

Organization Name: Greater Washington County Food Bank

Max Dunaevschi, Blythe Weng, Shalini Rao

Partner Name: Jon Schubert

May 5, 2021

# **Community Partner Background**

**About the Organization**

Greater Washington County Food Bank is a 501(c)3 community service non-profit that provides groceries / nutrition information to food insecure people in Washington county (30 min south of Pittsburgh). The food bank has been running for over 35 years and consists of 21 employees, but anyone can register as a volunteer to help hand out food. The missionof Greater Washington County Food Bank is:

*Form lasting solutions to hunger insecurity through effective food distribution systems; to educate and empower the needy in seeking positive lifestyle changes; and, to create awareness through individual and community partnerships.*

GWCFB’s main goal is to educate citizens on how to become more food secure. Prior to COVID-19, the food bank provided food and other necessities to low-income patrons, but they have now made exceptions for service workers who are no longer able to get work hours. They provide their patrons a mix of boxed items, canned goods, and health products along with meats, produce, and bakery items, resulting in the administering of 40 - 50k pounds of food each week. GWCFB has a well established distribution system to ensure low-income families and community members still have access to healthy and affordable food. The main distribution program is Truck to Trunk, a drive-thru system where pre-registered clients come and pick up their food. The food bank is dedicated to giving Washington County residents a reliable and sustainable to provide food security for themselves and their families.

# **Community Partner Project Description**

# **Project Opportunity**

Greater Washington County Food Bank would like a simpler way to manage their food inventory and make distribution easier. The main problem that they currently have is that they do not have a streamlined software meant for the transactions they do and not enough time to find another one. Currently Jon Schubert (Warehouse manager) is storing the transaction information on an Excel sheet and then manually transfers the data into the QuickBooks software. Another issue that occurs in the software is that after food is packaged into an assembly (box of food), the quantity left must be updated. Not only must this be done manually, but if the staff member makes a mistake, this results in negative numbers for the quantity of that item. Clearly, this is wrong and causes issues when needing to track inventory. Since the food bank receives funding and donations from the state and federal government, they are required to give reports for the distributions those donations ended up contributing to. However, their current system relies on mostly manually inputted data, which amounts to multiple human errors. Each of these errors costs the staff even more time when it comes to submitting reports, since they then need to go back and find the source of each error and rectify it. Solving this problem is necessary in order to improve the food banks ability to distribute food.

As a result, the organization wanted us to develop a standalone inventory tracking and scanning system that would replace their existing QuickBooks software. Since there is still a reliance on using Quickbooks for accounting purposes, the new system needed to have capabilities to generate a report based on the invoices in the form of an Excel sheet. This Excel sheet would then be imported into the QuickBooks software. With a proper tracking system where information can easily be updated and managed, GWCFB can now prioritize the distribution of food without worrying about misinformation regarding their inventory which will save time, food, and money.

**Project Vision**

The goal of this project was to improve data entry and inventory management, saving time and effort for the GWCFB staff and streamlining the reporting process for funding agencies. To accomplish this, the project aimed to reduce the number of human errors and improve efficiency in the data entry process for food donation and distribution. The solution was to find and document a new inventory management system to be implemented in place of their current accounting software. This includes a mobile application with scanning capability, as well as a website platform. Our stakeholders were the Greater Washington County Food Bank, its employees, the patrons that rely on the food bank, donors to the food bank, and volunteers. Our solution saves the organization time, limits human errors, and helps reduce food waste from untracked, expired donations.

# Project Outcomes

# **Outcomes related to any new tools that were implemented:**

* Multiple software inventory and scanning solutions were evaluated and a comparison chart was created to aid in choosing the best solution
  + Since we had narrowed down our solution to HandiFox, FoodBank Manager, and Sortly as possible solutions, we created a detailed analysis on all 3 so that we could present the differences to Jon. The detailed analysis included benefits of each solution, price analysis, and feature comparisons and was laid out in a way that made it easy to see the difference between the solutions. This was important since this allowed for Jon to make the decision on which software to move forward with. Jon ended up selecting Sortly.
* Documented actionable items
  + We created a comprehensive list of actions that can be done in Sortly. Jon sent us a list of actionable items that he was able to do in Quickbooks or that he wanted to be able to do, and we created a document that outlines the steps that need to be completed to do these actions in Sortly. For every action, we noted the steps required, as well as added in photos to help with the guidance. We created this document to help train Jon as he goes about learning how to use the new software. Furthermore, this documentation can be used in the future for training other employees, as well as a quick reference if Jon ever forgets how to do something.

