Syracuse University

ywca IS ON A MISSION

Design and Prototyping: YWCA Data Tool

IST 654 - Information Systems Analysis
Professor Lu Xiao

Group Members:

Name	**Contact Number**	**Email Address**
Niti Saluja	315-751-4752	nasaluja@syr.edu
Ashmin Swain	315-949-9758	aaswain@syr.edu
Rajat Varshney	315-901-9077	rvarshne@syr.edu
Raghav Raheja	315-751-4355	rraheja@syr.edu

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Project Index

Overview

Summary

Processes Completed

The project workflow included different phases, we will go through each of them in order of precedence.

Requirement Gathering

- The group conducted an interview at YWCA office with Ms. Liz Wierbinski in the fourth week of the class. The interview was conducted at YWCA office.

- We used recording and in person conversation during the meeting to create a list of deliverables from the project.

- YWCA team has been really helpful in providing the necessary project documents required for the understanding of the organizational workflow.

- The team used combination of interview, observation, existing documents and discussion amongst the team to unlock the solution for the organizational problems.

Planning

After carefully going through the documents provided by the organisation and listening to the voice recordings during the meeting. The team mapped down the project plan dividing work amongst the team and creating a project timeline, the team answered some crucial questions while creating the project plan:

- Time duration of each task
- Person responsible for the task
- Steps performed for each task

Analysis

The team analyzed the current system for each program and listed down the common functionalities in each of these tool to optimize the memory usage in the integrated system. We tried to focus on some high level functionalities of the organisation, these include:

- Data Gathering
- Data Aggregation
- Generate Visualization
- Report Generation

Design

We used different information system analysis concepts like use case diagrams, activity diagram, sequence diagram, data flow diagrams and Entity relationship diagram to create an infrastructure for designing the final system. Additionally we used paper prototyping to create a skeleton model for the system.

Implementation

We used Microsoft Excel for the actual implementation of the tool where we integrated three of the program run by the Nonprofit, i.e. Girls Inc., STYA, Women's residence. We used macros to create a user forms for better entry of the data, we focused on excel functions like Offset, Lookup, SumIf, etc. to create an automated reporting sheet. We also created a training manual for easy transition of the organisation from already existing tool.

Current Status

The team has successfully addressed majority of the issues faced by the NGO, these can be listed down as follows:

- Inputting of data from user forms
- A common data tool for all the three programs run by the Non-Governmental Organisation (NGO)
- Creation of the data charts for projecting achievements
- Training Manual for smooth transition to the new System

Open Issues/ Suggestions

- The forms cover a lot of data that can be derived from other question. These can be reduced to reduce the size of the form.
- The attendance for events is not projected in the final report. It will be easier to note down the number of attendees instead of the attendance if the final projection is "Number of Participants".
- It will be easier to map Income if it is a number, instead of a range. If it is difficult to find the exact amount, every range should be allocated a specific amount (like an average) so that the projection becomes easier.
- There are a lot more analysis that can be done from the data collected. It will depend on requirements from the sponsor. However, mapping individual beneficiary will help access growth from bottom to top. These mappings can be used as case studies in the sponsor report (qualitative analysis).

- The report generated currently focus a lot on numbers and are a little difficult to understand. It will be beneficial if the data can be represented in form of infographics for better visibility and design. It will also make the report concise and efficient.

Design Description

<u>Use Case Overview</u>

After having the discussion and going through the documents sent by the organisation, we all brainstormed to figure out the major events in the whole process. We listed down all the events in a chronological order. It can be depicted as:

1) Registering a new beneficiary and collecting his/her details on a physical form.
2) Entering the details of all the beneficiaries into the system.
3) Receiving requirements from the funder and the Executive Director for data.
4) Generating graphical visualizations to depict the progress of the organisation
5) Submitting the report to the funder or the Director

