

Designing an Online Health Card Application for Military Families

April 26, 2019

Situation of Concern

Military families, defined in this project to be those with at least one parent/adult in the Canadian Army, face a wide variety of challenges due to their involvement with the armed forces. Promotions and training requirements result in these families having to relocate their families continuously across Canada. This causes issues that are otherwise inconvenient such as updating licenses, documentation and finding a family doctor, into continuously reoccurring struggles. A 2013 federal report by the Military Ombudsman identified frequent relocations as one of the biggest strains put on military families. Ontario's public services are not meeting the needs of the Canadian military families required to relocate to Ontario. This failure of providing the necessary services required for a smooth transition has resulted in frustration and negative sentiment directed towards the federal and provincial government. As of June 2018, almost 40% of all regular forces in the Canadian Armed Forces (CAF) reside in Ontario, making this is an issue at the provincial level.

Objective

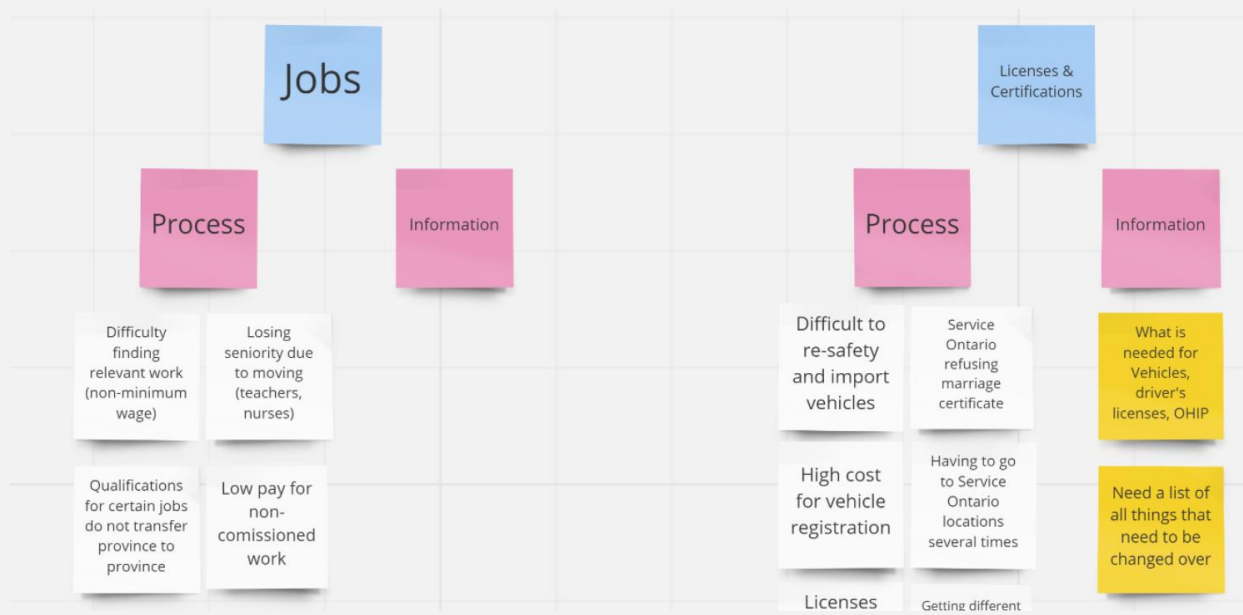
To investigate how the provincial government could improve the capabilities and reception of their services provided to these military families, the ODS prototyping lab was given the opportunity to investigate and develop a potential solution for an issue within the problem space. The overall objective of the project was to generate a proof of concept that demonstrated a potential method to address one of these issues. This report shall focus on the investigation of the problem space to find a suitable project direction, followed by the planning, iterative development, and overall review of the prototype.

Data Collection and Investigation

Before constructing any kind of prototype, a deeper understanding of the current issues military families had with relocation as well as further information needed to possess was required. Thus, the project began with forming a knowledge base from previously collected data and carrying out user interviews.

Background Information

Prior to the investigation carried out by the ODS, a Military Families Consultation survey was released on the Ontario.ca website. The survey asked users open-ended questions regarding what they found most difficult about relocated to or near Ontario bases, as well as what they thought would make the move easier. These responses were all read through and categorized based on the issue that concerned it (e.g. childcare, employment, local information). Under each of these categories, issues were further subdivided into either being issues with the process versus issues with information availability. This was done in order to understand which problems could be dealt with by better informing the user versus those that required a change in how the service is being delivered. These results were recorded on a real-time white boarding program shown in figure 1 called Miro, as it allowed multiple members to view and edit each other's work while emulating the overall structure of a whiteboard with sticky notes for easy comprehensibility.



