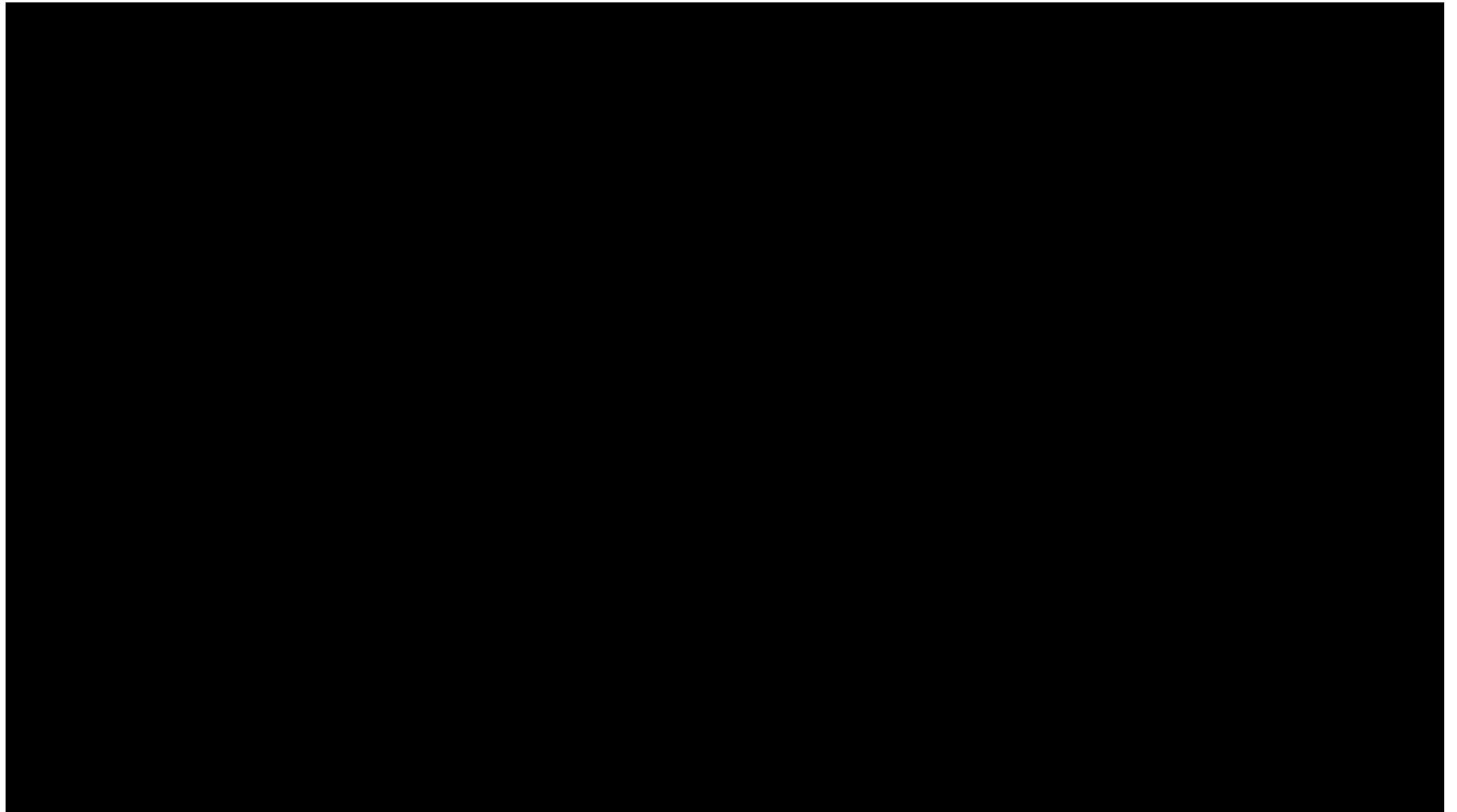
## PRODUCT DEMO

Trend Radar Intelligence  
System (TRIS)



# Blink

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# Project Demonstration

TRIS - Trend Radar Intelligence System



## Actors



CEO



Marketing  
Supervisor



Marketing  
Executive

TRIS

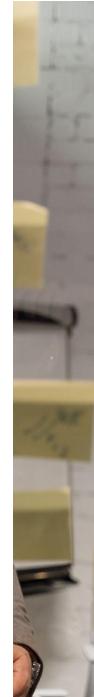
View Dashboard

Update Data

View past reports



# Demo



03

## Project Attributes



# Attributes: UI/UX

Jakob Nielsen's 10 Usability Heuristics for UI Design

Visibility of System Status	Match Between System Real World
User Control & Freedom	Consistency & Standards
Error Prevention	Recognition Rather Than Recall
Flexibility & Efficient of Use	Aesthetic & Minimal Design
Recognize, Diagnose, Recover Errors	Help & Documentation



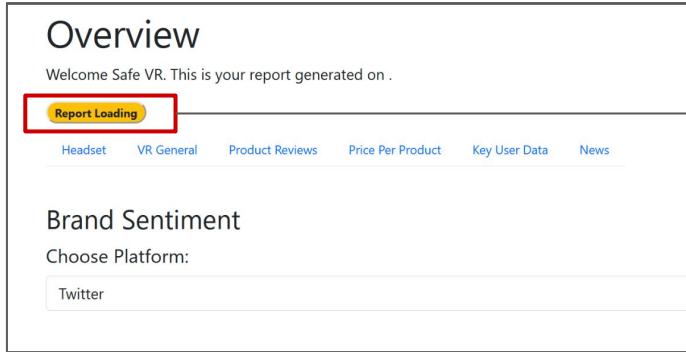
TRIS



# Attributes: UI/UX

Jakob Nielsen's 10 Usability Heuristics for UI Design

## Visibility of system status



Overview

Welcome Safe VR. This is your report generated on .

**Report Loading**

Headset VR General Product Reviews Price Per Product Key User Data News

Brand Sentiment

Choose Platform:

Twitter

Main dashboard page displays the status of report generation.

This ensures that **system status is clearly communicated** to our user.



User is alerted with a notification once the new report is generated.

This ensures that **prompt response** is provided.





# Attributes: UI/UX

Jakob Nielsen's 10 Usability Heuristics for UI Design

## Error prevention & Help users recognise, diagnose and recover from errors

The figure shows four sequential screenshots of a 'Change Password' form:

- Screenshot 1:** The 'Registered Email' field contains 'a'. A red border surrounds the input field, and a red error message below it says 'Please enter a registered email.'
- Screenshot 2:** The 'Registered Email' field contains 'safe.vr.sg@gmail.com'. The 'New Password' field contains '...'. A red border surrounds the 'New Password' field, and a red error message below it says 'Please ensure that password is at least 8 characters long.'
- Screenshot 3:** The 'Registered Email' field contains 'safe.vr.sg@gmail.com'. The 'New Password' field contains '.....'. The 'Confirm Password' field contains '...'. A red border surrounds the 'Confirm Password' field, and a red error message below it says 'Please make sure your passwords match.'
- Screenshot 4:** The 'Registered Email' field contains 'safe.vr.sg@gmail.com'. The 'New Password' field contains '.....'. The 'Confirm Password' field also contains '.....'. A green success message above the 'Save' button says 'Great, passwords match!'

Immediate feedback is given before users click save in clear, distinct colours.

This helps users **prevent slips**, and **quick ways to solve** the issue are shown.



# Attributes: UI/UX

Jakob Nielsen's 10 Usability Heuristics for UI Design

## Recognition rather than recall

### Overview

Welcome Safe VR. This is your report as of 21 June 2021.

Headset   VR General   Product Reviews   Price Per Product   Key User Data   News

Main dashboard page displays the date of latest report generated.