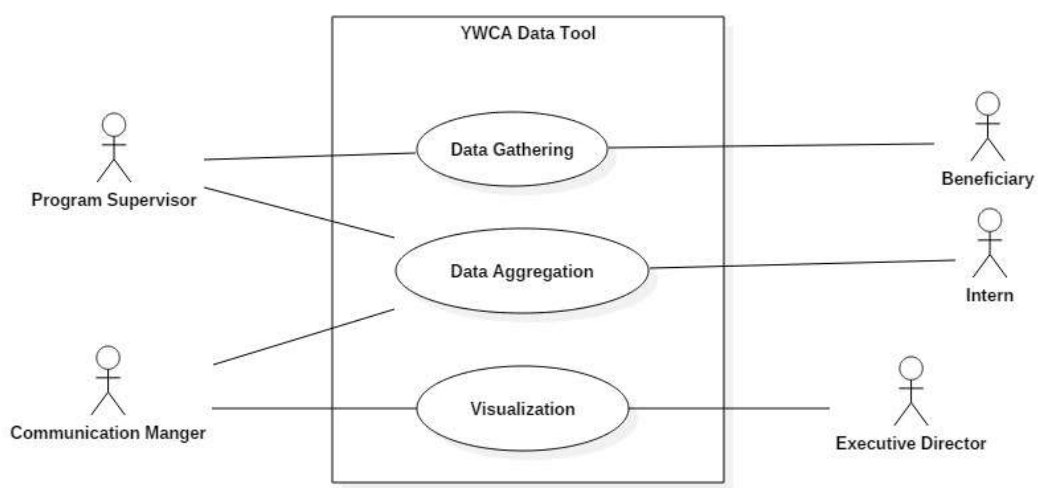
In this we have added one more activity that is missing and is important for the organisation i.e. training the existing employees using training module.

6) Using Training module

The list mentioned above covers the overall working of the organisation in terms of the tasks that are necessary for the organisation in our perspective. When we tried to study these activities, we could put them in different baskets of:

1) Data Gathering (Register beneficiary and data entry in the system)
2) Data Aggregation
3) Visualization

Based on this, we selected our Use Cases because we feel that these are the main events in the organisation that takes place and they cover the overall picture



Data Gathering

- **Who will use the form?** The user form is used by the program supervisor to collect data about the beneficiary.
- **What is the purpose of the form?** The user form is used by the Communication Manager to pass it on to the intern for further generating reports for the funders.
- **When is the form needed, and used?** The form is needed whenever there is a new beneficiary who wants to register for a specific program.
- **Where does the form needs to be delivered and used?** The form needs to be delivered to the communication manager where it will be used by the intern (as assigned by the manager) to input data into the YWCA tool.
- **How many people need to use or view the form?** The user form needs to be used by the program supervisor to gather data, but it can be viewed by all the members of the organisation.

Sample Design


Girls Inc @ YWCA Syracuse
Registration Form

United Way ywca girls inc.

Hoops & Dreams 2017 Registration Form

Parent/ Guardian Name___ Email___

Address___ City| State | Zip___ Phone___

Daughter Name___ Age___ School___ Grade___

□ Yes, there will there be more than one child attending!