**Outcomes related to the configuration of the tool:**

* Created QR codes for food bank inventory items
  + We created QR codes for items in the Food Inventory, PASS, and CSFP folders within the official Sortly account. These QR codes are saved as pdfs which have been shared with Jon and can be easily printed and used with in the warehouse.

**Outcomes in terms of the content that has been added to the tool:**

* Transferred the inventory from Quickbooks to Sortly via Excel
  + Using the existing inventory counts information we populated the real account with the inventory data. Essentially, we set up the initial state of the system. We created the QR codes and assembly assignments. Since none of the items had any barcodes associated with them we created a large pdf with all the barcodes and sent it to Jon. Furthermore within the software itself we assigned the appropriate items to their respective assemblies. However, we must keep in mind that at the end of June there will be a data transfer for new inventory (all the inventory is being changed with different providers), thus our modifications are meant as a temporary state. Jon himself stated that in this next month he will use the Sortly software along with Quickbooks for learning purposes.

**What Jon did that demonstrates new understanding and capacity:**

* Jon wanting to organize the rest of the inventory into folders and finish creating item barcodes
  + Jon wants to familiarize himself with the Sortly software and wants to do this by finishing the rest of the set up tasks. We plan to assist Jon in this process and will provide any support he needs via email or zoom.

**Other Outcomes related to research**

* Background research on the technology used in similar organizations were compiled in a comprehensive research document (see appendix)
  + We conducted research on the technology used in other food banks to help us gain more insight on what kind of system we should be looking for. We looked through these organizations’ websites as well as reached out to their technology coordinators via email or phone. Only a few organizations responded to us and we found that their technology systems were far less advanced than GWCFB’s Quickbooks and excel system.
* Research conducted on different types of software scanning solutions were written out on a comprehensive research document (see appendix).
  + We looked into methods on how to create an inventory scanning system from scratch as well as pre-existing software solutions. Every week, we would plan a list of questions to ask our client Jon in order to better gauge what functionalities to look for in our solution. Documenting the functionalities of these software solutions helped us visualize and compare them to each other in order to ultimately decide on a final solution to implement.
* Compiled final features list which was used when looking into various software solutions (see appendix)
  + We nailed down a comprehensive list of features that Jon wanted in a scanning software solution. Initially, Jon was very wishy-washy on what he wanted and would constantly change his mind on what features he wanted. To solve this, we listed all of the features Jon had previously

**Top-level outcomes**

* Saved Jon time from having to search for a new solution
  + Jon has always stated that he wanted to move away from QuickBooks and Excel for inventory management. However, as the sole person responsible for GWCFB’s technology, he has no time to look into other solutions. We were able to take into account all of the organization’s needs, pain points, and budget and create an analysis of the top pre-existing software solutions. However, the final decision was still up to Jon.
* Saved Jon time and effort during inventory and assembly processes.
  + The organization’s current QuickBooks and excel system used to track the movement of inventory is extremely inefficient and error prone. Sortly allows for all of the data to be stored, tracked, and manipulated all on the same platform. It also has a built in scanning system replacing the previous pencil and paper slip tracking system, greatly reducing time.