By consolidating all of the survey responses into a single document, a list of major pain point categories for the problem space was created.

- 1) Healthcare: Families struggle to get access to healthcare professionals in a reasonable amount of time
- 2) Childcare: Many areas have limited affordability and accessibility of options
- 3) Employment: Spouses and partners of military personnel struggle to find non-minimum wage employment
- 4) Local information: Information regarding specific assets on military bases as well as the resources in the region is limited
- 5) Licenses and certifications: Updating certifications and non-transferrable documentation is very time-consuming
- 6) Language: There's a lack of bilingual resources available at/near military bases

User Research Planning

While this list of pain points indicated the general areas of concern, the survey responses did not provide a completely detailed account regarding specifics of each area. Additionally, a greater understanding of the general steps that military families take when relocating was needed. To obtain more information on each of these categories, the next step was to conduct primary user research. Hour-long interview sessions were decided to be the main method to obtain this information as it would allow for detailed accounts from users that had experienced these issues first-hand. To obtain participants, survey respondents that had left their email indicating that they were interested in providing additional feedback in an in-person session were emailed. Gift-cards were used as an additional incentive to obtain as many interviews as possible. To further increase the number of possible interviews, participants were also able to take part in the interview either online through videoconferencing or in-person.

In order to obtain answers that would lead to more informed decisions with regards to how to help military families, suitable interview questions were required. Research questions were devised based on the learning objectives determined after the analysis of survey

responses. As research questions directly ask what it is that needs to be discovered, they are not to be used in an interview with the user. Thus, time was spent transitioning these research questions into corresponding interview questions. These questions were worded carefully to assure that a sufficient amount of information from the user would be obtained without biasing them in any way. Once these were drafted, an interview script was prepared consisting of them as well as an introduction to the scenario in order to provide the user context to the ODS and the objectives of the project.

Conducting User Research

The general process for user interviews conducted both in-person and remotely was functionally the same. Interviews were conducted 1-on-1, with a single member of the team speaking face-to-face with the interviewee. Other members would observe the interview remotely through videoconferencing with their video feed turned off and audio muted. This was done to ensure that the interviewee would not feel an overwhelming amount of pressure due to the number of observers. While the interviewer went through the questions with the user, these members would simultaneously be taking notes using the Miro whiteboard software in real-time. Splitting the responsibilities in this manner allowed the interviewer to focus on obtaining as much information as possible as well as ensuring that relevant statements from the interviewee were recorded in the notes. In addition, all interviews were recorded for audio, allowing for future review in case a part was missed. Similarly to how they were organized when sorting the survey responses, notes were structured into distinct sections based on the major pain point categories that previously identified (healthcare, childcare, etc.). Doing so made the structure of the notes match the structure of the interview, allowing for a simpler note-taking process overall.

Overall, 18 people signed up for an interview and 13 were conducted. The interviewees were fairly diverse; the demographic of those interviewed consisted of 4 military members, 1 military veteran, and 8 military spouses. The responses obtained from the interviews in addition to the responses that had already processed from the survey were consolidated. From them, the most common issues as well as those which military families found the most impactful were identified. Through primary user interviews, a solid grasp of the problem space was obtained. This allowed the planning and design of a content prototype solution to begin.