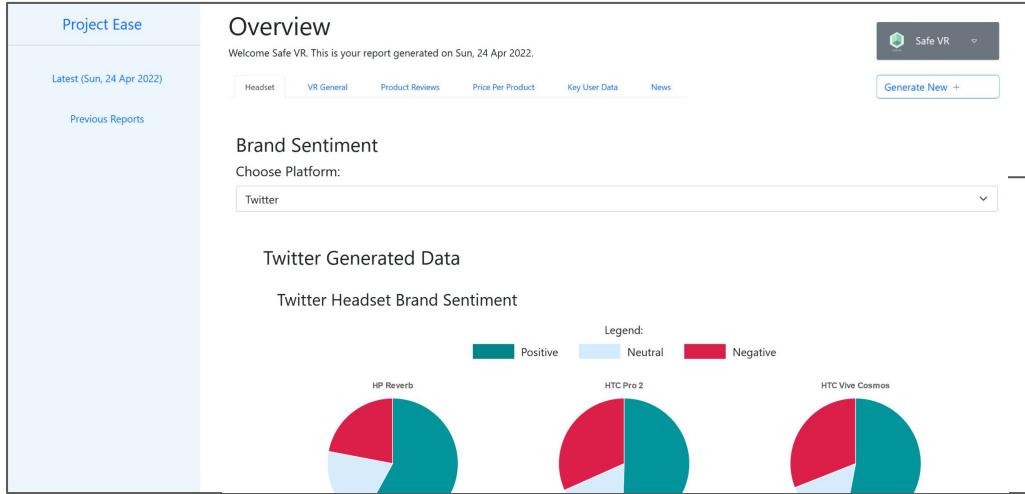
This reduces the user's memory load.



# Attributes: UI/UX

Jakob Nielsen's 10 Usability Heuristics for UI Design

## Aesthetic and minimalist design



Content and design is **focused on the essentials**.

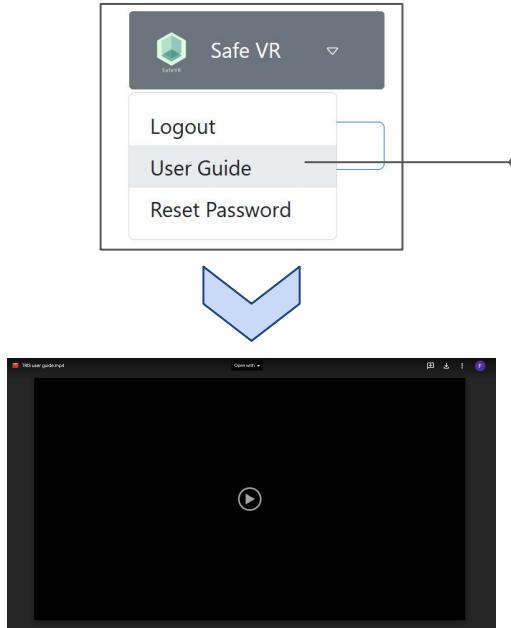
This helps user **complete desired actions** without being distracted.



# Attributes: UI/UX

Jakob Nielsen's 10 Usability Heuristics for UI Design

## Help and documentation



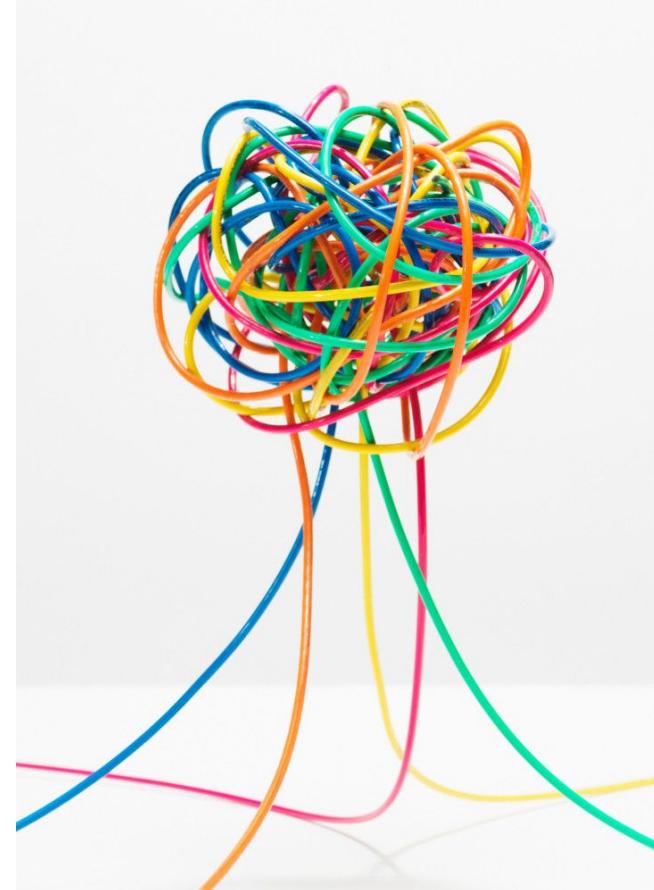
This leads to TRIS user guide that contains concise steps to use the main functions of TRIS.

This provides the user with reactive help & documentation to **gain system proficiency**.



# Technical Complexities

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# Quality Attributes: Technical Complexity