**Constraints and Risks**

|  |  |  |
| --- | --- | --- |
| **Risk** | **Description** | **How we avoided this risk** |
| Missing functionalities in documentation | If our documentation does not include all of the functionalities that Jon needs | We had Jon walk through his entire assembly and inventory process and made sure we documented all of those functionalities. We also asked him for any other functionalities he wanted to include. Lastly, we included the Sortly technical support contact information in the event that Jon would need to use a functionality not covered in the documentation. |
| Inadequate Budget | GWCFB would not have the financial capability to continue paying for Sortly’s monthly | We asked Jon about his budget before looking into pre-existing software solutions. This ensured that our final three software solutions fell at or below the organization’s budget |
| Insufficient Technology | The current technology GWCFB has cannot handle a hefty burden | Minimize extra load of solution on current infrastructure. Sortly offers cloud based storage which avoids overloading the local servers. |
| If Jon disappears | In the event that Jon is unable to continue working at GWFCB | Our documentation serves as an extremely useful tool for learning how to use Sortly. Other GWCFB employees can look over this and learn how to run the Sortly account themselves. |
| Sustainability risk | Once we walk away Jon may not be able to access / use documentation that we have created. Also, since he has been busy and not been able to give us enough information about his progress in the software, we cannot ensure that he understands how to use the software. | We created a github which contains all the documents we have and made Jon a co-owner of it. This way once we are no longer working with the organization and in the case where our CMU accounts are no longer active, Jon and his employees can access all the documents. |

**Metrics used to measure success:**

1. Time saved during the entire data entry process (going from building assemblies, to invoices, to Excel, and finally to being entered into QuickBooks)
   1. Measure how long it currently takes and compare to time taken after we implement the scanning solution
      1. Time taken should decrease
   2. Solution Results
      1. Building Assemblies
         1. Before solution implementation: 1 hour. Since the Quickbooks software did not support assembly creation, Jon would need to go through the excel invoice report generated and manually assign the items to their respective assemblies.
         2. After solution implementation: 3 minutes. Create a new tag and assign the tag to the items that belong to that assembly.
      2. Inventory Counts
         1. Before solution implementation: Takes 2 guys 3-4 hrs each to go count every unit on hand.
         2. After solution implementation: Takes 1 minutes to get running item count through search functionality in Sortly
      3. Generate a report
         1. Before solution implementation: 2 hours because Jon needs to go back and look over the report to ensure the values are correct. This is caused by the fact that Quickbooks has negative inventory issues which leads to miscounts.
         2. After solution implementation: 30 seconds in Sortly. Using the history function for a folder you can generate a report for the active inventory folder.
2. Number of individual tasks required to complete the data entry process
   1. Measure current number of individual tasks required and compare to numbers of individual tasks needed after we implement our solution
      1. Number of steps required should decrease
      2. Number of employees able to carry out the process should increase
   2. Solution Results
      1. Tasks required
         1. Before solution implementation (total: 7)
            1. Tally up shipment invoices
            2. Add purchase orders
            3. Hand count each unit in the warehouse
            4. Use Excel for deduction math from distribution
            5. Take into account all shipment invoices (use Excel again)
            6. Compare inventory counts with Quickbooks
            7. Go through warehouse to do a secondary hand count
         2. After solution implementation (total: 2)
            1. Scan barcode to deduct/add quantity as it comes in so on hand count
            2. Choose appropriate folder if necessary
      2. Number of employees able to carry out the process
         1. Before solution implementation: Previously, only one person (Jon) was able to access Quickbooks and manipulate the inventory. He was the only person trained to use the software and the only technical staff member with access to Quickbooks.
         2. After solution implementation: There can be as many employees/volunteers trained as Jon sees fit. One configuration would be to train each volunteer who heads an assembly line, so they can scan each box as it's assembled.
3. Observable actions that can be completed in Sortly that were not capable in Quickbooks
   1. Measure the number of unique actions that can be completed in Sortly that Jon is not able to do in Quickbooks
      1. Scanning functionality
      2. Assembly creation
      3. Generate report in less steps
      4. Inventory management through counts or weight
      5. Assign price for item
      6. Search functionality

# Final Project Deliverables

1. Github repository with all documents
2. Documentation of Sortly actions
3. Software analysis
4. Sortly software with inventory data
5. QR barcodes pdf for a portion of the inventory (what do the QR barcodes take you to?, inventory encompasses just food donations)
6. Background research
7. Possible solution research

Our final project deliverables consists of our Github repository that holds all of our documents.

