

Deliverable G: Prototype II and Customer Feedback

Adora Chiu, Aidan O'Neill, Andres Ackland-Snow, Billy Cheung, and Ethan Loiselle

November 11, 2021

Table of Contents

1. Introduction.....	3
2. Prototype II.....	3
2.1. App.....	3-4
2.2. Website	4
2.3. Conversions.....	5
2.4. Wallet	5-7
3. Prototyping Test Plan, Analysis and Results.....	7
3.1. Prototype II Test Plan.....	7-9
3.2. Prototype II Analysis.....	9-11
3.3. Prototype II Results.....	12
4. Prototype II Feedback and Comments.....	13
5. Target Specifications, Detailed Design and BOM.....	13
5.1. Prototype II Target Specifications.....	13
5.2. Prototype II Detailed Design.....	14
5.3. Prototype II Bill of Materials.....	14
6. Prototype III Test Plan.....	15-16
6.1. Prototype III Stopping Criteria.....	16-17
7. Conclusion.....	17-18
8. Wrike Update.....	19

Introduction

This document explores the challenges and successes that we have faced when working on our second prototype, one that is meant to be of moderate fidelity and an indication of how our final product might look. Many of the subsystems are now solidly formed and soon we will only have to tweak them. We have started developing secondary functions of the subsystems (such as the transfer of points between user wallets). Additionally, we have begun combining the subsystems with the app as the main hub. At this point, the app exists as a UI for a SharePoint list as a database. Thorough documentation has been kept and a clear analysis of results and implications has been taken to determine our progress and steps moving forward.

Prototype II


App

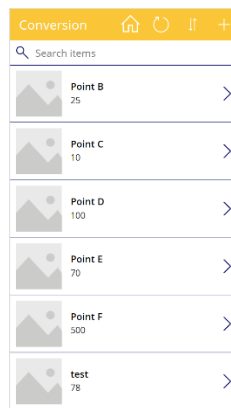
<https://apps.powerapps.com/play/f60200e9-5a49-4dae-b587-544fdaed2ecd?tenantId=d41fdab1-7e15-4cfd-b5fa-7200e54deb6b>