Deciding on a Problem Space

Narrowing the Possibilities

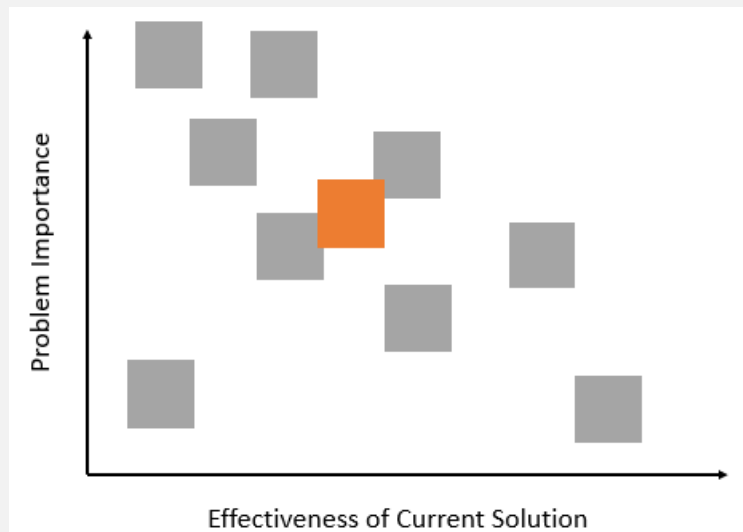
A large number of issues were identified within the problem space. As a small prototyping team, it was not realistic to create a prototype solution for each one. Thus, a singular issue to focus on needed to be determined. To begin, the first step was to identify any solutions that required changes to legislation and policy. While these issues were noted and documented for the corresponding policy team within the ODS, it was outside the scope of this project for the prototyping team and would thus not be worth pursuing for our team. Secondly, issues that could be addressed by adding or changing the information content on the Ontario.ca website (known internally as “content changes”) were identified. Addressing these issues required a greater focus on writing and graphic design; developing an application prototype to address them would be unnecessary.

Having filtered the issues discovered during the data collection and investigation, the remaining issues required ideating and problem solving to find a solution. These could potentially be addressed through the creation of a prototype; however, these problems still varied greatly. There was a large degree of variation regarding how greatly the issue impacted military families. Similarly, there was a large number of differences with regards to how well services were currently being provided to these families to mitigate these issues. It was also necessary to acknowledge that ODS prototyping team was constrained to a timeline of 6 weeks; with the level of resources available, some issues were too complex to be dealt with reasonably.

Comparing Issues

To aid in the decision-making process, all of the problem statements that could be tackled were graphed in manner shown in figure 2. The y-axis of the graph indicated the problem’s relative importance i.e. the measure of the impact the issue currently had on the lives of military families. As the greatest positive effect from the prototype was desired, issues with greater impact were naturally favored over those with lower impact. The x-axis indicated how well the process is currently being handled. Issues farther along this axis were less favored, as it would be difficult to improve upon a service that is currently being done relatively effectively compared to other issues. Conversely, issues being done relatively

poorly were also less favored, as typically the situation is as it is due to the amount of resources and investigation required to approach the problem. This would not be feasible with the time available and would thus be outside the scope of the project. The problem statements were positioned in the graph based on the feedback received from the user interviews. With both of these axes in mind, the team chose to focus on approaching the problem of streamlining the process of getting a health card for military families specifically.



Problem Space Pain Points

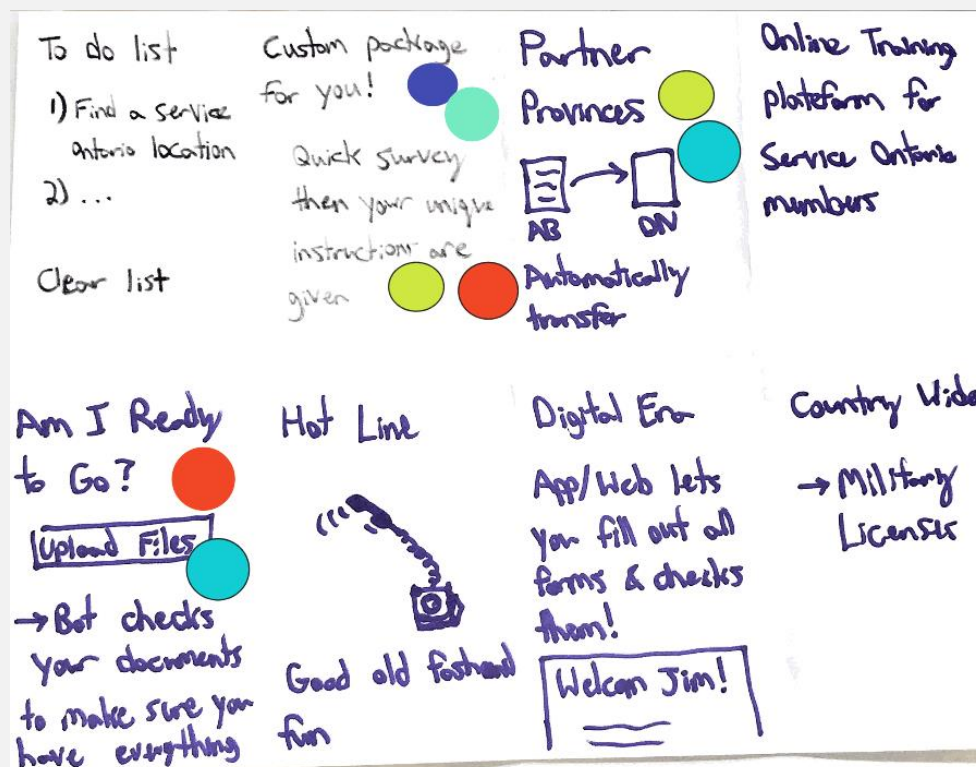
Having established a problem space, a better overall understanding of the biggest pain points that currently in the health card process needed to be outlined. To do so, the issues relating to the area identified during user testing were consolidated. One of the most common issues brought up by interviewees was unknowingly going to a Service Ontario location that was not able to provide health cards to military families. This ultimately resulted in frustration and wasted time as the interviewee would need to travel to multiple locations. Additionally, long wait-times at Service Ontario locations further aggravated the process. Another issue discovered was that various rules and restrictions around how to obtain a health card were not well understood by the interviewed families. Many military families were also unaware of their health care coverage rights.

