VIC SAFE

Visit: http://vicsafe.tk

SUPPORT DOCUMENT

ABSTRACT
This document is for the perusal of future stakeholders tasked with the day to day operations of the VicSafe website to ensure that the product is up to date.

TA21- Lightning Coders

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1. Introduction

This document aims to provide information related to the support activities required for the smooth day-to-day operation of the product – the website – VicSafe (http://vicsafe.tk). The contents of this document are divided by sections for ease of use regarding different aspects including the system fundamentals, day to day activities, security aspects and the training requirements for further maintenance.

2. System Fundamentals

The product, VicSafe is a website designed for international students in Victoria to access essential safety information and services. These features include finding the location and information about the closest services, i.e., Community Legal Centres and Police Stations and discovering the safest areas in Victoria using the Safety Ratings map which is built on historical crime data. The website also includes a safety guide for students to learn more about laws pertaining to specific issues as well as where to seek help for the same, and it also provides an avenue for isolated students to get in touch with local communities.
The website can be accessed through the following link: http://vicsafe.tk (password: ta21).
The product video can be accessed through the following link:
https://youtu.be/nNg8fvyb4VM

The website has the following key features:

1. Safety Ratings

This page provides a choropleth map visualization of Victoria and shows the safety ratings of the different LGAs in Victoria based on historical crime data. This visualization is made using RShiny and includes options to search for specific locations to find its respective safety ratings. This is a useful tool for international students looking to reside in a safe area in Victoria. The visualization also provides a usability guide for ease of use for the users.

2. Services

This page provides a RShiny map visualization of all the police stations and community legal centres located in Victoria and the option to filter and view by each of those options. It also includes options for the users to search for the closest services in their radius. This can be determined by either a user entered location or by choosing a university campus. Hovering and clicking on the location markers on the map provides additional information regarding the services as well as the fastest route to selected services from the user location.

3. Guide Page

This page provides subsections regarding specific crime/safety scenarios, including and not limited to, sexual harassment, blackmail and racism. Upon selection, users are provided with

information on how to identify if they have been a victim of the crime, when their rights are being violated as well as how to seek help.

4. Help Quiz

A subsection of the guide page, this quiz aims to improve the users understanding of how to react to specific situations which threaten their safety. The quizzes provide results about your awareness of specific crime/safety scenarios and provide users with suggestions to improve their awareness and links to specific sections in the Guide page. The quizzes are built using the WPQuiz plugin and displayed using a shortcode.

5. Road Safety

This page provides information on how to stay safe on the roads in Victoria as well as measures to prevent accidents. It educates users on the main traffic laws of Victoria.

6. Fatigue Measuring Tool

A subsection of the Road Safety page, this tool is run as a quiz which the users can answer to get results on how safe it is for them to go out driving in their present condition. This quiz is built using the WPQuiz plugin and displayed on the website using a shortcode.

7. Communities

This page provides users with contact information about getting in touch with their communities in Victoria. At present, this includes specifically Indian and Chinese communities in Victoria since data shows most international students come from these two countries as well as a general international student community section for the others.

3. Day to Day processes

Day to day activities necessary for the smooth functioning of the website are as follows:

1. All processes need to be checked daily to ensure no downtime.
2. Regularly check the hosting platform. The website can be shifted to other hosting platforms than AWS as it will be charged in pay as you go fashion in near future.
3. Check the storage space taken by the website weekly, also check the user numbers that visit this website daily. Increase the storage and compute capacity if necessary.
4. You need to ensure that the website is up and always running. All sections of the website will require daily checking.
5. Ensure that the RShiny applications are always up and running with minimal load time.
6. Regularly check the shinyapps.io dashboard to ensure that the shiny applications are running and haven’t exceeded the daily limit of use. In case of heavy usage, you

might have to shift from a free to a paid version to ensure that the app remains running or shift the app to another account.

7. After any changes to the code scripts, make sure the new changes are pushed to GitHub.
8. We need to do the backup if any changes have been made to the website using a plugin called All-in-one-migration to back up the wordpress files and if needed we can also use this backup to transfer it to any other websites.
9. You also need to reflect the new crime data in the safety ratings page to be more relevant and accurate. The data is set to be released later this year (2021).
10. Make sure that all the quizzes are loading and displaying properly on the webpage. Shift the quizzes to a different plugin if WPQuiz plugin stops the free functionality of their plugin.

4. Security Aspects

The following are the security aspects identified as having potential to occur as well as the conceptualized mitigation plans.