Three-tiered: Architecture | Application | Source Code



Architecture

- Microservice Architecture
- Deployment Architecture
- Continuous Integration



Application

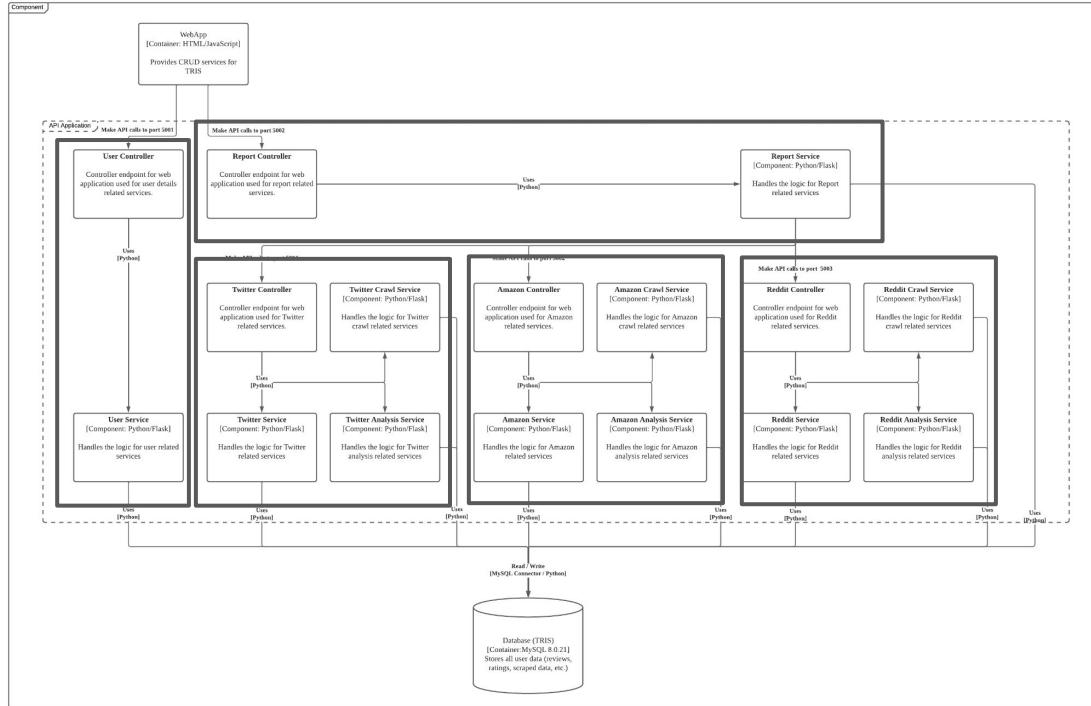


Source Code



# Technical Complexity: Architecture

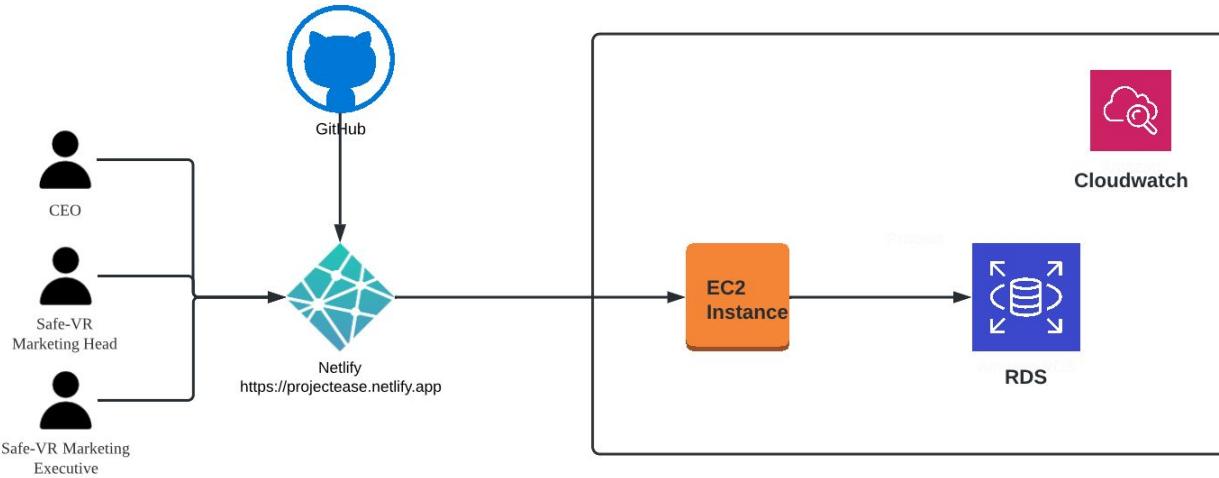
## Overall Architecture - Microservice Architecture



# Technical Complexity: Architecture



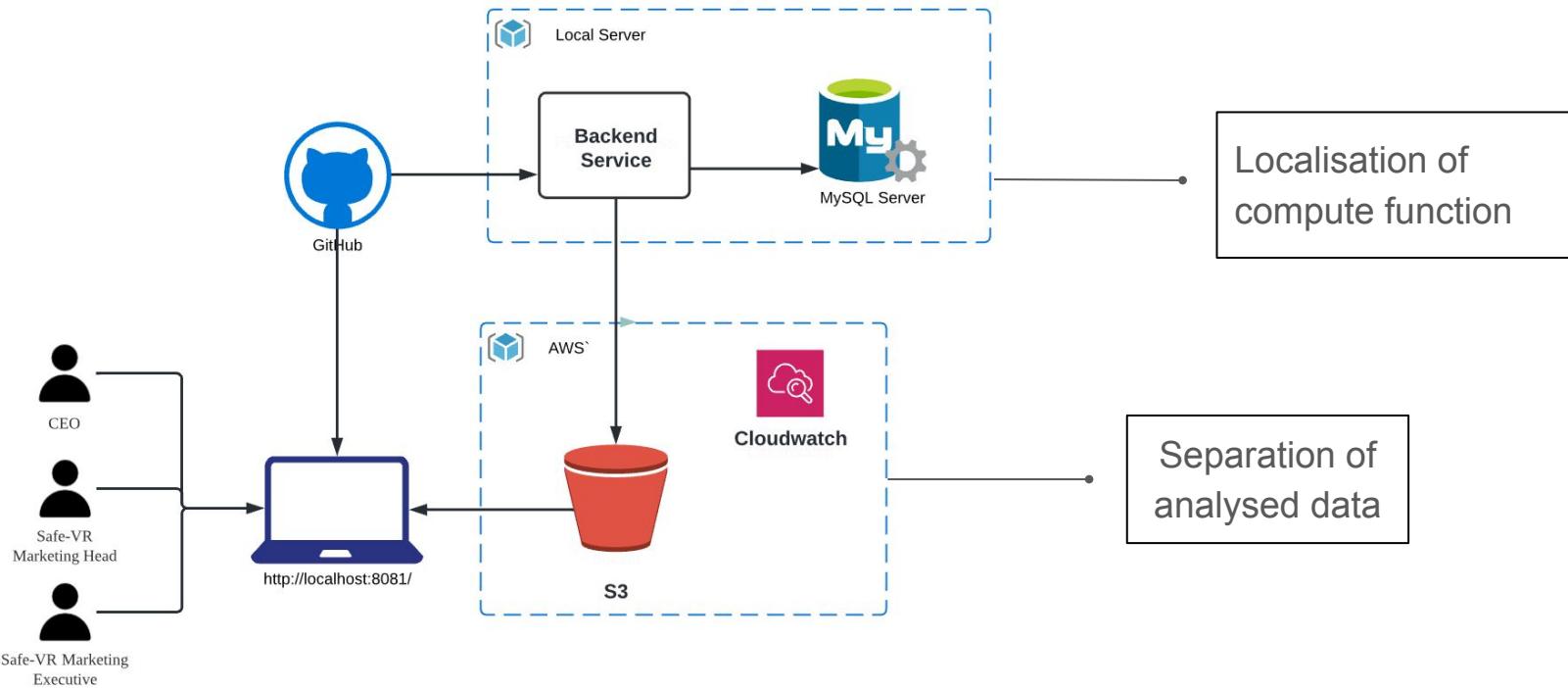
## Overall Architecture - Planned





# Technical Complexity: Architecture

## Overall Architecture - Actual



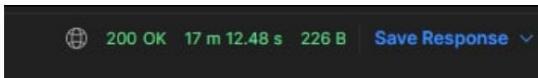


# Technical Complexity: Architecture

Quality Attribute: Performance, Cost

## Local Deployment Justification

Local deployment  
4x faster

	Local	Deployed RDS
Twitter		
Reddit		
Amazon		





# Technical Complexity: Architecture

Quality Attribute: Performance, Cost

Item	Reason	Cost
EC2 Instance	To hold the backend	99.50
EBS	Database	22.80
S3 Bucket	Analysed Database	0.28
Netlify	Front End Deployment	0
Total Cost (monthly) \$USD		122.58
Total Cost (monthly) \$SGD		168.07