Development of the Prototype

Ideating on Solutions

To brainstorm multiple solutions, the design sprint activity “Crazy 8’s” was utilized. To perform the activity, each member takes a piece of paper and divides it evenly into eight sections. The members are given eight minutes to sketch a design solution in each section, with strictly one minute allocated to each section. This activity was chosen for several reasons. Firstly, it is quick and strictly timeboxed to 8 minutes, assuring that it will not drag on for too long. Secondly, the method results in a wide variety of ideas that push past the initial (and typically least innovative) ones. Finally, as the activity is individual at the beginning, it assures that the voices of all team members is heard.

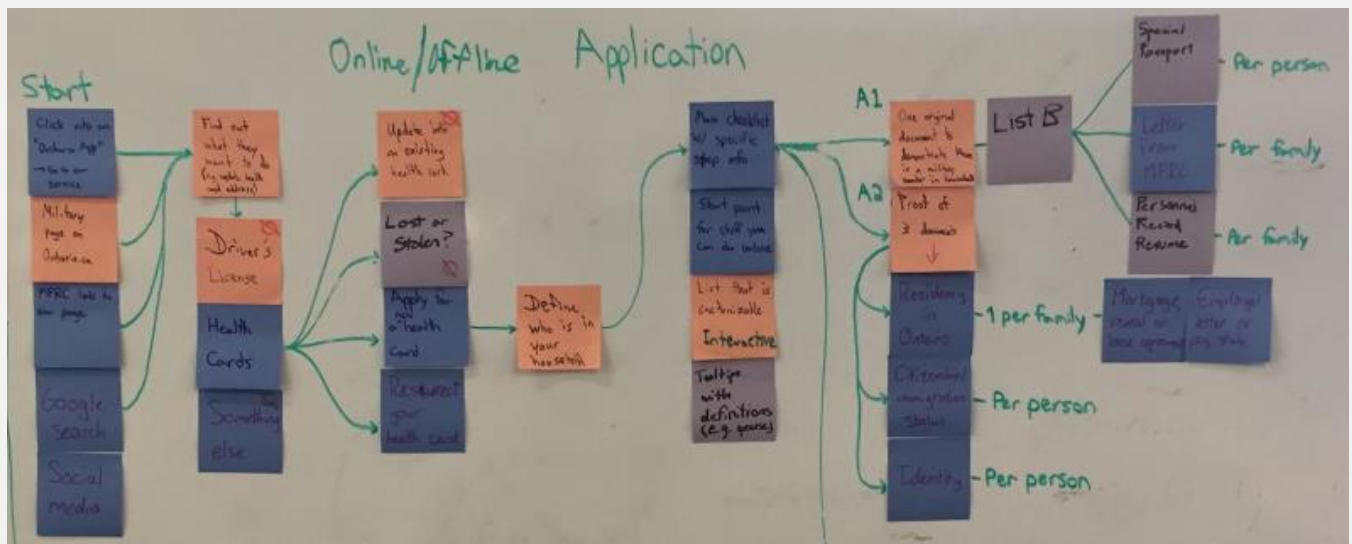
After performing this activity, each member briefly described each of their 8 ideas. All members then put dots on the section of the ideas they felt would be most successful as shown in figure 4. Members were not limited to the number of dots that could be put down to encourage promoting all ideas. Afterwards, the ideas with the greatest number of dots were discussed in greater depth with regards to determine additional details and whether or not it would be feasible for the lab to create.