Our **documentation of** **Sortly functionalities** can be found under this link. Sortly is an inventory scanning software solution that we decided to implement within the organization. We documented all of the functionalities that Jon needs to use during the inventory and assembly process. Our **scanning software analysis** includes pricing, pros/cons, and functionalities of the top three inventory scanning softwares we found. The **Sortly software inventory data** includes all of the current GWCFB inventory which have been uploaded to the official Sortly account. The **QR codes pdfs** are created for a portion of the inventory. These QR codes allow for mobile scanning capabilities and can be printed out and used at any time. Our **background research** and **pre-existing software solutions research** documents includes all of the initial research we used to help us choose a final scanning inventory software solution.

All documents can be found on the GitHub repository at <https://github.com/mdunaevs/GWCFB>

# Recommendations

Using the documentation we created, GWCFB should prioritize training other employees on how to use the Sortly software. The largest risk that the organization currently faces is the fact that Jon is solely responsible for maintaining the software. In a situation where Jon is not able to control the system, other employees need to be prepared to take over. Although one could teach themselves how to use the software directly from our documentation, it would be easiest to learn directly from Jon, who should already be familiar with navigating Sortly. Training should include walking through the documentation and explaining how to complete each action. Afterwards, the trainee should use the documentation and attempt to complete all the actions recorded. Once they have a decent understanding of how to do everything, they should focus on completing the actions without the use of the documentation. This should conclude the training, and as always, they should be able to access the documentation if they ever need a quick refresher.

GWCFB employees should use the next month to practice using the software. At the end of June, there will be a data transfer for new inventory. This means that the existing inventory will be completely replaced with new items that are distributed by different providers. Even though this affects the progress our group has made, it serves as a perfect opportunity for the employees of GWCFB to have a “test phase” with the new software. During this time, Jon should prioritize learning how to use the software. He has already mentioned during this next month he will be using both Sortly and Quickbooks. This will allow him to slowly make the transition between softwares, as well as identify any other actions that need to be recorded (if he remembers something in Quickbooks that he didn’t ask us to document and needs to learn how to do it in Sortly). This test phase will serve as a perfect learning curve so that when the transfer happens, the organization will be able to easily move all operations onto Sortly. In the scenario where a new action is discovered and Jon cannot figure out how to do it in Sortly, the help desk comes in handy. From our group's previous experience, it is really easy to set up a meeting with customer support and ask for their assistance on how to do something. It takes 2 minutes to set up a meeting time on an upcoming date, then you simply show up and ask the questions you have.

Implement a streamlined system for creating infrastructure each time a new item is added to the system. GWCFB should create an outline for creating a new item in the system, generating the barcode for that item, updating the counts for it, and applying the bar codes to the physical items. This will be effective for the transition that is happening in June. To speed up the process they should teach their employees about how to produce a new inventory item. This could be done with a word document that could be distributed to the employees that deal with inserting new items into the system.

**Future possibilities**

Tasks a future team could work on:

* Implement handheld scanner technology
* Write a script to create barcode and make item in sortly and print barcode

We were unable to implement the following user story: “As a grocery store owner donating food to GWCFB, I want a simple invoice system so that I can write off the donations on my taxes and balance my own inventory tracking.” This could be solved by implementing a customer-side interface that pulls the reporting data from Sortly and generates an invoice of the goods donated and tallied by the number of pounds given

Advice to future teams: Take into account the technical capabilities of the staff and of the warehouse itself. It may be higher than when we worked with GWCFB, but keep in mind that the number of capable staff members trained in the IT aspects of the organization is very low, in our case only one (Jon).

# About the Team

1. Max Dunaevschi
   1. Max contributed equally to market research, functionality testing, and documentation. He took on the “box assembly” portion of the functionalities and documentation. He was responsible for updating the Kanban board on Github every week by creating, assigning, and marking tasks complete.
2. Shalini Rao
   1. Shalini contributed equally to market research, functionality testing, and documentation. She took responsibility for the “customer history” portion of the functionalities and documentation. She took the role of Project Manager and handled all communication with Jon. Jon expressed a preference for channelling all communication through one person, so Shalini corresponded with Jon via email and scheduled meetings.
3. Blythe Weng
   1. Blythe contributed equally to market research, functionality testing, and documentation. She took on the “item history” portion of the functionalities and documentation. She did a lot of the initial market research by calling other food banks and prospective software.