Daughter Name___ Daughter Name___

Age___ Age___

School___ Grade___ School___ Grade___

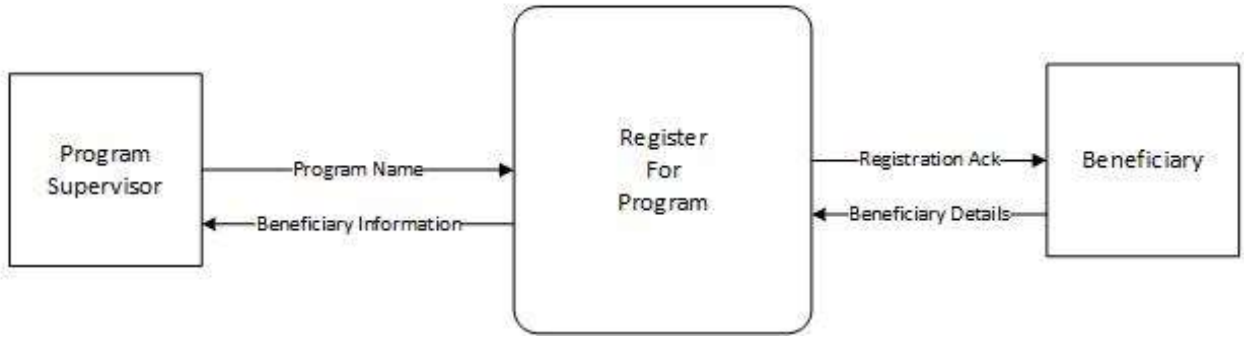
□ In case of illness or emergency, I understand that every effort will be made to contact emergency contact listed below.
□ If no contact can be made, I hereby give authorization to the above stated organizations to seek medical treatment and if needed arrange for transportation.
□ My daughter/dependent may participate in photographs, video tapes and/or audio recordings for Girls Inc at YWCA Syracuse & Onondaga County. I understand that such items shall be the property of the aforementioned programs.
□ I understand that a healthy snack will be provided and that I will be responsible for providing my daughter/dependent a bagged lunch each day.

I understand and give my permission for all of the above.