Of the ideas produced by through the Crazy 8's brainstorming exercise, the idea that had the greatest number of dots on it was allowing users to apply online before going to a Service Ontario location. Going back to the problem space, the inconvenience of going to a Service Ontario in addition to not providing the user enough information regarding the overall process were the overall main points identified. Allowing the user to apply before going to a Service Ontario could potentially address both of these issues. An informative online process could potentially provide a way to guide the user through the health card transfer process. This would also provide the opportunity to inform the user on appropriate Service Ontario locations that would offer this service. It could also reduce the amount of time spent at these locations due to a higher level of preparation. Thus, the chosen solution direction was to prototype an online application that would guide the user through the health card process, making them more prepared and informed when getting their health card at a Service Ontario location.

First Iteration

Based on the solution direction in brainstorming, the first iteration was planned to be an online application that would take in information from the user, then output a customized checklist that would inform the user what would need to be done. The application would provide links to external resources as well as offering explanations within the tool. To begin developing the online/offline application, the overall step by step process was outlined. By clearly showing the complex pathways to serve as a visual aid, the prototype construction would be much easier. Based on the team's understanding of the health card process obtained during the analysis of the problem space, the various steps of a potential prototype experience were mapped out on a whiteboard shown in figure 5. Doing so allowed for a flexible rearrangement of steps and branches, making for a faster and more adaptable diagram. After visually mapping out the application process, it was time to begin constructing the journey in a form where it could be prototyped for user testing.



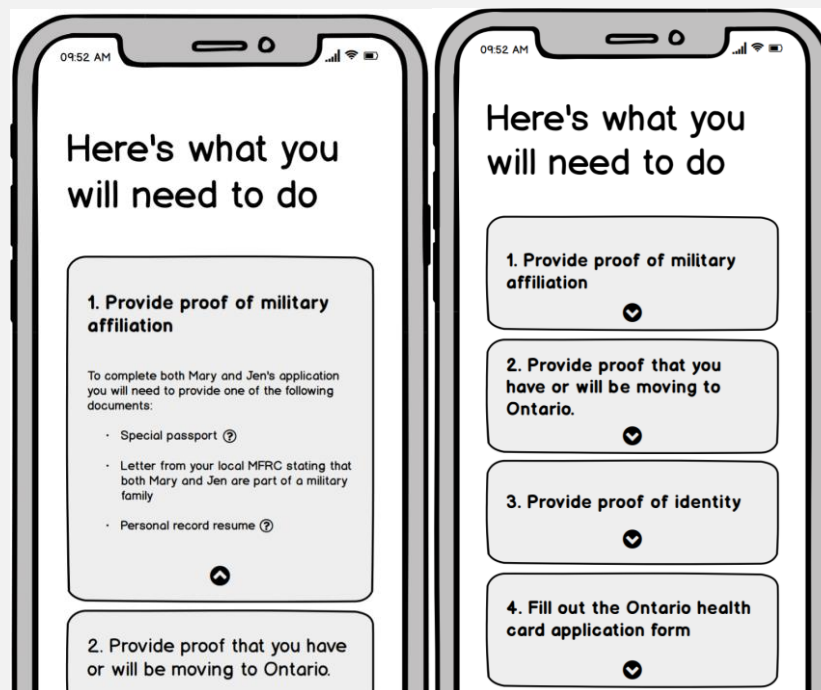
Prototype Construction

As the main objective for this initial prototype was to present a process that would primarily provide the user with information, the wording of content and method of information display were highly prioritized. Fully developing a coded prototype would require too much time. What needed to be determined was whether or not military families were receptive to the

concept; building the prototype legitimately in code at this point would not have led to more fruitful results in testing. Thus, the first prototype was constructed in Balsamiq, a web-based mock-up tool. Through this tool, multiple screens were created and linked together. This would effectively simulate a navigable web application. As this could be done in a short amount of time, it was extremely helpful for constructing a usable prototype. Using the workflow visually outlined in figure 5, screens with the appropriate information were created and wired together in Balsamiq.

