



## ENSE 405 Project report-out & lessons learned

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### Project name

Qurrat Ulain

### Project sponsor & class facilitator

Dr. Tim Maciag (ENSE 405 Lecturer)

### Business need/opportunity

- Keep this to a maximum of ½-page

In 2018, 1 in 3 trafficking victims were children, and this has been increased due to the pandemic. The pandemic has also led to the loss of jobs for millions of workers, with a jump in the unemployment rate to 13% from 7%. With so many people losing their sources of income, those already in the low-income bracket were hit the hardest. As popular research shows, people that are economically and socially disadvantaged are overrepresented among the people reported missing compared to the general population. With COVID-19 putting millions of Canadians at an economic disadvantage, the risk of vulnerable persons being targeted is much higher.

This application will not only make it easy for people to get involved in the search for the missing, but it will also provide them with an easy way to learn and talk about why social exclusion can lead to higher cases of missing persons and what the general population can do to help. For example, if there was a wanted or missing person, a user might see their picture on social media or the news, but those are for fleeting moments and are difficult to compare with on the street. An application such as *Find* would take data from the Regina Police website or the news and display it in a database format, simplifying the process of comparing and recognizing a specific person during a busy workday.

### Reflections on project planning

- Keep this to a maximum of 3-pages (with images if needed)
- State the United Nation’s (UN) Sustainable Development Goals (SDGs) selected and your “why” for selecting the one(s) you did

- Summarize key findings from community research and understanding (Community characteristics and technology configuration inventory)
- Summarize your professional opinion of the processes and documentation used in this course for project planning
- State selected north star & carryover customers. Why are these customers important?
- Summarize assumptions made and constraints uncovered, re: drafting an emerging picture
- Discuss initial & the evolution of your technology stack selection, drafted prototypes, and initial Minimum Viable Products (MVPs)

This app focuses on promoting peace and inclusive societies for sustainable development and providing access to justice for all, following the 16<sup>th</sup> UN Sustainable Goal; Peace, Justice and Strong Institutions. The reason I selected this goal was inspired because of the research done for my business need. There are so many people suffering in the world right now, with crime statistics showing an increase from previous years. People that are in the low-income bracket are the most vulnerable in our community, and we should be doing our part to keep them safe.

This app allows civilians to contribute to the safety of their own community, which is something very necessary in our current political climate. With such a distrust in the policing system, I think an app that users can use to get the latest information at their fingertips and know that it is from a verified source is important. Especially when it comes to missing people, I've noticed that often families and loved ones of the person missing are not satisfied with the work the police are doing to find them. This app will allow them to get the word out to a larger audience themselves and provide general users with a way to stay caught up on updating news.

The project also covers the UN Sustainable Goal #4, Quality Education. When I began working on this project, I had not prioritized this aspect of the app as much, but as I worked on finding the statistics to build my demo pages on, I realized how important it was for this information to be shared and understood. Providing users with an easy and accessible way to access information they would have to research otherwise is just as important as providing them with a way to help their community by using the database. This application will not only make it easy for people to get involved in the search for the missing, but it will also provide them with an easy way to learn about why social exclusion can lead to higher cases of missing persons and what the general population can do to help. The discussion aspect of the app will also be super beneficial because it will challenge the general view of thinking as people try and answer others' questions or comments.

My key findings from the Community Characteristics research were that Regina, the community I am focusing on, is stable and open to new technologies, and so it would not be too disruptive to introduce another one. However, if this new technology somehow interfered with the general public's autonomous life, they would not be very accepting towards it. Regardless, my app wouldn't be a problem because it would make use of existing smartphone technology, which is always evolving as it is. I found Regina to be diverse, with a varied racial composition

but the majority of citizens being white. The level of participation in the city is also very diverse, with lots of opportunities to volunteer and different kinds of job opportunities.

In terms of Community Orientations, the first major orientation I came across was Content. The Regina community shares a majority of their information through social media, local news or the newspaper. Especially for the purposes of my app, missing people, I saw that most information shared was either through the Regina Police Website, or the local news. The second major orientation of the community was through Relationships and Open-Ended Conversations, or more specifically, word of mouth. Lots of people rely on family members and friends for updates on local news, or they might make small talk during community groups, at the workplace or at clubs/events. This can serve as a major way for news of missing persons to travel around the community. I also encountered other community orientations such as individual participation, service content and access to expertise, all of which are very active in the Regina community, but I chose to focus on the first two because I was able to easily integrate them into my application.