Monthly cost for deployment

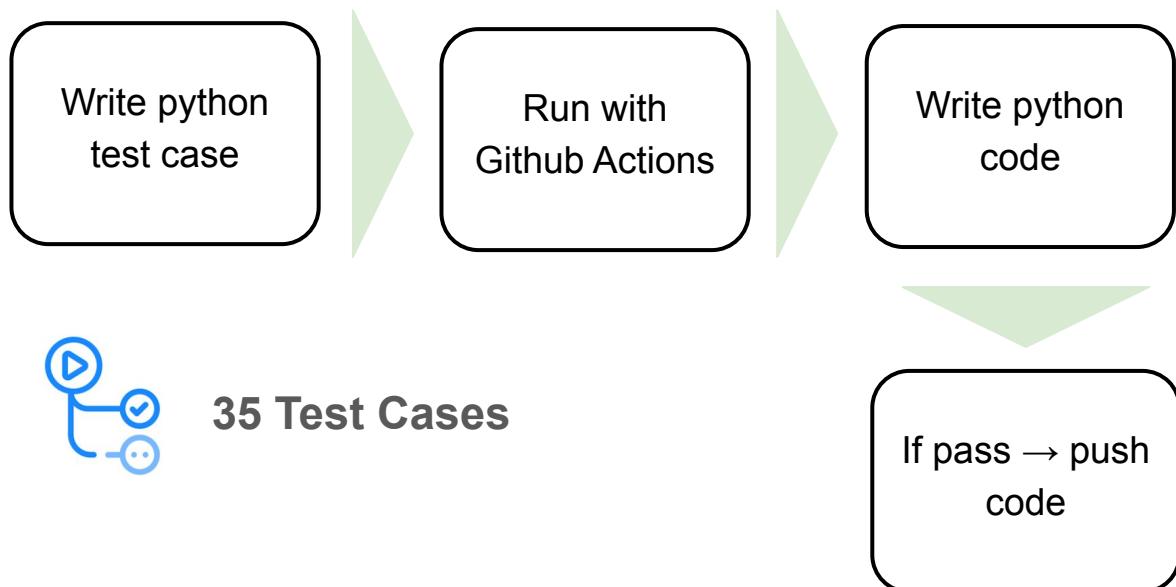


# Technical Complexity: Architecture

Quality Attribute: Maintainability, Testability

## Automated Testing with unittest: Unit Testing, Regression Testing

```
35/35 tests passed (100%)
✓ test
> ✓ test_amazon_service_analysis.py
> ✓ test_amazon_service_crawl.py
> ✓ test_reddit_service_analysis.py
> ✓ test_reddit_service_crawl.py
> ✓ test_report_service.py
> ✓ test_twitter_model.py
> ✓ test_twitter_service_analysis.py
> ✓ test_twitter_service_crawl.py
> ✓ test_user_service.py
```



# Quality Attributes: Technical Complexity

Three-tiered: Architecture | Application | Source Code



Architecture



Application



Source Code

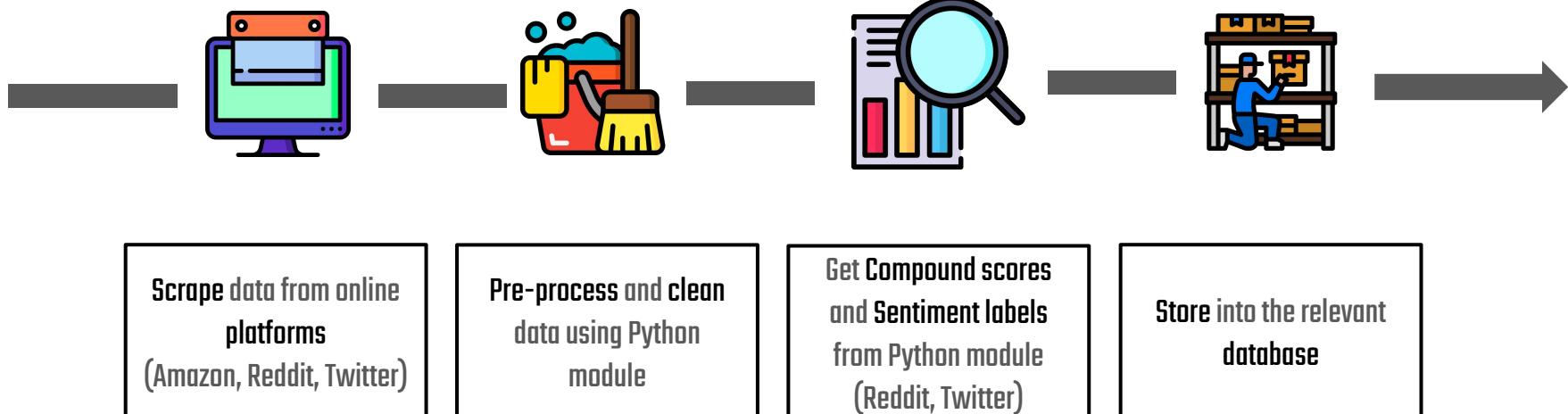
- Scraping steps
- Analysis steps



# Technical Complexity

Three-Tiered: Application Level

## Steps we took for scraping data





# Technical Complexity

Three-Tiered: Application Level

## Steps we took for analysing data



Retrieve all data from the database

Perform necessary analysis on the retrieved data using Python modules

Combine and store analysed data result into json file and upload to AWS S3 bucket

Expose endpoint for Report service to retrieve S3 report links



# Quality Attributes: Technical Complexity

Three-tiered: Architecture | Application | Source Code



Architecture



Application



Source Code

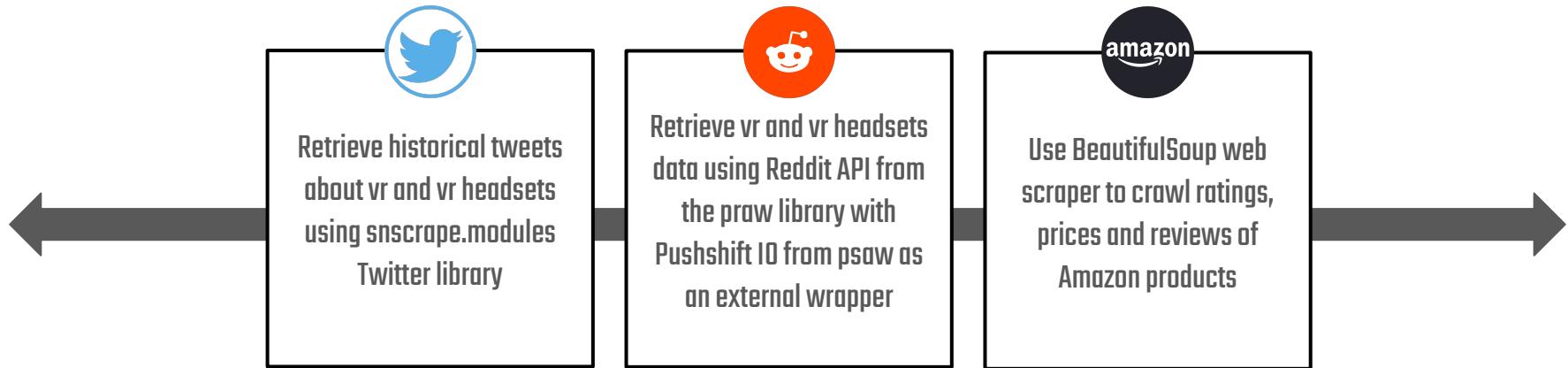
- Web Scraping Modules
- Sentiment Analysis Algorithm
- LDA Algorithm Topic Modelling
- Key User Analysis Algorithm
- Machine Learning Research