Completed First Iteration

The first iteration was completed entirely through Balsamiq. The wording of questions was based off of the current existing forms utilized by the government of Ontario. The prototype also included a “checklist” page, where users would be able to view all the steps of the process on one page. These steps would be expandable fields, offering a method of learning more without overwhelming the user with too much information as shown in figure 6. The ability to download the checklist was included at the end of the prototype as a way to provide users with a digital copy on their device or on paper. The general appearance of the design was very barebones, with minimal visual details. However, certain basic iconography such as arrow icons and question mark symbols were utilized within the design.



Before moving forward with usability testing, the goals for the iteration (that is, what wanted to be learned) were planned out. The first objective of the testing was to see if users were receptive to online format of the information. Additionally, it was important to learn the best way of presenting the required steps to military families, as well as if the prototype contained all of the steps users found critical. These goals were kept in mind when creating the dialogue script to make sure that they were answered in some form throughout the testing sessions. Interviews were conducted through the videoconferencing software Zoom. One member would have their video and audio activated to ask the user questions and guide them through the prototype. The videoconferencing software allowed the rest of the team to observe the hear the user as well as view their screen for the purpose of note-taking.

Summary of First Iteration Findings

Several key discoveries were made through this first iteration of the prototype. The first was that users preferred a detailed initial view of the instructions rather than expandable fields; they would rather have it immediately present without having to click a button to expand. The second finding was that some of the document requirements listed in the prototype did not make sense for military families. Despite these document requirements being present on the government website, the interviewees indicated that obtaining such documentation was not feasible for them to obtain. Finally, many of the icons utilized in the prototype were not understood by the users. Question mark icons that would provide an additional tooltip on-click were not noticed, and plus-sign icons were thought to increase the zoom as opposed to add a new user. Icons that included corresponding text such as the “Download checklist” button were much better understood by the users. Overall, users enjoyed the idea of having an online resource to aid them through the process. However, the way information was being displayed as well as the wording itself needed to be revisited.

Second Iteration

Iterating on the Design

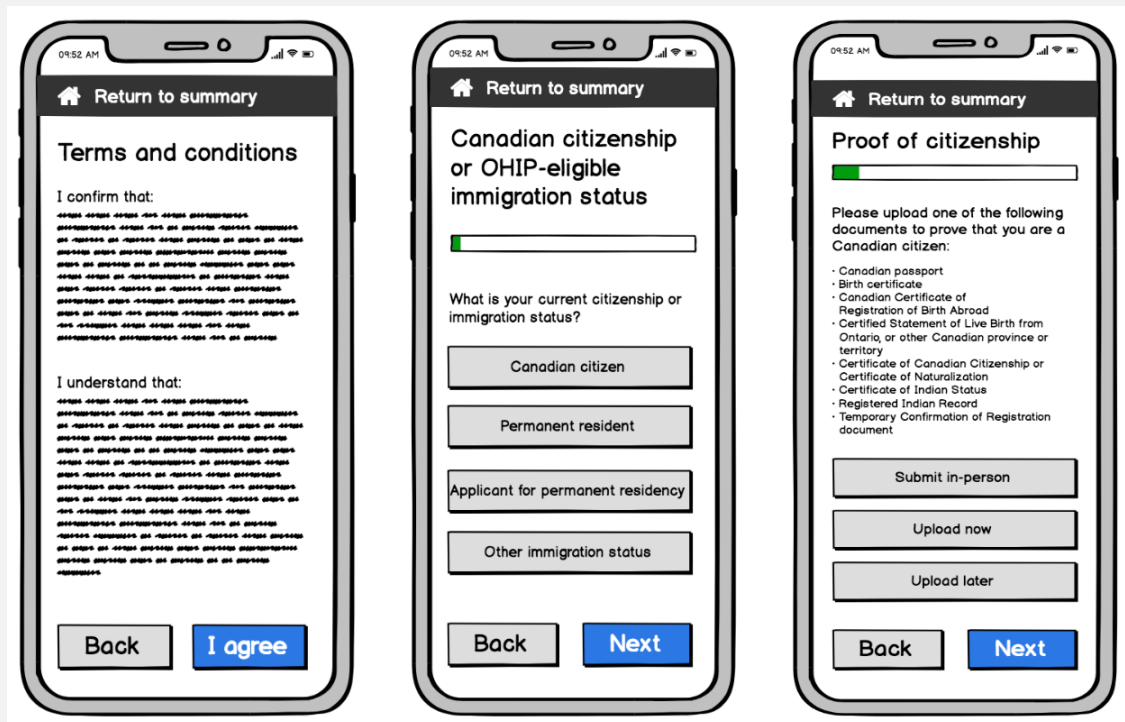
With the feedback from the first usability testing session, several changes were made to the current prototype. Based on the fact that users disliked the expandable information fields, the design needed to be reworked to show the user all relevant information without making the screen overwhelmingly long. To remedy this, a more step-by-step approach was used to display information. Each step of the process would be an entire screen, giving plenty of space to allow for descriptive text relating to that specific step. While this would increase the total number of screens, the theory was that users would prefer moving rapidly through many screens feeling informed rather than stuck on a single one. The documents brought up as unrealistic to obtain were removed from the prototype. However, a question was added to the script to ask users during the next round of usability testing. With regards to the visual presentation of the prototype, iconography that did not have accompanying text was completely removed due to the confusion it had caused previously.