Username: Tom

Password: 123

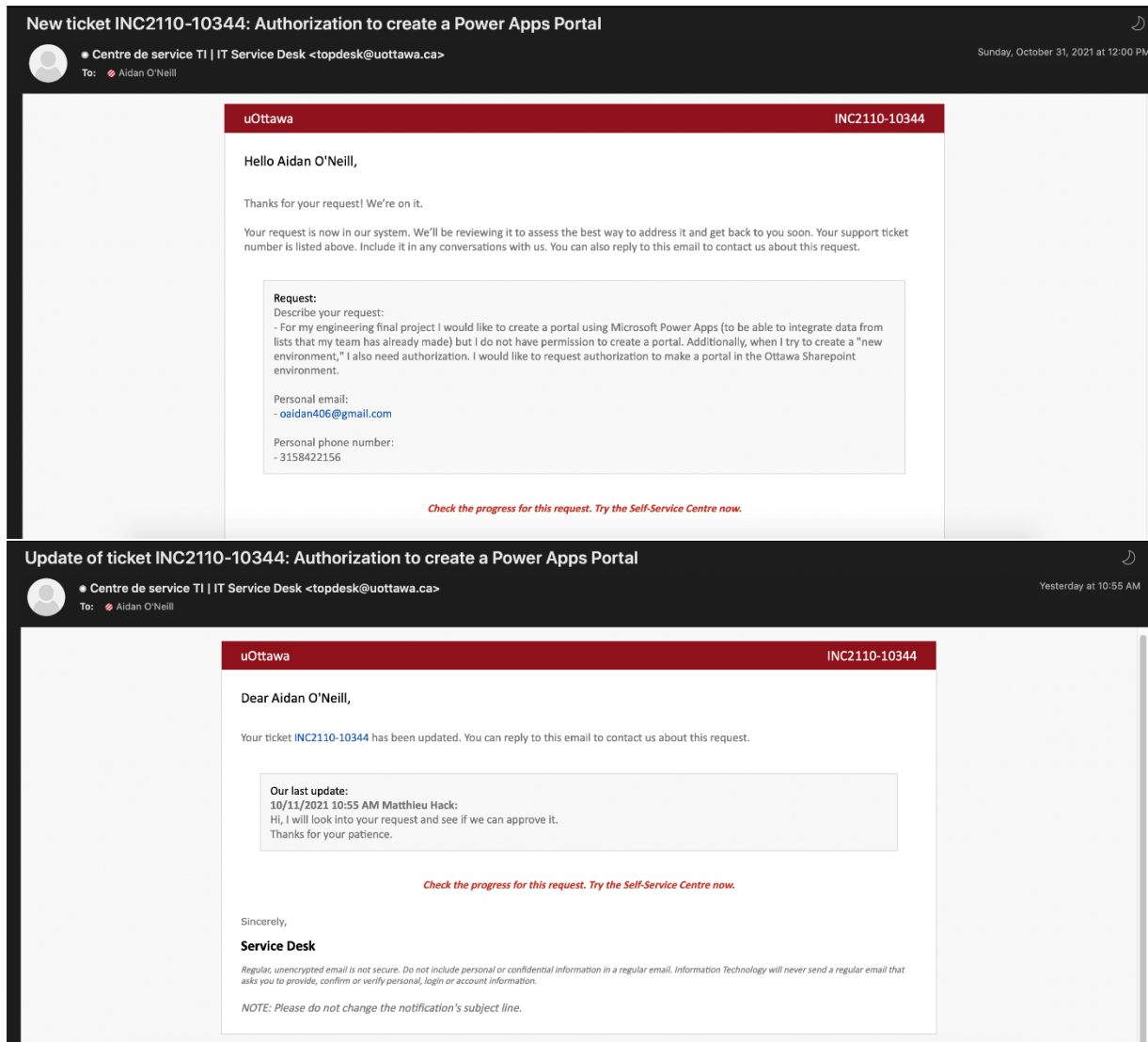
In prototype II, I added the new screens for Translation and Conversion for the use of connection with other databases and changed the return Icon (button) from “Canuel” to “Home,” which do to the user feedback, Give the user know which is the main screen and limit the icon functionality confusion. On top of that, I have received user feedback saying the app password input text box always has text on it, every time they try to log in must delete the text on the password input box first, it is annoying.

Additionally, the wallet component of prototype I was integrated with the app. The  icon opens the wallet screen, allowing you to deposit and withdraw points from the SharePoint list but using the interface of Power Apps.



This is near identical to prototype I, but now integrated with a more usable UI. Ideally, new types of points can be created, which will create a new row in the database. Currently, this feature is not functional and will be updated in prototype III.

Website



Originally, I was going to use a Portal in Microsoft Power Apps as the basis for our website because I was more familiar with these tools, and it would be easier to connect it with the app that Billy had already made. Unfortunately, I did not have authorization to make one (as described in the first image above). Upon advice from my TA, I emailed the IT department of uOttawa on the 31st of October, and they finally got back to me yesterday (the 10th of November). Right now, we are waiting to see if they will be able to authorize me soon, and if they can't authorize me within a few days, I will take the option of purchasing a one-month subscription on a personal account of Microsoft Power Apps (with the authorization of Vineeth and Luis).

Although I had already started developing the Wix site, I was finding it exceedingly difficult to maneuver once I got into coding it. Additionally, we were not able to connect it with the app that Billy had made, or the other SharePoint lists that we were using. I will not delete this Wix site in case it is still usable, but I am halting development until I am sure that there is not another option.

