Project Stages

This document accompanies the source code for the ‘WanderSafe’ GovHack 2017 Project by The Data Surgeons. It describes the different stages on the project and how we went from an idea to a working product together.

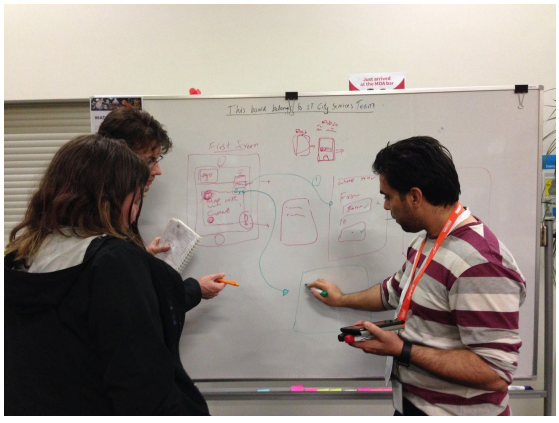
Idea Forming - Discovery - Stage 1

The Data Surgeons arrived at the same data surgery (table) by chance and through casual conversation, united by their passion to make government data more accessible to the public, set about producing a solution that takes NZ Police data and Stats NZ Geographic data, intelligently entwines it and presents it in a meaningful user-centric interactive application.

Scoping out the project happened during a whiteboarding session where the team identified the vision of the project, who would benefit from it, what outcomes we were aiming for and which datasets would support that. We also noted what was out of scope.

The final part of the idea forming and discovery stage was to confirm the two datasets selected could be interpreted in a meaningful way that aligned to the project priorities and would produce the outcomes required. Next we turned our attention to the design stage.

Solution Design - Design - Stage 2



The Design stage comprised of some wireframing of the user interface with consideration given to user-centric design. We wanted to create something that didn’t require the user to learn how to use it. UI prototyping was completed using proto.io.
App design is available through the following link.
https://pr.to/SMEYO9/

Once the team had finished the UI design, we turned our attention to selecting the tools and solution architecture that would enable this design. R Studio, Shiny and the services supplied by HERE were natural choices. The solution architecture and information flows between the solution components are modelled in a basic diagram here;
https://drive.google.com/file/d/0BwfVT7GJQ3G7MFc5UnM4akk4ZEU/view?usp=sharing.

Solution Build - Develop - Stage 3

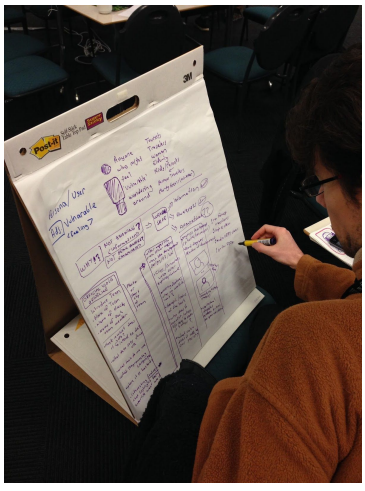
NZ crime data is processed using R and algorithm is implemented to find the crime hotspots at the meshblock level. Some of the key considerations were frequency of crime by day of the week and time of the day. NZ police data is released every month. We computed the trend analysis between whether the crime in a particular area has gone up, stayed same or gone down compared to the previous months.
We have also considered crime types such as domestic violence or street crime to inform users accordingly.

This data then feeds into the front end application built using shiny R. Users would be able to see crime hotspots on the map. We use the HERE map API to display data on the maps and then compute geographic distance between the user's location and crime hotspots. The Shiny app will alert users when a crime hotspot is detected in close proximity.

It uses the location of the user's mobile device and the algorithm is implemented to find the distance of the user form the closest crime hotspot. If it is close enough, the app will alert users in the form of mobile vibration or audio alert. The app allows users to see more statistics about the hotspot by tapping on it. Shiny app also generates a report for the residents about their area.

Data sets
Sample crime data set from the NZ police
Sample Processed data

Promoting WanderSafe - Deploy - Stage 4



Once the main development work was completed, attention was turned to telling the story of WanderSafe through a 3 minute video explaining the key aspects behind the idea, how the app works and who can use it.

The team planned the video using a simple storyboarding technique and wrote an accompanying narration. The narration was recorded, along with scene shooting indoors and outdoors and then the images from the prototyping added for context.

All media elements were combined into the 3 minute promotional video and uploaded to The Data Surgeons YouTube channel and Github.