Outside of the issues identified during the usability testing sessions, the prototype underwent other major changes. The main concept of the second iteration was to provide the user the opportunity to complete as much of the health card application process as possible before having to go in-person. This would provide the user a way to get the application started online in advance. Through researching the requirements, it was found that much of the information could be handled online aside from providing an in-person photo. The new prototype would ask the user for information step-by-step, providing them the opportunity to upload documents or skip steps to be done later in-person.

Prototype Construction

Due to the greater number of screens required than the previous prototype, the wireframing tool Figma was used instead of Balsamiq. Figma allowed for multiple people to edit the prototype in real-time, making it possible for multiple members to work on the prototype at once. This greatly boosted the speed at which the screens could be produced. Once again, design details such as font choice and colour palette were not prioritized as the main learning objective of the prototype was to discover if a partially online application was helpful for military families. Readability and word choice were once prioritized in order to

assure information as clearly expressed to the user. Shown in figure 7, the completed second iteration was built to convey the instructions and purpose of the prototype clearly in terms of wording and readability. With regards to testing, no issues had arisen with the method utilized for the first iteration. It was thus kept the same for the second iteration.



Summary of Second Iteration Findings

The usability testing provided a great deal of insight with regards to the merit and presentation of the application. The primary takeaway from the testing process was that users wanted to complete the application online. Upon seeing that it was still required to go in person after the online process was complete to finalize the application, all users interviewed described the process as a waste of time. This universal sentiment meant that the purpose of the prototype needed to be shifted for the final iteration to assure that users would see value in the process. However, the way the prototype presented information to the user was received much more positively than the first iteration. Users felt the step-by-step process was easy to go through and made processing information easier. That being said, users disliked being shown large amounts of information and options on a single screen.

Final Iteration

The second usability session made it clear that users saw no value in partial online completion; however, they saw the application as being exceptionally more worthwhile if it allowed for the process to be taken care of in its entirety. Based on this finding, the planned purpose of the application was shifted from allowing the user to partially complete the application online to handling the entire health-card application through the prototype.