Conversion

Total Amount of Points ▾	CAD Conversion ▾	Investment ▾	Transfer ▾	Air Miles... ▾	TD Canada Trust ▾	Redeem ▾	Conversion Rate ▾	Conversion Rate Calculation ▾
700	\$7.00	\$5.38	700	2,100	350	Transfer	1.10	770.00
8000	\$80.00	\$61.54	8000	24,000	4,000	CAD	3.20	25,600.00
10000	\$100.00	\$76.92	10000	30,000	5,000	Investment	1.20	12,000.00

① Conversion Rate

Enter a number

📄 Calculation

0

☑ Redeem

Type to filter or add new choice

Investment

CAD

Transfer

Users may quickly calculate conversion rates for CAD, Investing, Transfers, Air Miles Points, and TD Canada Trust using the total number of points. Users can choose how they want to redeem their points from a drop-down menu: through investments, CAD conversion, or transfer points. Users can write in any conversion rate they wish in the conversion rate box, and it will determine what that conversion rate would be based on their total number of points.

Wallet

The wallet has been fully integrated with the app and data from the SharePoint list is displayed in Power Apps. See the section the app for further details on the wallet.

The screenshot shows a mobile app interface titled 'Wallet'. At the top, there is a blue header bar with the word 'Wallet' and three icons: a refresh icon, a list icon, and a plus icon. Below the header is a search bar with the placeholder text 'Search Items'. The main content area displays a list of six items, each with a title and a value, and a right-pointing chevron icon:

- Point A: 60
- Point B: 25
- Point C: 10
- Point D: 100
- Point E: 70
- Point F: 500

This is a rudimentary wallet UI that is connected to the share point list below.

Wallet ☆

Point Type ▾	Amount ▾	Exchange Rate ▾	CAD ▾	+ Add column ▾
Point A	60	1	60	
Point B	25	0.5	12.5	
Point C	10	2	20	
Point D	100	2	200	
Point E	70	0.1	7	
Point F	500	5	2,500	

Points can be deposited and withdrawn from the app interface, which will then be updated in the SharePoint list database. New types of points can be created, which will create a new row in the database.

The screenshot shows a mobile app interface titled 'Wallet' with a close button (X) and a checkmark icon. The form contains the following fields:

- * Title**: A text input field containing 'Point A'.
- Amount**: A text input field containing '60'.
- Exchange Rate**: A text input field containing '1'.
- CAD**: A text input field containing '60.00000000000000'.

This is the interface for the movement of points in and out of the database. This is proof of concept of changing data in a SharePoint list using PowerApps.

The screenshot shows a PowerApps flow interface. At the top, a message states: "No additional information is needed for this step. You will be able to use the outputs in subsequent steps." Below this, there are two steps in a sequence:

- Create item:** This step is configured with the following fields:
 - Site Address:** (Fall 2021) GNG1103A01 - Proj4 - https://uottawa.sharepoint.com/teams/GNG1103A01-Proj4
 - List Name:** Wallet 2
 - Title:** CreateItem_Title
 - Amount:** CreateItem_Amount
 - Exchange Rate:** Exchange rate to CAD as a fraction.
- Delete item:** This step is configured with the following fields:
 - Site Address:** (Fall 2021) GNG1103A01 - Proj4 - https://uottawa.sharepoint.com/teams/GNG1103A01-Proj4
 - List Name:** Wallet
 - Id:** DeleteItem_Id

For the transfer of points between SharePoint list databases, a flow was created that deletes and item from one list and adds it to another. This flow was then added to PowerApps, so when a button is pressed the flow runs.

The link to this basic app is found below, but also requires access to the SharePoint list database found in the project 4 teams space:

<https://apps.powerapps.com/play/5a62ff82-2bf3-447f-b97a-d9aba708aa4f?tenantId=d41fdab1-7e15-4cfb-b5fa-7200e54deb6b>

Prototyping Test Plan, Analysis and Results

Prototype II Test Plan

Test ID	Test Objective (Why)	Description of Prototype used and of Basic Test Method (What)	Description of Results to be Recorded and how these results will be used (How)	Estimated Test duration and planned start date (When)
Interface				
	Data transfer from website to app	Wix is used for the website. The test method would be to see if data entered through user input on the website could be transferred live; website <> excel <> SharePoint <> App	The results would be the speed at which they transfer (if they transfer at all), and making sure the data was transferred accurately.	Monday, November 8. Test duration: 3 days