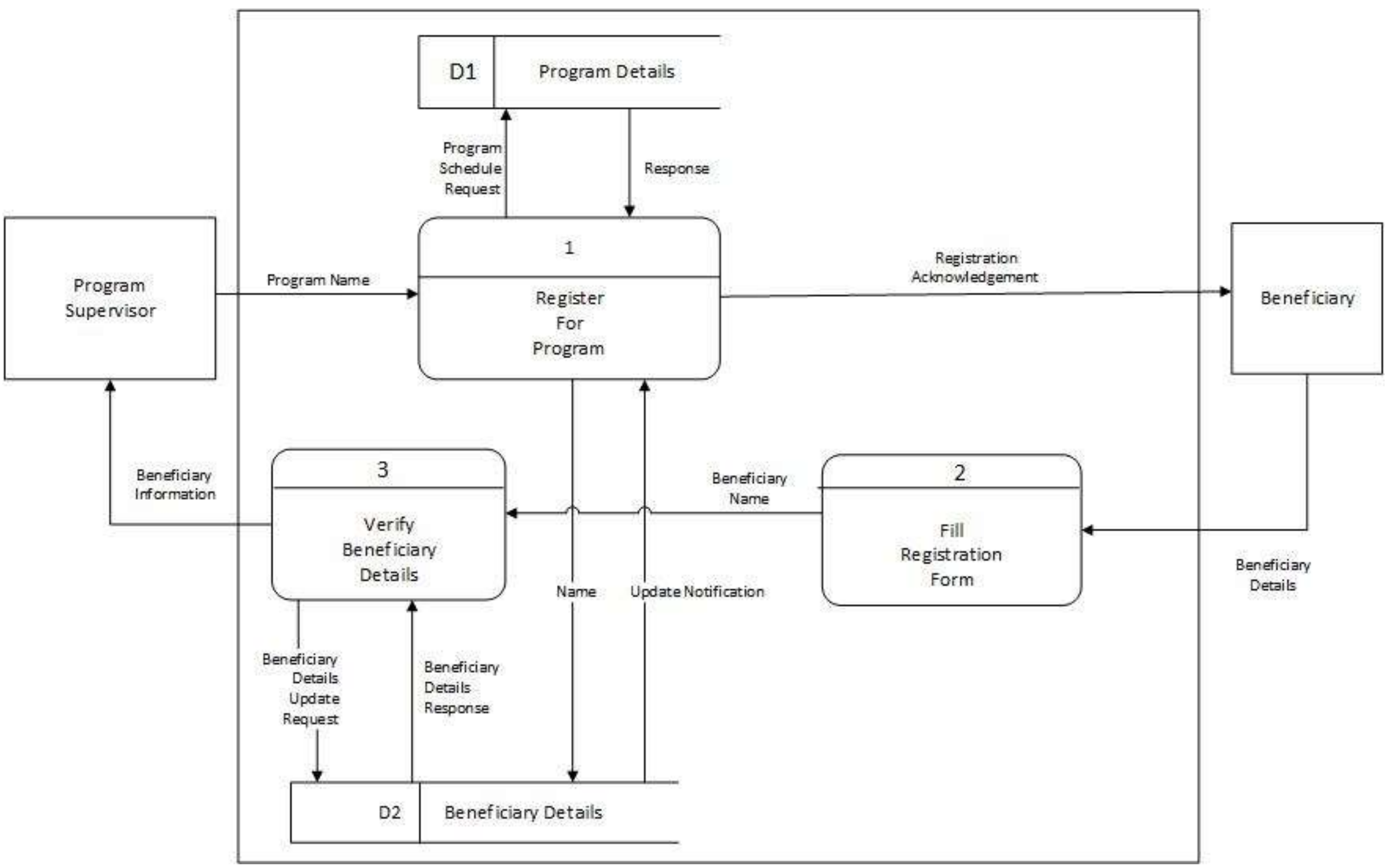
Use Case Diagram

Use Case Title: Data Gathering
Primary Actor: Beneficiary, Program Supervisor
Level: Sea Level
Stakeholders: Department Manager, Beneficiary, Executive Director,
Precondition: Interested customer should able to get in touch with the YWCA Manager.
Minimal Guarantee: Registration Forms are filled with the beneficiary details.
Success Guarantee: Data is successfully entered in the excel sheets.
Trigger: A new beneficiary arrives at YWCA or existing beneficiary wants to register for a new program
Main Success Scenario: 1. New beneficiary fills in the initial registration (answering name, address, race, gender) form for the selected program. 2. The beneficiary's identity proof is verified by the Supervisor. 3. The Supervisor confirms the successful registration of the beneficiary. 4. The Supervisor then provides the beneficiary with a complete schedule of the program and the upcoming events. 5. The Program Supervisor provides the bunch of registration forms to the intern. 6. The interns manually enter the customers information to the excel sheets depending on the program names.
Extensions: 1) The Program Supervisor falls short of Registration forms for a specific program a) The Supervisor checks with other staff members for the availability of forms. b) The Supervisor gets new forms printed for the customer. 2) The Beneficiary does not have the identity proof while registration a) The Program Supervisor tags the Beneficiary's registration form as "Document Verification Pending". b) The Supervisor requests the beneficiary to check his email for the availability of softcopy of the required documents. 3) While the interns try opening the excel sheet for data entry, excel does not open a) Clicking on excel file, the file shows an error saying there is something wrong with the excel file. b) Supervisor checks the expiry of the software, verify the format in which the file was saved or contact an external expert to resolve the issue.