# Appendix

**User stories (ranked from most to least essential):**

1. As a GWCFB volunteer, I want to save time with the scanning process so that I can keep track of the food we’re distributing without needing to run around the warehouse.
2. As a warehouse manager, I want an automated inventory system so that I can spend less time inputting data and more time improving GWCFB’s information systems to expand with our mission.
3. As an organization board member, I want accurate records from our distributions so that we can make sure funds continue to be allocated to our organization.
4. As a grocery store owner donating food to GWCFB, I want a simple invoice system so that I can write off the donations on my taxes and balance my own inventory tracking.
5. As a GWCFB employee, I want to reduce the amount of expired food that goes unaccounted for so that we can reduce the waste from our donations and purchases.
6. **Background Research**

<https://docs.google.com/document/d/1HScqYAVoAlywHQ4tkuMQ9vQ4cJxK-c_HXnCMY9CI1OA/edit?usp=sharing>

This is a document outlining all the background information of Greater Washington County Food Bank. This includes research about the organization’s mission, key customers, corporate sponsorship, marketing, and partners.

1. **Scanning Solution Research**

<https://docs.google.com/document/d/1H1OAf9mxP_z1Dni4iOCLyego0qvRes_54YANmLG3TmE/edit?usp=sharing>

This is a document outlining the research related to the scanning solution. This includes details about existing systems, standalone softwares, steps required to build a solution from scratch. We also include information on outside food bank interviews asking about their inventory software. We also have information about Quickbooks and its current functionalities.

1. **Software Comparison Analysis**

<https://docs.google.com/document/d/1-kgnouh3LxsS3MZg4oeAuXxwkWKGIJX4hIX42zQ1qmc/edit?usp=sharing>

This was an in-depth analysis comparing our final three solutions. We included details regarding Sortly, Foodbank Manager, and HandiFox. Some of the information in the analysis includes pricing, scanning functionality, features, report functionality, free trial capabilities, and disadvantages. This document was used for presenting our solutions to our community partner which led him to make a decision.

1. **Sortly Inventory Barcodes**

<https://drive.google.com/drive/folders/1DMDycJQk-prmenMOFkWjN_HmLm4ba7Wu?usp=sharing>

PDF of barcodes generated for some of the items in the existing inventory. We worked on creating a few barcodes for items and compiled it into a document to send to Jon. He decided that he wanted to finish creating the barcodes on his own so that he can better learn to use the software.

1. **Sortly actions documentation**

<https://docs.google.com/document/d/15ebI5OD51tilyVFAFJ6mYFNceGSw24dsYnLmKRm_nvg/edit?usp=sharing>

This is a document outlining the actions that can be taken in Sortly. This includes actions related to Vendor History, Item History, Box Assembly, Customer History, Mobile Scanning, Importing CSV files, and Running Item Totals. The actions are recorded step by step with images to help guide the users.

1. **Github repository with all documents**

<https://github.com/mdunaevs/GWCFB>

This is a github repository that contains our final deliverables so that Jon has access to them even after we finish the project. It also contains our project plan which shows all the tasks we completed over the course of the semester.

1. **Scanning Features List**

This is the final feature list that Jon wanted in terms of scanning functionality. We focused on implementing this task flow through the Sortly app.

Distribution:

Scan 1: Upon completion of each box assembly, it will receive a UPC sticker for identification of its contents. Each skid is stacked with up to 50 boxes. Once a skid is complete, either we will scan each box or preferably scan one box and manually enter a quantity to be added to inventory. As the box assembly is added to inventory it will automatically deduct each unit of the assembly from our bulk inventory. (+1 box, -30 units)

Scan 2: As items are pulled from inventory to load onto a truck for distribution, they will be scanned and assigned an order #. This scan will deduct the item or assembly from inventory to create an invoice for the order #.

Scan 3: There are always items being returned to inventory after a distribution. The 3rd scan will simply be a “return” or “adjustment” on the order # so that it is not reflected on the invoice.

Receiving:

Scan 4: As we receive certain items it will be convenient to be able to receive in bulk with a generic UPC and manually enter a quantity.