	Custom registration and login	Velo forms (which use JavaScript) which are customizable. The test would be to make sure labels are given properly, that registered accounts can log in using the same credentials, and that changes made in one login session are stored for the next time the user logs in.	Login / registration errors, accounts and their given roles/permissions	Monday, November 8. Test duration: 3 days
	Automations	If the automations will automatically send confirmation emails	Where do automations send their emails and how long does it take?	Monday, November 8. Test duration: 3 days
	Database and Conversion	The addition or removal of points to the user's wallet upon the click of the button. Conversion of said points which are stored for future reference.	History of addition/removal; if the times are automatically recorded; are conversions stored?	Monday, November 8. Test duration: 3 days
Conversion				
	Multi-faced conversion	Create a dropdown list on all partnering companies so users can easily switch between the different conversion rates for their points from different companies	Observe the conversion of the same number into 5 different systems (and repeat 5 teams) to see if the numbers are converted consistently every time.	Monday, November 8. Test duration: 2 day
	Multiple Tabs for Different Conversion Options for Points	On the Home page of the app, create three different tabs; Redeem, Transfers and Invest This will help better organize the different conversion options instead of grouping them together under one tab	Observe the conversion of the same points into the 3 different tabs. Check if the transaction is saved onto the wallet	Tuesday November 9. Test duration: 3 day

			Redeemed points should be removed from the user's total points	
Wallet				
	Transferring points to other wallets through Power Apps (moving data from one SharePoint list to another)	Will use flows in the Power platform to delete data in one list and add the same data to another	Successfully move identical data from one list to another	Friday, November 5. Test duration: 7 days
	Clean up UI/Integrate with Billy's app	Make UI more accessible	Will test through user feedback	Friday, November 5. Test duration: 7 days
	Integrate with Adora's conversion system	Use Power Apps to change points in a SharePoint list into alternate points	Can accurately exchange points based on a set exchange rate; no miscalculation	Friday, November 5. Test duration: 7 days

Prototype II Analysis

Subsystems	Analysis
App	<p>Now the app and the conversion code and database are connected, and another two screens are added for the conversion and translation.</p> <p>I could not make the process bar in the screen two functional, in other words, the process bar cannot react with the changing value that connects to other software still finding a way to solve it.</p> <p>The next step is to make the conversion system work in the power app while inputting a number in the power app and reacting to the SharePoint list.</p>

Website Layout and Coding	<p>Although the presentation of the website was great, I was not able to complete all the necessary functions using Wix. First, we are unable to connect it to SharePoint due to licensing issues. Secondly, I faced limitations concerning the actual coding.</p> <p>I was unable to learn JavaScript (which Wix uses) sufficiently to be able to connect the custom (Velo) registration with the custom login, and many of the tutorials only explained the most basic concepts. Even with YouTube videos, I was not able to figure the coding out. Additionally, I was not able to create an automation that would create a custom dataset for each individual user which could be added to and subtracted from like the wallet. This was due to limitations of being a non-Pro member on Wix. It is time for an alternative.</p> <p>What is next: I will be waiting for a few days to hear back from uOttawa IT before purchasing a personal subscription to Microsoft Power Apps. My goal is to create a “portal” which is modeled after Billy’s app and can connect directly with the app and all the SharePoint lists.</p>
Conversion Coding	<p>The total points are able to be converted to CAD, investments, transfers, and changed from company A to company B. There is a drop-down menu where users are able to choose they want to redeem their points. There is a conversion rate section where users are able to type in whatever conversion rate they want, and it will calculate for them what that conversion rate would be using their total amount of points.</p> <p>The next step is to use PowerApps to create a flow in Share Point so that when a new value is added onto the list, the flow will make it so that it automatically deletes a row from the wallet.</p>