# Technical Complexity

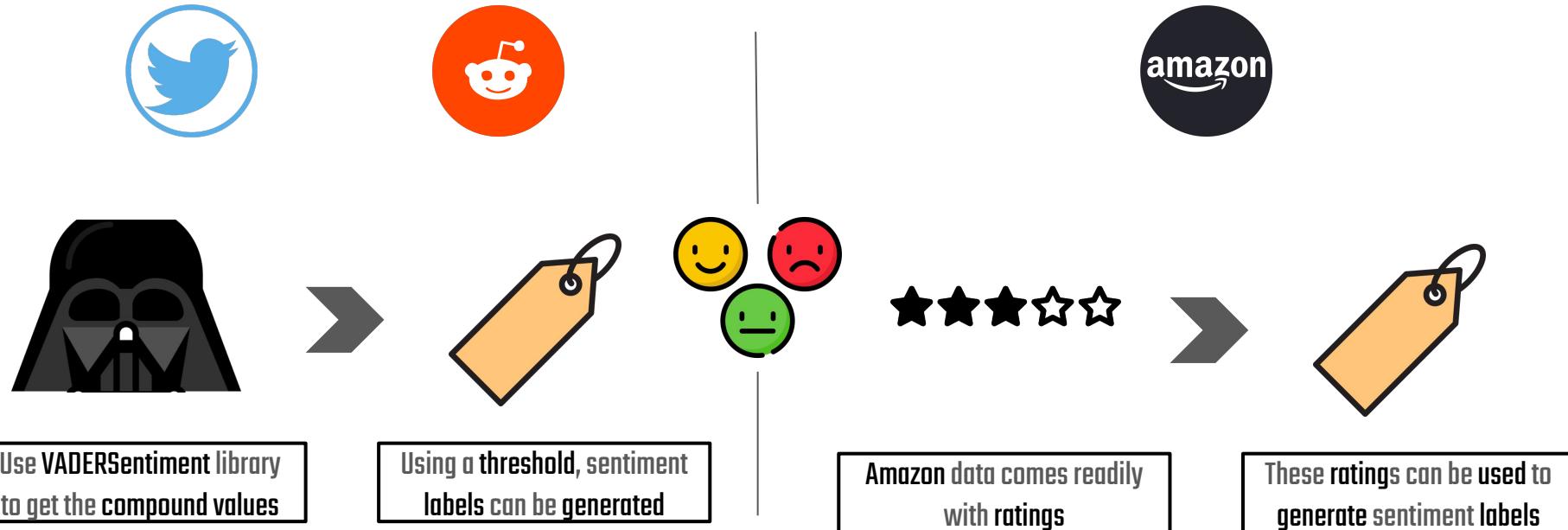
Three-Tiered: Source Code Level: Web Scraping Modules





# Technical Complexity

Three-Tiered: Source Code Level: Sentiment Analysis Algorithm



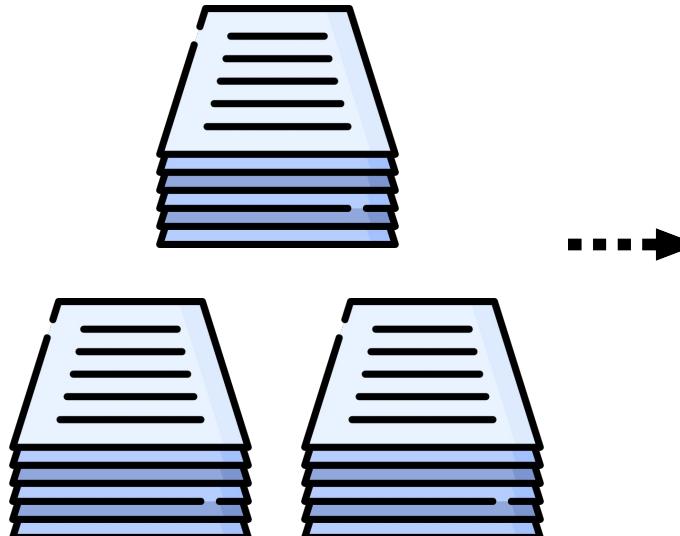
# Technical Complexity

Three-Tiered: Source Code Level: LDA Algorithm Topic Modelling

Clean and pre-process text to obtain corpus and convert it into a Document Term Matrix

Create an object for LDA model and train it on the Document Term Matrix using gensim library

Obtain 4 topics with 10 topic terms and weights.

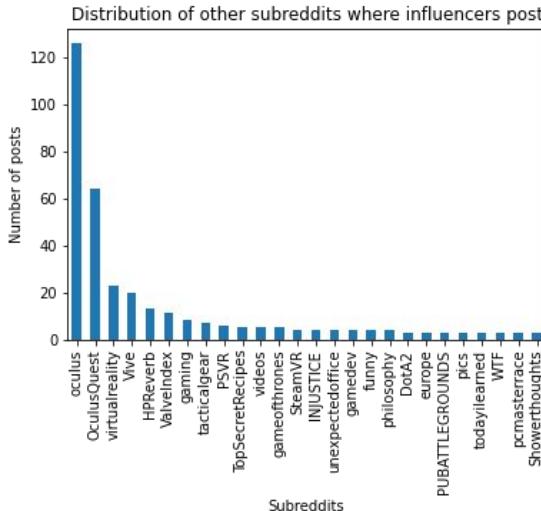
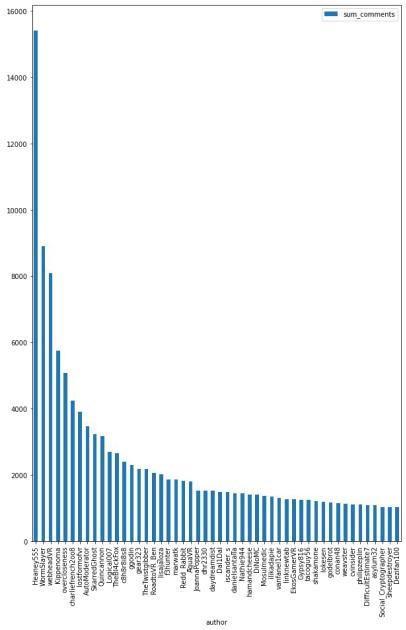


term	frequency
Topic 0  -----	
design	0.014
hardware	0.014
folk	0.013
platform	0.013
space	0.007
player	0.007
devs	0.007
meeting	0.007
studio	0.007
move	0.007
Topic 1  -----	
marketing	0.011
long	0.011
expect	0.010
part	0.008
industry	0.008
metaverse	0.007
release	0.007
hit	0.007
chat	0.007
locomotion	0.007



# Technical Complexity

Three-Tiered: Source Code Level: Key User Analysis Algorithm [Reddit]



From the database, key users were identified based on their total number of comments

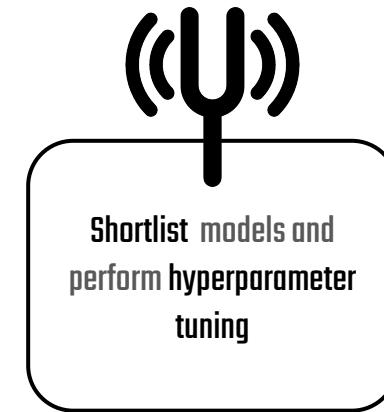
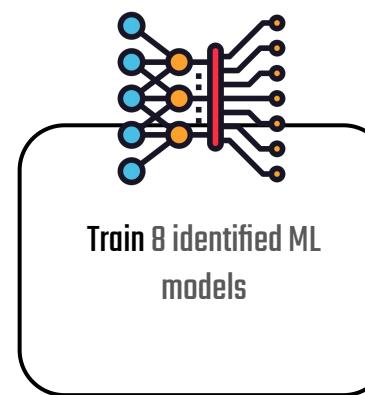
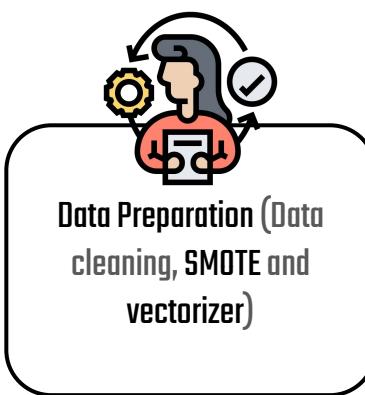
The top 50 key users data will be scraped to get the popular reddit forums

The analysed data will be converted into json and saved as json files stored in AWS S3 bucket



# Technical Complexity

Three-Tiered: Source Code Level: Machine Learning Research [Amazon]



## Goals

Compare sentiment classification accuracy with VADER to select the best sentiment analysis model