Context Diagram



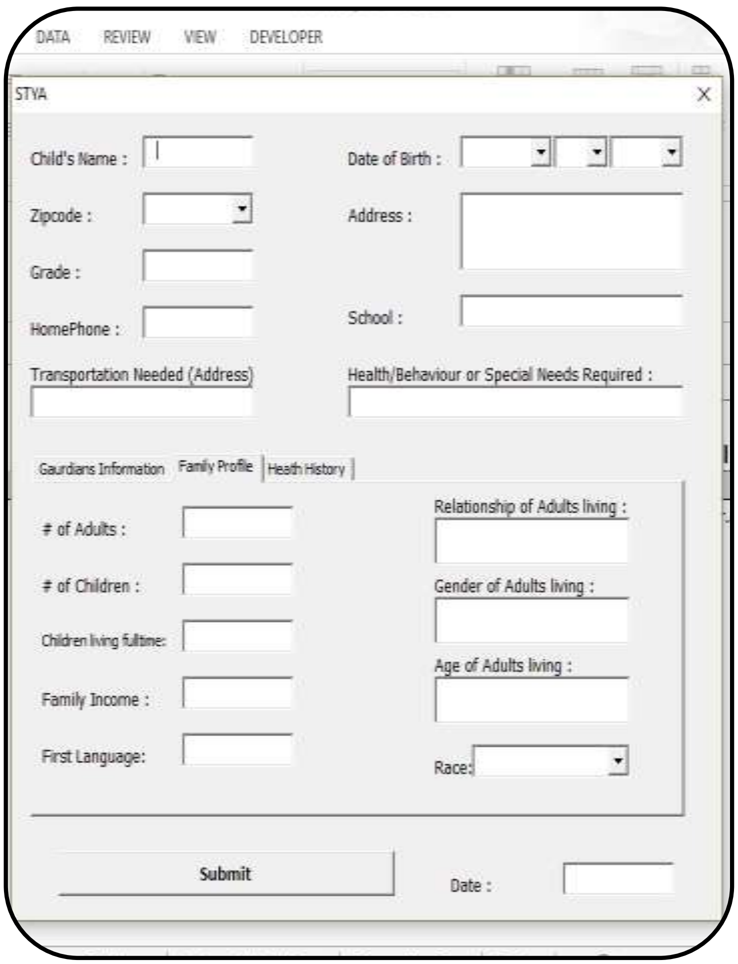
Data Flow Diagram



Data Aggregation

- **Who will use the form or report?** The intern will use the form to fill the data into the tool.
- **What is the purpose of the form?** The form is used to integrate all the data and finally use this to create visualizations.
- **When is the form needed, and used?** The form is needed to map the success of the organizational activity. Additionally, it helps to generate reports for the funders.
- **Where does the form needs to be delivered and used?** The form needs to be delivered to the communication manager when the data entry is complete, so that the communication manger can use it to create visualizations for the report.
- **How many people need to use or view the form?** The data entry form needs to be used by the intern to input data into the excel sheet, but it can be viewed by all the members of the organisation.