	<p>The conversions also need to be implemented into the functional app. As the app will include several different options for what users want to do with their points; checking the total amount of points, redeeming, or looking at the different conversion rates that are available.</p>
<p>Wallet Coding</p>	<p>After prototyping the wallet in prototype I, it had to be integrated with a usable UI. The first prototype was used as proof of concept – the idea that data could be added and removed in a SharePoint list from a UI such as power apps. Using Billy’s app, the wallet was added through a SharePoint connector to a list in Power Apps. This list in Power apps was given its own screen that displays all the various types of points held within the wallet.</p>

Prototype II Results

Subsystems	Results
App	<p>The App is connected to the conversion and the data shown in the power app has no errors on it. However, we still cannot input numbers on the app.</p> <p>The App now has three functional screens, login, home, and conversion. More, now all the pages can go back to the home screen by clicking the “home” icon.</p>
Website	<p>My Wix website is not especially useful as of now due to limitations described in the Analysis section. I will keep it in case we need it in the end, but I will transition to Power Apps instead.</p>
Conversion	<p>Users are able to take the total amount of points and instantly see the conversion rate calculations for CAD, Investing, Transfers, Air Miles Points, and TD Canada Trust.</p> <p>There is a drop-down menu where users can choose how they would like to redeem their points: through investments, CAD conversion, or transfer points.</p> <p>There is a conversion rate section where users are able to type in whatever conversion rate they want, and it will calculate for them what that conversion rate would be using their total amount of points.</p>
Wallet	<p>Ideally, the list could be edited within this new app, however some features were not functional in this prototype. Data was unable to be edited within Billy’s app for an unknown reason (unlike prototype I where SharePoint data could be edited from Power apps) and will be tested thoroughly in prototype III.</p> <p>At this point, the wallet is mostly integrated with the UI of the app. Other than bug testing, next steps are to integrate the conversion and transfer portions into the wallet and attach these functions to the UI.</p>

	Some optional functionality could be added, such as icons for each type of point for ease of use.
--	---

Prototype II Feedback and Comments

Subsystems	Feedback
App	<ul style="list-style-type: none"> • Much easier to recognize the functionality of the icons, and feel smooth while using this app. However, there is no logout functionality button for the app.
Website	N/A (Wix is not being used anymore)
Conversion	<ul style="list-style-type: none"> • Needs to be added under a tab on the app, not have the conversions on its own • Needs to have separate tabs for different conversions • The several different options for points are very nice and convenient • The drop-down menu makes it easier to look at all the available options
Wallet	N/A (see app feedback)

Target Specifications, Detailed Design, and BOM

Prototype II Target Specifications

Specific ation No.	Specification	Priority	Specifics	Implementation
1	Horizontal transfer of points	Point transferability	Allowing points to move and be used easily.	Centralized interface which supports many kinds of users (banks, businesses, consumers). Provides a place where points can be transferred, redeemed, used, and converted all in one platform.
2	Democratization of the point system	Inclusion of smaller businesses	The inclusion of smaller businesses and more freedom to bank clients	The app and website level the playing field by allowing smaller businesses to make accounts and offers, advertise, etc. By making this centralized platform, users will also have greater diversity in using their points.

3	A general and adaptable product	Allow data to be moved in and out of the wallet from multiple locations; locations that can be specified in Power Apps rather than in SharePoint lists and Power Automate	The product is meant to be sold to different banks and must be adaptable to their needs.	Create flows that are nonspecific to wallets, and allows outside wallets to be added within the app (make the data transfer location specifiable in app, rather than coding a new flow)
---	--	---	--	---

Prototype II Detailed Design



Prototype II Bill of Materials

Project	Inventory Name	Priority	Vulnerabilities	Task	Cost/ month (CAD)with tax
Prototype 3	Power Apps	Secondary	Can only be edited by one person at a time	Building app & Building website	\$0.00
Prototype 3	Share Point	Primary	Cannot make any function and handle large database	Auto Database Act as a wallet	\$0.00
Prototype 3	Microsoft	Primary	Will have to be linked to a personal account	Portal (website)	\$20.00 (per month)