Security Aspect	Description	Mitigation Plan
Unauthorized entry	Unauthorized users could enter the website and create damage (malicious or otherwise)	A password is required for anyone trying to visit the website, it's helpful to protect the website from DDos attack.
Privacy Leak	Website could leak private information of users.	The website does not collect any user data, so it is not a concern that our website will leak any information.
Hosting Provider vulnerabilities	Hosting on an unreliable server can cause security issues.	The website is hosted on AWS, so no one can make changes to the website if they do not know the password for our AWS account and the private key to ssh into the certain EC2 instance.
Website Crash	Unforeseen events lead to crash of website and potential data loss.	Keep backups for each version of the website using backup plugins, in case that any crash happens, we can recover the website from the backup.

5. Training requirements for day-to-day activities and future maintenance.

For the day to day running of the website, a Site Reliability Engineer is required. The day-to-day runner should have the skills outlined in the below table and must be trained on the fundamentals of the system to ensure a smooth operation.

Profession	Number Required	Required Skills
Site Reliability Engineer	1 (Day to day operation)	Proficient in web development using Wordpress.org Familiar with AWS components, such as EC2 instance, elastic ip and CloudWatch. Familiarity with centos 7, which is the Linux system AWS is based on. Familiarity with the shell language to configure the backend of AWS Familiarity with putty, which is a tool to help windows users ssh into the EC2 instance.
Business Analyst	1 (future maintenance)	Proficiency in empathy mapping, identifying personas and creating epics and user stories. Proficiency in requirements identification
Data Scientist	1 (future maintenance)	Proficient in R and RShiny Proficient in Excel Proficient in data collection, wrangling and visualization
Web Developer	1 (future maintenance)	Website development on wordpress UI/UX proficiency Proficient in prototyping
Backend Developer	1 (future maintenance)	Familiar with AWS components, such as EC2 instance, elastic ip and CloudWatch. Familiarity with centos 7, which is the Linux system AWS is based on.

		Familiarity with the shell language to configure the backend of AWS Familiarity with putty, which is a tool to help windows users ssh into the EC2 instance.

6. Preparation for future site

1. Use a hosting server, here we used AWS.
2. Create an AWS account as root user.
3. Create an AWS EC2 instance and set up wordpress
4. In AWS console home select EC2 to see the information of instances and get the public address here.
5. In System log page get the user id and password of the instance, access with the public address and login.
6. Use freenom to get a free domain name and connect it to the instance.
7. Use a plugin called All-in-one-migration to back up the wordpress files
8. If the website crashes, use this backup to restore the website.

7. Data Management

The two main functionalities of VicSafe involve visualizing how safe different Local Government Areas (LGAs) in Victoria are (http://vicsafe.tk/index.php/interactive-map/) and also displaying legal and safety services (Police Stations and Community Legal Centres) across Victoria to the users (http://vicsafe.tk/index.php/about/) . For this purpose, data was obtained from different sources. R was the language used for wrangling and coding the data.

The datasets are all in Excel format with the exception of the shape file and are all available on the GitHub as well as the product drive.

Since datasets from Vic Police are updated periodically, these changes can be reflected in our website, specifically the safety ratings page, by updating the datasets we use in our solution delivery.

Names	**Physical access**	**Frequency of source updates**	**Frequency of Iteration system updates**	**Granularity**	**Copyright / licensing details**	**Type of Data**
Crime Incidents in Victoria	Available as csv	3 months	4 months	Aggregate number	Creative commons	Tabular Data

https://www.crimestatistics.vic.gov.au/crime-statistics/latest-crime-data-by-area				of crime incidents in Victoria by LGA	http://creativecommons.org/licenses/by/3.0/	
Community Legal Centres in Victoria https://clcs.org.au/sites/default/files/2021-03/Member%20org%20directory%20March%202021.pdf	PDF	3 months	4 months	Directory of all community legal centres in Victoria	PDF published by the Community Legal Centres Australia	Text data
Police Stations in Victoria https://www.police.vic.gov.au/location	Online data	Not specified	4 months	Directory of all police stations in Victoria	© Copyright State Government of Victoria	Text Data
Victorian Universities https://universityreviews.com.au/list-of-universities/victoria/	Online data	Not specified	4 months	List of all universities and campuses in Victoria		Tabular Data
Shapefile of Victoria https://data.gov.au/dataset/ds-dga-bdf92691-c6fe-42b9-a0e2-a4cd716fa811/details?q=	Available online as shp file	Quarterly	4 months	Shapefile of administrative boundaries of Victoria	Creative Commons Attribution 4.0 International	Shapefile data

The cleaned datafiles and the R source files can be obtained at: https://github.com/Mack-zhou/TA21/tree/Iteration-3. Download as a zip file to make changes as required. Follow the readme (https://github.com/Mack-zhou/TA21/tree/Iteration-3/IE#readme) for further clarifications.