Sample

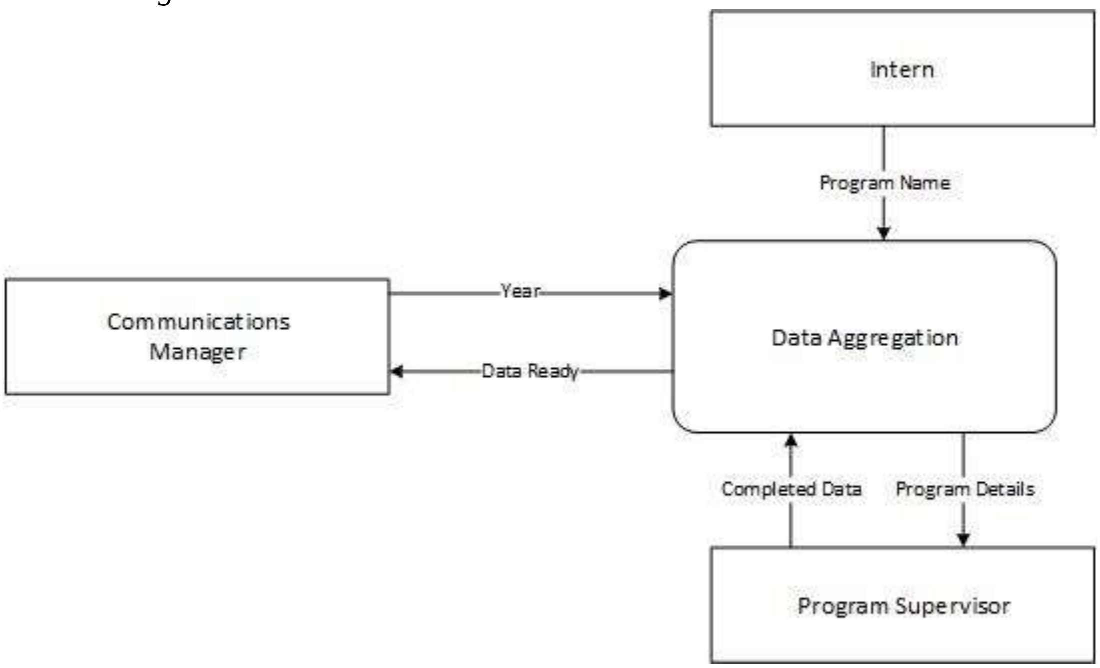


We can Input Data Manually by pressing the "STYA Data Entry" button on the top left. Similarly for all the programs in other sheets