For my Technology Inventory document, I was not able to dive as extensively into it as I would've preferred, but I did research some of the major platforms available in Regina. The first one was the Regina Police website. I found that it had an appealing layout and provided current and available information when using a laptop/PC, but on a phone, it was not very easy to navigate and find information. Facebook groups were another major configuration that the general public in Regina seemed to use to follow missing persons news. The Facebook groups were useful because they used Facebook, an application most people are familiar and comfortable with. It also included notifications and were easy to follow on a phone as well, which were two goals I wanted out of my app. However, the downside with the Facebook groups were that they didn't have link or signifier to contact the missing persons help line or leave a tip for the police if needed, it was to be used more for getting the word around of a missing person, and less to encourage users to actively keep an eye out for the person. There were also other platforms such as the Missing Children's Society Canada website/app. This platform I found to be almost exactly what I was aiming to create, the only difference was that I wanted to target all missing persons, whereas this website and app only focused on children. It also wasn't updated as often as I think it should be to keep users engaged to the topic, and it didn't have any sort of learning resources provided.

My professional opinion of the processes and documentation used in this course for project planning is that they were very educational, and overall resulted in a better thought-out product. Going into this project, I knew I wanted to do something to help people, and this Missing Person's app idea came to me suddenly, but I still didn't fully understand the intricacies of what I wanted to achieve with the project and what it would mean for the community I am targeting. Using the project planning documents such as the Community Characteristics, Technology Configurations Inventory, and Drafting an Emerging Picture document, I was able to properly understand the importance of constructing this application, and how it would help the

community I was focusing on. I was also able to pinpoint the details I needed to make my project successful, such as a discussions box for each major statistic/article in my app.

My North Star customers for this project would be the general public of Regina, in the ages where they are comfortable using smartphone technology and can also understand the statistics and articles presented. The carry-over customers are really just anyone that the North Star customers interact with, I want to be able to create an app that influences not only the people that it's for, but also the people that maybe can't use or understand the application but can still benefit from it through other people.

When I began my project, the way I had structured my MVP's was that MVP 1 would be creating a database of missing people in Regina (working alongside the Regina Police) that automatically updates as a case is added to the Regina Police website or as a the person is located. I would also create a database for statistics and articles. The second MVP was supposed to include a notifications component, options to share a case on social media and a leave a tip functionality for users to be able to leave a tip for the police through the app. The final MVP was supposed to integrate a sort of discussion board aspect to the educational component of the app, allowing users to leave questions and comments (automatically filtered for security and appropriate language use) to create discussion opportunities. It would also include links to directly sign up as a search party volunteer or find other resources.

I found during my research that Kivy/KivyMD would be a good technology to employ for my project, as it was a python-framework that was very compatible with Android devices. It also looked like there was a lot of a support available for the technology, and so I decided to use it for my application. However, as time went on, I realized that Kivy was maybe not the best software to use, as it had more so design options rather than increasing the functionality of the app. This proved to make the task of completing my MVP's quite difficult, and eventually I ended up moving some things around. I ended up taking parts of the 3 MVP's that were the most easy to accomplish and getting them done first. I created the statistics/articles page and a functionality to move around and navigate the page as MVP 1, I created the resources and case details page as MVP 2, and created the database and discussions page as MVP 3. Another reason that I had to change my plans around was because I was unable to get in touch with the Regina Police, so I ended up creating more of a proof of concept application than a fully functional one.

## Reflections on project results

- Keep this to a maximum of 3-pages (with images if needed)
- Summarize how you felt about this project (likes/dislikes), from your experiences with the technology stack selected, translating prototypes into real solutions, and the evolution of your Minimum Viable Products (MVPs)
- Summarize what went well during the project
- Summarize what not went well during the project

- Summarize software design activities and findings. Ensure you discuss how you/your team either linked or envision links to design ideas back to topics discussed in class
- What would you do the same on future projects?
- What would you do differently on future projects?
- Summarize opportunities and design ideas for future work