Prototype III Test Plan

Test Objective (Why)	Description of Prototype used and of Basic Test Method (What)	Description of Results to be Recorded and how these results will be used (How)	Estimated Test duration and planned start date (When)
Interface			
Functional Website using Microsoft Power Apps Portal	The testing method will be creating an account, redeeming, and adding points to the wallet, making 3 separate conversions, setting a goal, and transferring points to another account	The measurements will be if adjustments made on the site remain even upon leaving, how long it takes for updates in data, making sure all the buttons work, etc.	Thursday, November 18. Test Duration: 2 days
Combined website and app	The test method will be to follow a process similar to that of the above criterion in either the app or the website, and making sure that it updates on the other	The measurements will be accuracy of data transfer, time it takes for “the other” to update	Sunday, November 21. Test Duration: 2 days
Conversion			
Adding and Deleting Rows	Using PowerApps to create a flow between the SharePoint list and the wallet. When a value is added into the SharePoint list, that same value will be deleted from the wallet.	Observe that after inputting a value in the SharePoint list, the same value is deleted from the wallet. Test this 3 times with different values to make sure that the flow from PowerApps is consistent.	Saturday, November 13. Test Duration: 5 days
Multiple Tabs for Different Conversion Options for Points	On the Home page of the app, create three different tabs; Redeem, Transfers and Invest.	Observe the conversion of the same points into the 3 different tabs. Check if the transaction is saved onto the wallet.	Monday, November 15.

	This will help better organize the different conversion options instead of grouping them together under one tab	Redeemed points should be removed from the user's total points	Test Duration: 2 days
Wallet			
Bug Testing	Using prototype II, editing SharePoint data in Power Apps requires more testing	Add, remove, and edit existing data in Power Apps and check if it updates in SharePoint	Saturday, November 13 Test Duration: 1 Day
Transfer Testing	Using the app, input the values on the conversion pages and see if it will change the SharePoint(wallet)	Observe the result and data it. If anything comes out that was not expected, will refresh the page again.	Tuesday November 16. Test Duration: 1 Day

Prototype III Stopping Criteria

App	<ul style="list-style-type: none"> - Make the conversion screen open a sub-screen and can input a value on it. - Make the home-screen show the point value that the user has. - Connect to translation database.
Website	<ul style="list-style-type: none"> - The website looks similar in design to the app - All the processes can be carried out (redeem, earn, transfer, convert) - The website flows with the app - The website should have equally functional and aesthetically pleasing mobile and desktop counterparts.
Conversion Coding	<ul style="list-style-type: none"> - Can input a value onto the SharePoint list, with the same value being deducted from the wallet - Redeemed points are removed from the user's total points - Points are converted based on the set exchange rate - Be able to calculate the conversion of 5 different sets of numbers using 3 different conversion factors each
Wallet Coding	<ul style="list-style-type: none"> - Can add, remove, and edit existing data from a Power Apps list that is connected to a SharePoint list - Remove all bugs (currently unable to add new data from Power Apps)

Conclusion

Ultimately, this prototype demonstrates that we are on the right track and that the final product is taking shape. Just as we had hoped, we have now created the means necessary to convert between different loyalty rewards systems, add and subtract points to user wallets, and the app gives users some interactivity. Below, a more in-depth explanation of these functions can be found.

For the conversions in prototype I, users could take the total number of points and instantly view the conversion rate calculations. The conversion rates of 2 different businesses were included in this prototype to show how a 'company A points to company B points' would appear on the final product. Prototype II conversions adds a drop-down option, where users may choose how they want to redeem their points. Users can write in any conversion rate they wish in the conversion rate box, and it will calculate for them what that conversion rate would be using their total amount of points. This is important for the user experience because it allows them to plan and interact more deeply with the app. This is also important to the concept of democratization of points because this is what allows users to transfer their points from one loyalty rewards system to another.