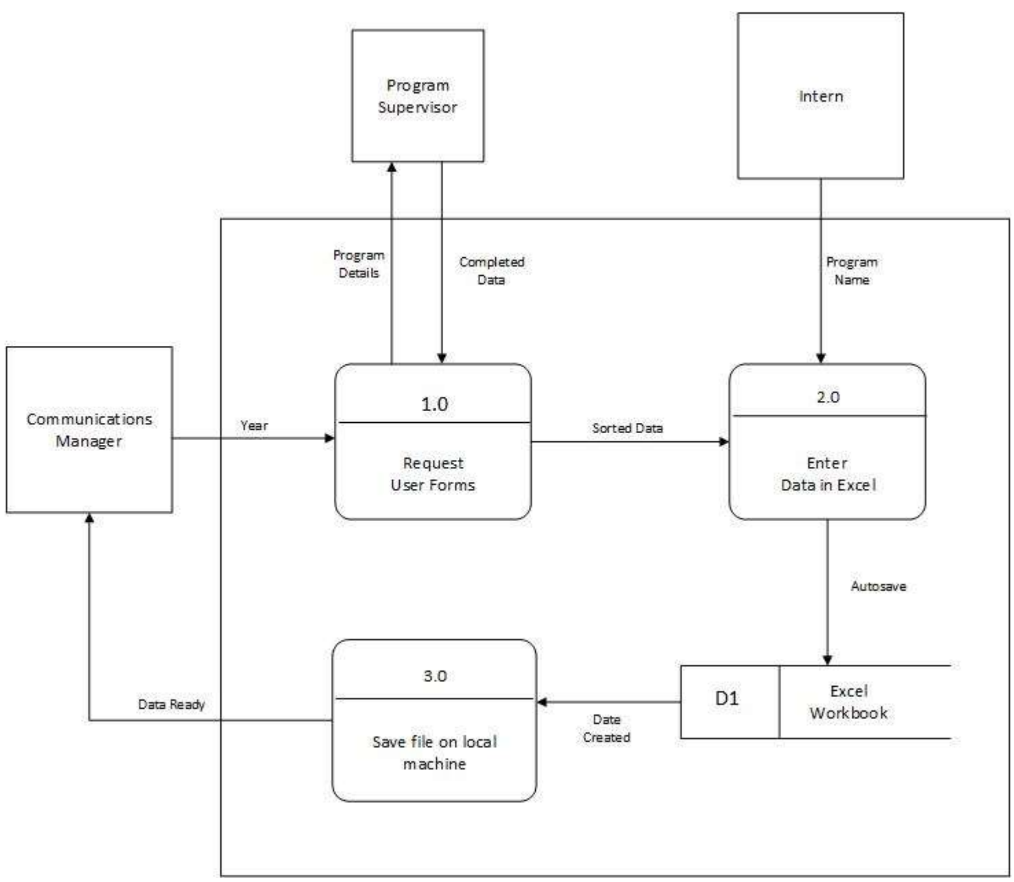
Use Case Diagram

Use Case Title: Data Aggregation
Primary Actor: Development and Communication Manager, Program Supervisor, Intern
Level: Sea Level
Stakeholders: Executive Director, Development and Communication Manger, Funders
Precondition: Program Supervisor has collected data on physical user forms
Minimal Guarantee: Data is consistent even if Excel stops working abruptly
Success Guarantee: Data entered in the Excel workbook
Trigger: Report Request
Main Success Scenario: 1. Program Supervisor collected all the data on physical user forms. 2. Communication manager requests for all the user forms from the program supervisor. 3. Communication Manager assigns an intern to input data into the database. 4. Intern requests permission to use YWCA data tool designed by Syracuse Interns. 5. Intern segregate the user forms based on different programs. 6. Intern opens the excel file, a new session is created. 7. Intern opens the program specific sheet to enter for that program. 8. Interns repeat the step until he/she is finished entering the data for all the programs. 9. Intern cross verifies that the entered data is correct. 10. Intern saves the excel workbook with the current date as the file name. 11. Inter inform the communication manager of the fulfillment.
Extensions: 1) Program Supervisor collected all the data on physical user forms a) Data collected by program supervisor has missing data b) Program supervisor misplaced some user forms 4) Intern requests permission to use YWCA data tool designed by Syracuse Interns a) Intern does not understand the working of the tool b) Intern does not understand the training manual 6) Intern opens the excel file, a new session is created a) Excel might not open due to insufficient memory b) Excel not responding due to the processor speed