Overall, the project went well. I am happy with my final product even if it isn't exactly what I envisioned. I am also happy that I was able to create a working application using Kivy even though it was not a great technology to work with in hindsight. I also liked my overall design, I felt that I was able to employ some of the concepts I've learned in lectures through the years and in past projects, such as making sure to use signifiers and keeping track of the usability and learnability of my app as well. Translating the database prototype into a real solution didn't go so well, I ended up making more of a high-fidelity prototype than an actual database of information, but I know that given more time to work on the project, how I could fix it into a proper database. I was also happy to have a way to convert my project to an actual phone app and get it started on my phone. I used a platform called "Kivy Launcher" which is an app that you can use to run Kivy projects on your phone. However, the app crashes a lot, which is another sign that maybe using Kivy wasn't the best idea. My MVP's had been outlined well in my opinion, and generally I would have preferred to stick with that flow of activities. While there were some personal interferences, overall I think the issues with the activities overwhelmed me at certain points, and I ended up working on the easiest parts first. That snowballed into me having a lot harder functionalities left at the very end. Still, I am happy that I was able to salvage the project and deliver a working product, but I definitely have learned some lessons for next time.

My main focus when designing the app was user interaction and accessibility. As discussed in lectures, I wanted to integrate the community orientations that I had researched during the conception part of my project. So for instance, the two main community orientations are Content and Open-ended conversations. So based on that, I knew to make the statistics visually appealing and the information easy to follow. I also included lots of ways to get to the discussion page of the app, so that users were able to access it anytime they had a concept to discuss or a question to ask.

### **General reflections on the class & project experience**

- Keep this to a maximum of 3-pages (with images if needed)
- Before taking ENSE 405, were you aware of the UN SDGs?
  - Yes/No – Please elaborate
- Typically, before taking this class, when you engineered software solutions, were you concerned with areas encompassing the UN SDGs?
  - Yes/No
    - If yes, provide some past examples and explain



- If no, do you have examples of past engineered works that you (co)created that could address one or more of the UN SDGs
- Did learning about the UN SDG(s) help you understand better your role and responsibility as an engineer to society?
  - Yes/Neutral/No – Please elaborate
- What was your experience(s) in engineering your specific software solution to address the UN SDG(s) selected?
- As a future engineer, what are your thoughts on the UN SDGs as a whole? Do you think they can help or hinder our work as software engineers?
- Should we use the UN SDGs to guide our work or is our work dependent on customer requests, regardless of the UN SDGs?
- Will you use your understanding of the UN SDGs in engineering solutions in the future?
  - Yes/No/Maybe – Please elaborate
- Will your experience learning about the UN SDGs inform your career path decisions in the future?
  - Yes/No/Maybe – Please elaborate
- Provide any other comments on the project accordingly

Before taking ENSE 405, I was not aware of the UN SDG's. I knew about United Nations, and I had a passion for getting involved in helping my community, but I never really connected the two, and I didn't have any opportunities to do so either. However, I am glad I found out about the UN SDG's as they give a very clear understanding of issues currently impacting the less fortunate and give clear insight on how we as individuals can help.

Before taking this class, when I engineered software solutions, I was aware in the back of my mind that I wanted to make sure I help people or create something that benefits the less fortunate, but it was not something that I would actively work towards. I never really looked at helping people as different achievable areas, it was more so as this grand goal that I was working towards slowly, so I didn't really think I had the ability to make a difference right now. It was after reading through the UN SDG's that made me realize that I could make a difference even in small ways and relatively privileged communities. For example, when I created the cook book application in a previous course with a group, I knew I wanted to create something that would help people, and a cook book application does help the general public, but it doesn't do anything to actually benefit the less fortunate. However, if I had made the cookbook application more accessible or geared towards people with certain dietary needs or disabilities, it could have made a much larger impact and also focused on the health and well-being of the community.

Learning the UN SDG's definitely helped me better understand my role and responsibility as an engineer to society. When I first went into engineering, my biggest motivator was that my parents wanted me to do it. And I didn't think that I would pursue engineering as a career once I graduated, because I wanted to do something that would help the larger community and make a difference for the less fortunate, and in my eyes I didn't think engineering would help



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me do that. However, as the years have gone, and especially after learning about the UN SDG's and seeing everyone's projects surrounding them, it's clear to me that engineering is one of the best roles for me to make a difference for future generations and help the less fortunate in larger communities get access to things they may not otherwise.