## Conclusions

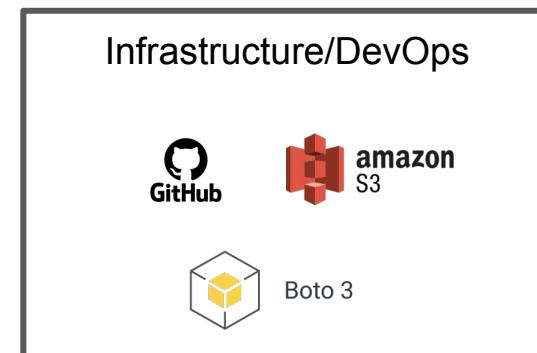
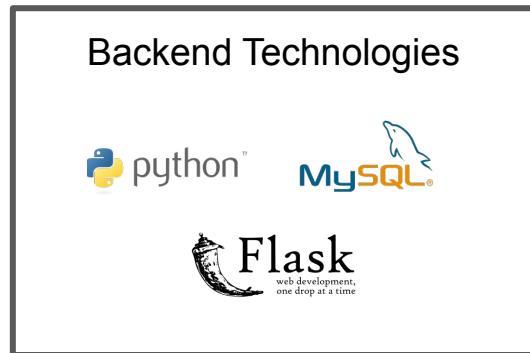
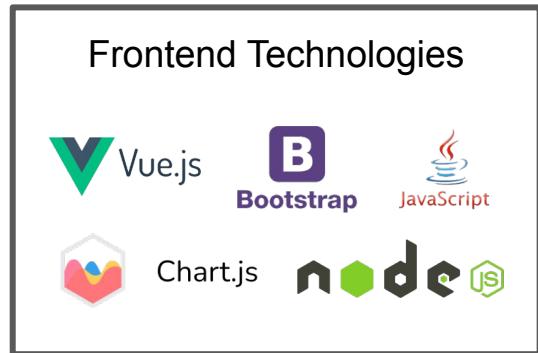
ML model results: Insignificant for change  
Final model for sentiment analysis:  
VADERSentiment





# Technical Complexity: Architecture

Third Party Components | Project Management Tools | Dev Tools



# User Testing

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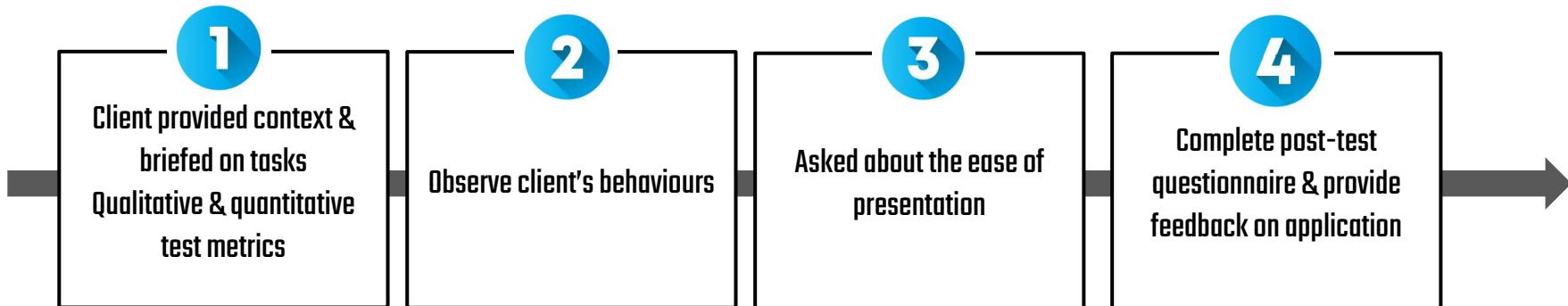
# Quality of Product: User Testing

## User Testing with Client

### User Testing Overview

- Conducted 4 client UATs
  - Sprint 2, 5, 7, 11

Methodology:





# Quality of Product: User Testing

## User Test Metrics

### User Test Metrics Examples

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
1	Login as HR	1. Go to <a href="https://silver-florentine-902740.netlify.app">https://silver-florentine-902740.netlify.app</a> 2. Enter UserId 3. Enter Password 4. Click on login	UserId = safe.vr.sg@gmail.com Password = jaga1234	Admin should be able to login successfully and land on the landing page (Headset Tab) <b>without any guidance within 10 seconds</b>	As Expected	Pass. All users complete the task successfully without guidance. (6 seconds)
2	Logout as HR	1. Go to <a href="https://silver-florentine-902740.netlify.app/dashboard">https://silver-florentine-902740.netlify.app/dashboard</a> 2. Click on the dropdown button on the "Safe VR" profile button 3. Click on 'Logout'	-	Admin should be able to logout of the system and be brought back to the login page <b>without any guidance within 10 seconds</b>	As Expected	Pass. All users complete the task successfully without guidance. (9 seconds)
3	View Generated Report - Headset Sentiment Analysis	1. Go to <a href="https://silver-florentine-902740.netlify.app/dashboard">https://silver-florentine-902740.netlify.app/dashboard</a> 2. From the side bar, click on 'Latest (21 Jun 21)' 3. From the top navigation bar, click on 'Headset' tab 4. Hover over different visualisations shown for "Twitter Headset Brand Sentiment"	-	Admin should be able to view report on Headset Sentiment Analysis and interact with the visualisations by hovering over different sections <b>without any guidance</b>	As Expected	Pass. All users complete the task successfully without guidance.





# Quality of Product: User Testing

Results & Findings (Quantitative)

## Results



### Situation

- Actual use of the application
  - View Reports
  - Generate Report
  - View past reports



### Liked

- Information captured is useful & meaningful
- UI has a good aesthetic
- Easy to navigate across pages



### Disliked

- Units on graph not clearly marked
- Slow PDF Report generation
- Not useful email notification





# Quality of Product: User Testing

Final UAT: Changes Made

## Report Generation Filter

Generate Report Filtering X

Filter by Customised Query:

Query Add

Oculus Quest HP Reveberb HTC Pro 2

Generate Report



Generate Report Filtering X

Filter by Customised Query:

Query Add

Oculus Quest HP Reveberb HTC Pro 2

Generate Report

Words on the query options  
are too small to see

Increased font size for  
clearer view





# Quality of Product: User Testing

Final UAT: Changes Made

## Main dashboard

Brand Sentiment

Choose Platform:



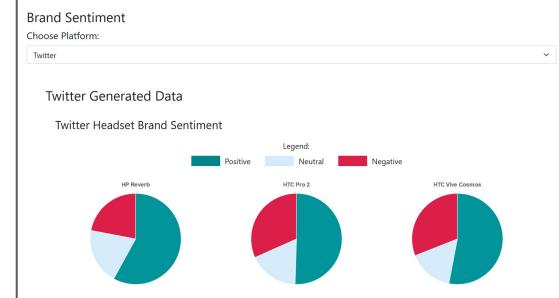
User is not sure if report generation is complete.

### Overview

Welcome Safe VR. This is your report generated on .

Report Loading

If report is still being generated, the system status is displayed.



If report is generated, display is loaded immediately to show visibility of system status.