- For the Services:

Most of these data sources are static and need not be updated in the future and these include the data regarding Victorian universities, police stations, community legal centres and the shapefile.
If there are any changes to the data regarding police stations, universities or community legal centres, they have to be manually changed in the corresponding csv files “police stations.csv”, “universities.csv” or “Community Legal Centres.csv”. Following this, the R files, “Geocode Police Stations.R”, “GeocodeUnis.R” and/or “GeocodeCLC.R” need to be run to reflect the changes.
The RShiny file, named “serviceapp.R” should be run following this and it should be published again to www.shinyapps.io which would require a ShinyApps account. Update the <iframe> code in the Services page accordingly.

- For the safety ratings:

With respect to the “Crime Incidents in Victoria” dataset, this needs to be manually updated every 3 months and it will be available at https://www.crimestatistics.vic.gov.au/crime-statistics/latest-victorian-crime-data/download-data under the naming format “Data Tables LGA Criminal Incidents Year Ending June 2021 (XLSX, 17.33 MB)” [Replace June 2021 with the latest update].
This dataset will then need to be cleaned and used for updating the safety ratings. This can be done by making use of the following source file:
https://github.com/Mack-zhou/TA21/blob/Iteration-3/IE/Safety_Rent_Wrangling.R (or open Safety_Rent_Wrangling.R from the downloaded zip file.)
Open the file using RStudio (or a viable alternative), and make the following changes:
Change the file name being read to the latest version and run the entire code to finish cleaning and to obtain an updated version of the cleaned dataset for use in the RShiny Application.
The RShiny file, named “safemap.R” should be run following this and it should be published again to www.shinyapps.io which would require a ShinyApps account. Update the <iframe> code in the Safety Rating page accordingly.

8. Potential changes that could be made in the future

Currently VicSafe is deployed for only Victoria and consists of a dataset limited by geography. The product can be upscaled to be deployed across Australia. You can make following changes in the future to improve on our product:

- Upscale product for cross Australia functionality
  Use additional datasets for the whole of Australia to create safety ratings and search for services visualizations to be used across Australia. The guide pages as well as the information provided can be either generalized to all of Australia or divided into separate sections for each state.

- Add more information to the student guide page
  Make the student guide page even more comprehensive by providing additional information about other scenarios.

- Add more quizzes to the Help Quiz page
  Make the student guide page even more comprehensive by providing additional information about other scenarios.

- Add more information to the Communities page.
  Include contact information for communities for students from countries other than China and India.

- Ability to create a user profile
  Users could be provided the option to create a profile to store their quiz results as well as look up their previous search history on the map pages.

The changes above require the following skillsets:

Skillset	Description of use of skill
Excel/Python	For data handling and wrangling
R/RShiny	For creating additional components in the visualizations
Git	Version controlling
AWS EC2	To configure the backend of AWS, i.e. adjust the resources allocated to the website and troubleshooting.
Wordpress	For designing additional elements and adding them to the wordpress page
Comprehensive Writing Skills	To compile and present new information collected on the webpage.

Additional information is provided in the Maintenance document included in the handover package. Please refer to it to get more information on how to make changes to the website and the contents.

9. Testing Information

Integrity (Acceptance Testing):
The safety ratings map should be able to display the correct location and rating when the user input suburb name, postcode or address.
Result: Pass

The services map should be able to filter services based on user selection and show closest services based on entered location.
Result: Pass

The help quizzes should provide results and recommendations based on the answers provided by the users.
Result: Pass

Functionality Test:

The website functionality, such as page navigation, buttons and content display, all work properly.
Result: Pass

Compatibility Test:
The website functions as expected across different screens and devices.
Result: Some content does not display in a user-friendly manner on a small screen(mobile phone device) in portrait mode.

Website Stress Test:
The map works as expected when up to 5 users are using them at the same time.
Result: Pass

Backup and Recovery Testing:
The website can be backed up, and the backup can be recovered to build up a new website that is the same as the old one.
Result: Pass

Other testing results as based on GTMetrix.com