Reconfiguring the Application Workflow

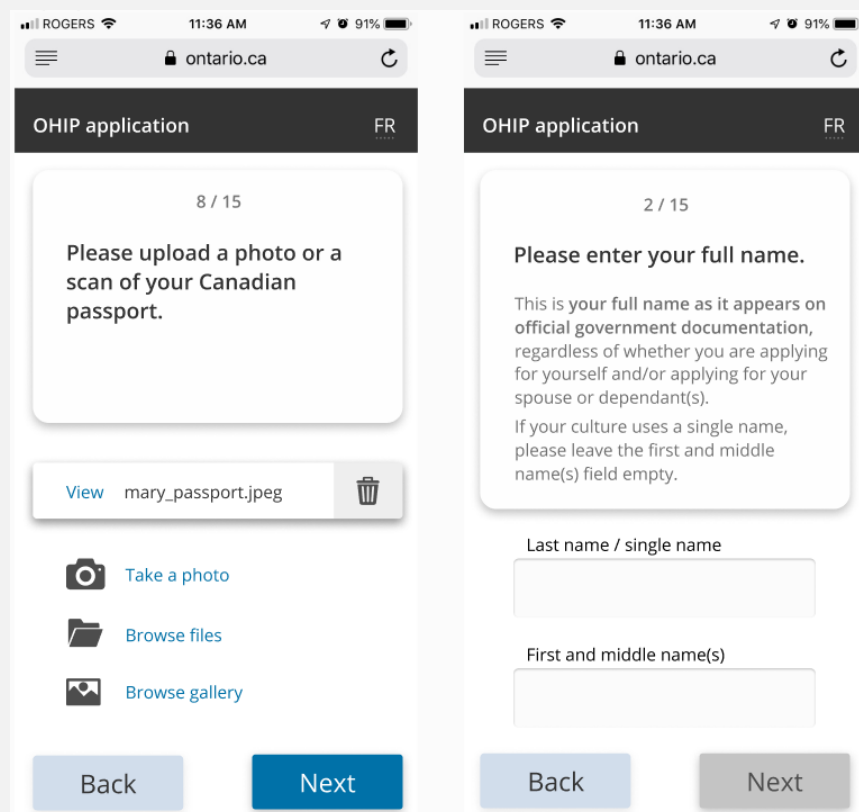
A change of this scale required the team to revise the current process of the prototype application. The application's missing steps were determined by examining the previous workflow and identifying all steps that were originally planned for the user to handle at the Service Ontario location. These extra steps added another level of complexity to the process that needed to be recreated within the prototype. Additionally, the process would change based on the user's background information as well as how many family members the user wanted to health cards for. To better understand these cases, the whiteboarding software Miro was utilized to visually represent the workflow. The visual presentation provided clarity to the screens that needed to be built and the logic behind when they would appear to the user.

Prototype Construction

The final iteration of the project to be fleshed out into a coded form in order to present a suitable proof-of-concept that completely behaved like a web application from the front-end. This meant that unlike the previous two iterations, using wireframing programs such as Balsamiq and Figma alone would not suffice. HTML and SCSS were utilized to create the structure and appearance of the prototype. The JavaScript library jQuery was utilized for the functionality and logic behind the application process due to its ease of use and online documentation. Half of the team utilized Figma to create visual mock-ups with all the necessary image assets while the other half recreated these mock-ups in code. Splitting the work in this manner allowed for all team members to work simultaneously. The additional steps identified previously (such as obtaining a signature and taking a photo) needed to be integrated into the prototype in some form for the application to be complete. As usability testing sessions were scheduled in advance, time was very constrained.

For the sake of usability testing, the prototype simply needed to appear to work rather than truly work in the back-end. Thus, to save development time without affecting what the user in testing would be presented with, efforts were concentrated on creating facades within the application. Functionality would be simulated for complex features rather than actually be integrated. Saving time in this manner allowed the various extra steps identified to be integrated into the final prototype before the deadline. Additional pages such as an initial landing page with instructions and error pages were also included to better flesh out the application pathways and better represent what a completed prototype would look and feel.

Outside of the process, the prototype also underwent a complete visual redesign shown in figure 8. Font and color usage were changed to match the current Ontario website style guide. Due to the desire for government resources to be as accessible as possible, elements were coloured, sized, and positioned with them in mind to assure that the prototype presented was a realistic proof-of-concept to be used for Ontario. Additionally, following the feedback received from the second usability testing session, screens with large amounts of text and instructions were restructured and reworded to appear much less overwhelming to the user.



Summary of Final Iteration Findings

From the final usability testing session, the central takeaway was that military families would find this resource a valuable method for obtaining a health card. Not having to leave the house was a major selling point; users would much rather use an application than go to a Service Ontario location. This third round of usability testing confirmed the desire for an application that fulfilled this role. With regards to the user's ability to go through the prototype, all interviewees were able to navigate the application process without hitting a point where they could no longer continue. Dividing the application process into small discrete steps while providing a manageable amount of instructions to the user proved once again to be an effective method of successfully transferring information. Past prototypes had various visual issues and confusing process flows that stopped users. The major visual overhaul to the design as well as the changes to the overall application flow guided the user much more effectively than previous prototypes. This observation demonstrated that the prototype designed here could be an effective model for a future application implemented by the government of Ontario.

While no critical issues (i.e. issues that stop the user from going through the process completely) were identified during the usability testing session, many smaller scale issues were identified. Confusing wording was identified in some of the new steps added to this iteration of the prototype, and the accompanying iconography did not assist in the comprehension of the wording. Other small issues such as indicating mandatory fields and clearly informing the user that they can upload multiple photos were also identified and documented for future use.