# 04

# Project Management



# Project Management

Value to Sponsor



## Project Principles - Client First

1

**Effective, useful & comprehensive**

2

**Cost Efficient**

3

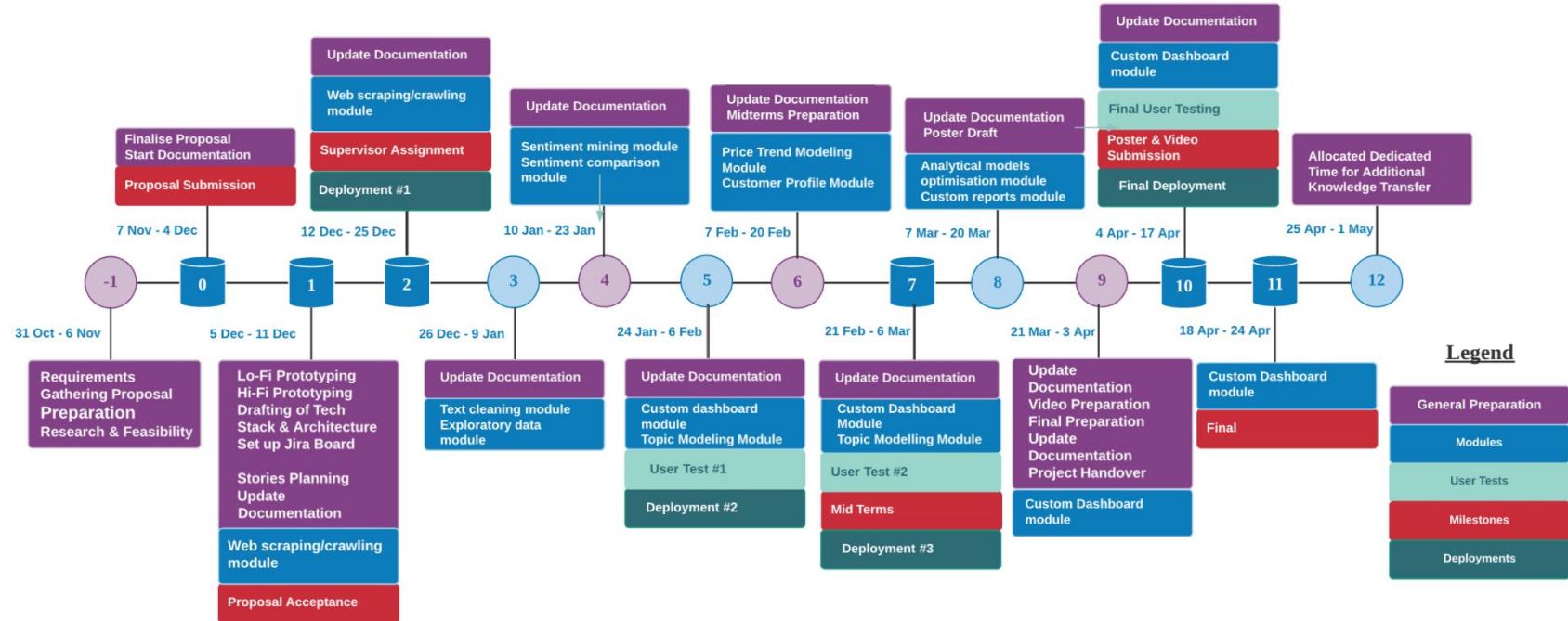
**Simple & Easy to use**





# Project Management

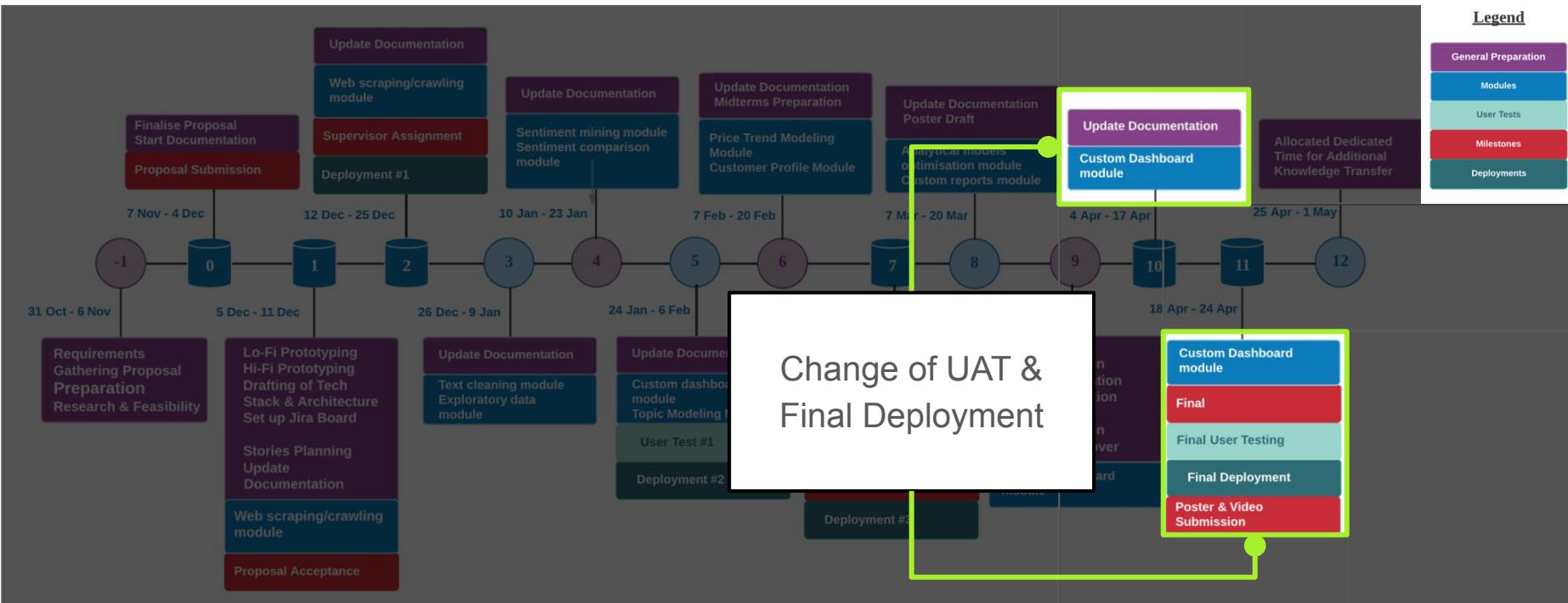
## Metrics: Planned Schedule





# Project Management

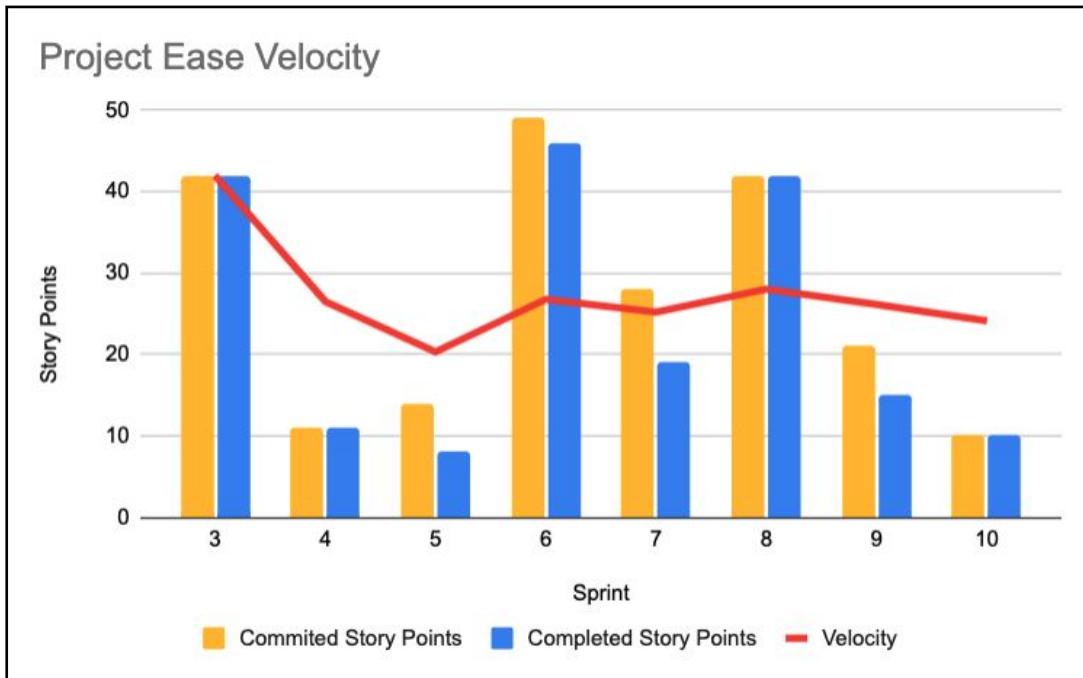
Metrics: Actual





# Project Management

Metric: Velocity



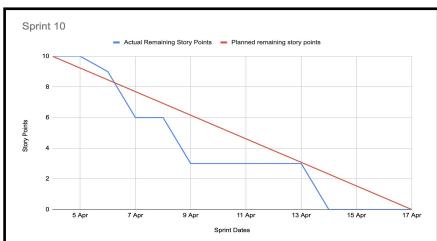
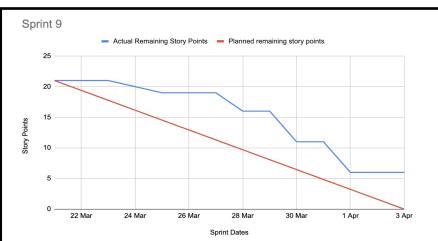
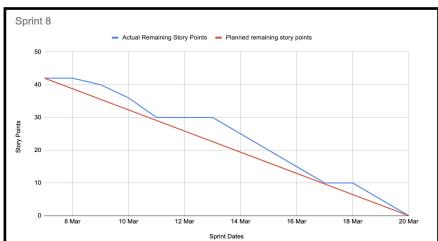
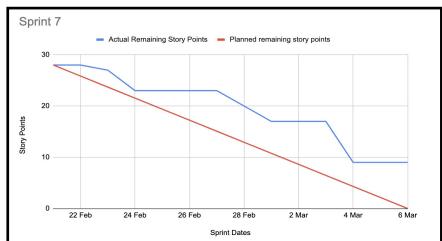
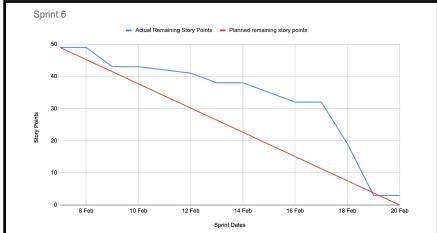
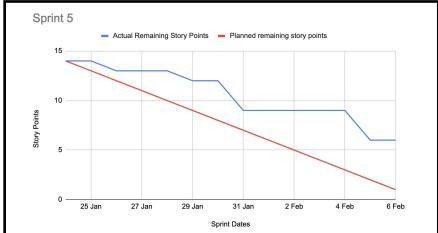
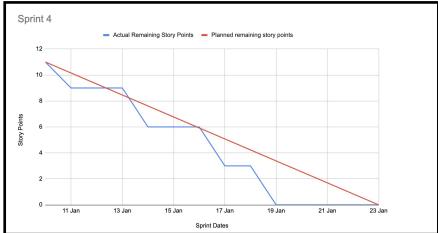
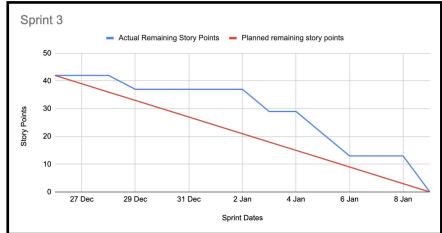
Average velocity  
= 27.4 story points / sprint





# Project Management

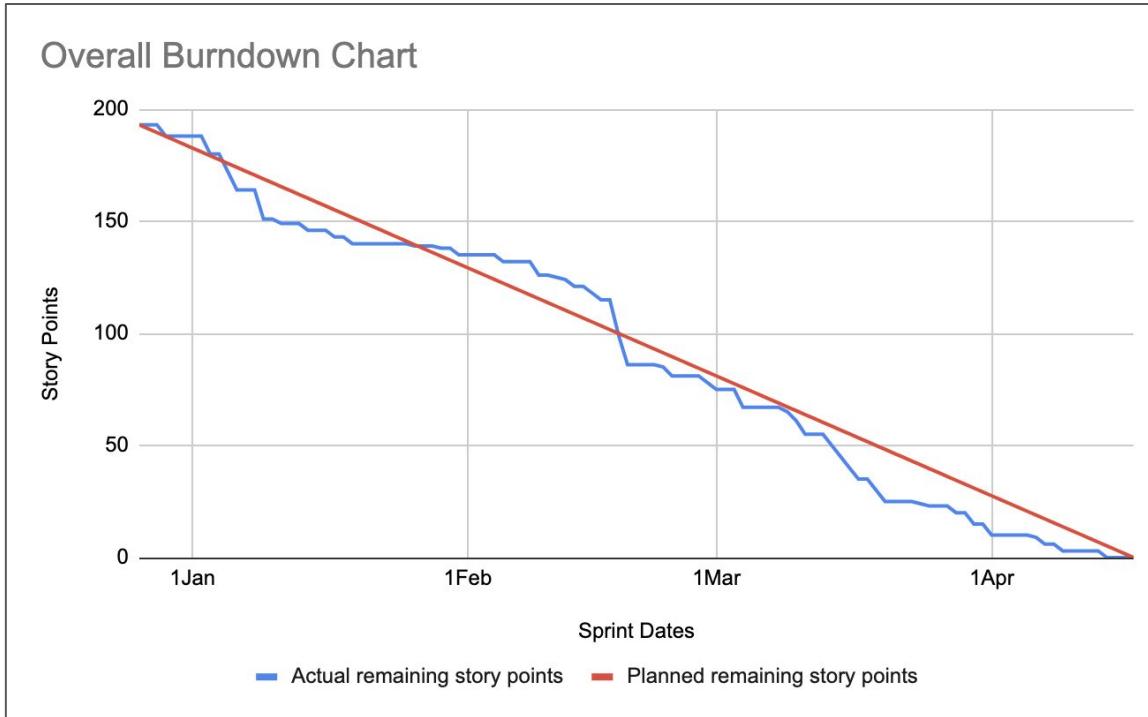
Metric: Burn Down Chart





# Project Management

Metric: Burn Down Chart





# Project Management

## Risk Metrics - Risks Mitigated

Risk Type	Risk Event	Likelihood	Impact	Mitigation
Client Management	Client may change or increase requirements depending on needs and preference	High	High	Adopt the scrum methodology and agile practices to adapt to changing requirements
Technical Issues	Crawled data from platforms like Twitter, Reddit and Amazon may contain messy code or only help uncover useful insights only after appearing more than 10k times	High	High	Longer period of data is scraped for the initial loading into the database.  Parameters for crawl function are improved with additional similar and relevant keywords to produce an improved data set.





# Project Management

## Risk Metrics - Future Risks

Risk Type	Risk Event	Likelihood	Impact	Mitigation
Technical Issue	Difficult for client to understand and make sense of the code	Medium	Medium	Comparison handover documentation & user guide.
Technical Issue	Code may not work during the rescraping of new data	Low	High	Separation of data to be displayed from data to be analysed.



# Project Management

## Stakeholder Management - Supervisor & Sponsor

### Frequency of Meeting

- Supervisor
  - Biweekly
- Sponsor
  - Monthly updates
  - Biweekly check ins





# 05

## Others



# Project Handover

## Sponsor Handover Procedure

1

### Read Me

- Description of resources
- Steps to set up the project

2

### User Guide

- Use the application
- Interpret the data

3

### Walk Through

- Live setup & meeting





### Large Dataset

- > 7 million data points



### Reduced Time Taken

- Process shortened by 75%





# Thank you!