In prototype one, the basic app layout was created to produce a low-fidelity representation of the distinct functions that the app could possibly have. For example, a page for conversions was created, but conversions could not be carried out. Now, the process of connecting the app with the wallet and the SharePoint conversion list has started with success. As this app is the central user interface, it is extremely important that we are able to connect it smoothly with these functions to provide an interactive, user-friendly experience. Moving forward, we will be working to finalize the look of the app (although in the future it can always be updated) and provide full functionality and connection, using automations and flows.

This prototype solved several of the feedback notes from prototype I. Prototype I feedback noted that the UI for the wallet was confusing and had few labels, resulting in several seemingly arbitrary numbers. By integrating the isolated wallet prototype with the isolated app prototype, this solved the difficulty of use of the wallet and introduced actual functionality to the app. Despite this, some bugs exist such as the inability to edit existing data in the app. Currently, the only way to edit the number of points a user has is through SharePoint (which is then reflected in Power Apps). Now that the app is functional, the other isolated prototypes of the conversion and transfer features will be integrated in prototype III and the final product.

The website creator used in prototype one, Wix.com, seemed to be promising at first. The site provides many unique features and has a clean look to it. We ran into problems, however, when trying to connect it with the SharePoint lists and app that we had already made. We were going to use it anyways, as a 'functional' representation of what the web-based part of the UI could look like, but we are too inexperienced in JavaScript to code the necessary functions within the scope of time of this project. We have decided to try using Microsoft Power Apps portals instead

of Wix, but we are still waiting on either authorization from uOttawa IT to make a portal, or authorization to purchase a month-long subscription to the Power Platform with a personal account. Although this website would be especially useful, the app is the main up. Hence, it is not imperative that we are able to create a functional app. We will, however, continue to try.

As can be seen, significant progress has been made between prototype I and prototype II, and we are now entering the final stages of the development of this system. The overarching goals and purpose of this system are to create a manner of connecting any company, bank, and user in a way that is mutually beneficial for all parties involved. Horizontality, democratization of points, and user experience are at the center of this project, and we wish to provide the means of including all willing partners (especially small “mom and pop” businesses).

Wrike Update

The screenshot displays the Wrike project management interface. The top navigation bar includes a search bar and a user profile icon. The main content area is divided into two sections, each representing a different project phase.

Project 4: Deliverable G – Prototype 2 & Customer Feedback

This section shows a list of tasks and milestones. The tasks are organized into a hierarchy, with subtasks listed under each main task. The status of each task is indicated by a colored dot (e.g., green for completed, blue for in progress). The milestones are also listed with their due dates.

- Prototype 2** (Nov 7, Completed)
- Prototype 3 Plan** (Nov 10, Completed)
- Update target specifications, detailed design and BOM** (Nov 9, Completed)
- Analytical, numerical, or experimental model** (Nov 8, Completed)
- Prototype II Test Plan** (Nov 4, Completed)
- Prototype II Analysis** (Nov 8, Completed)
- Prototype II Results** (Nov 8, Completed)
- Feedback and Comments** (Nov 7, Completed)
- Update stopping criteria** (Nov 9, Completed)
- Update Wrike** (Nov 11, Completed)
- Introduction** (Nov 11, Completed)
- Conclusion** (Nov 11, Completed)

Project 4: Deliverable H – Prototype 3 & Customer Feedback

This section shows a list of tasks and milestones. The tasks are organized into a hierarchy, with subtasks listed under each main task. The status of each task is indicated by a colored dot (e.g., green for completed, blue for in progress). The milestones are also listed with their due dates.

- Prototype 3** (Nov 18, New)
- Gather Client Feedback** (Dec 24, New)
- Update target specifications, detailed design, and BOM** (Dec 25, New)
- Careful Documentation** (Nov 25, New)
- Testing (with stopping criteria)** (Nov 23, New)
- Introduction** (New)
- Conclusion** (New)

The interface also includes a sidebar on the left with a list of tasks and a bottom section for recent activity, showing a timeline of updates and milestones.