Context Diagram



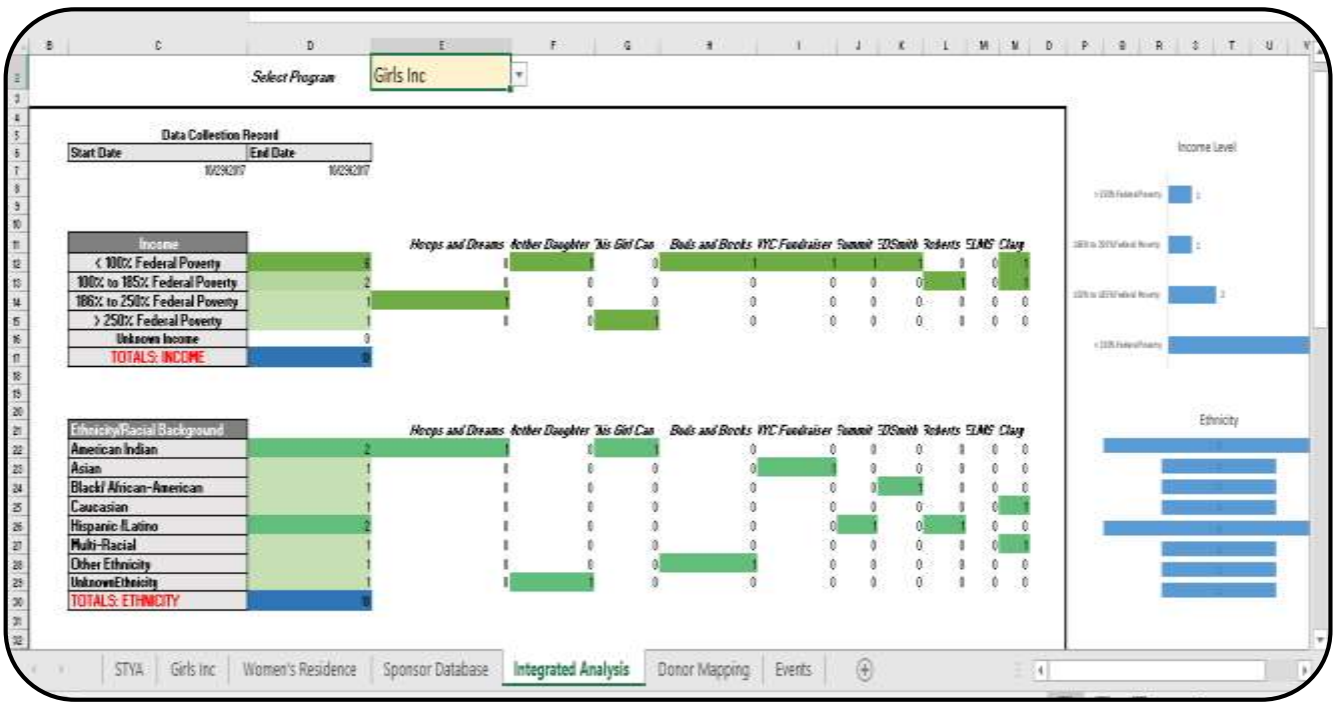
Data Flow Diagram



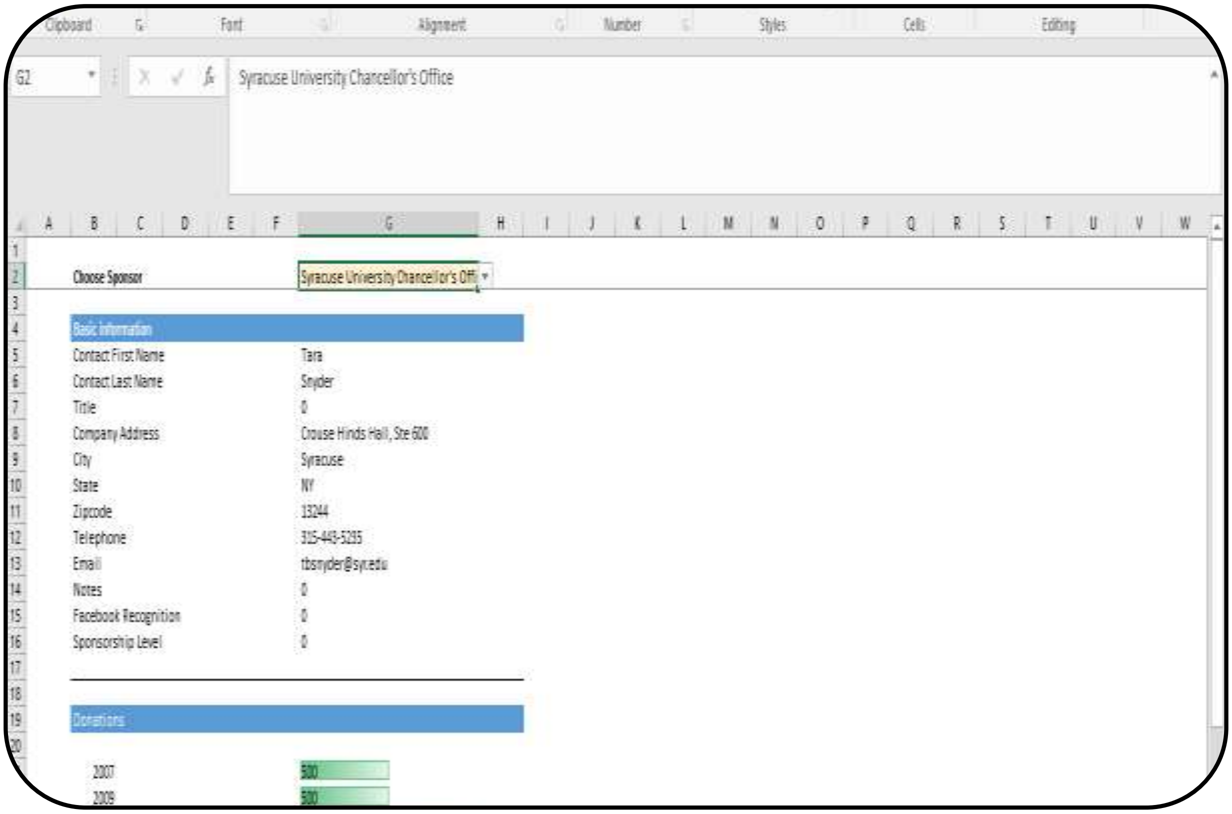
Visualization

- **Who will use the report?** The visualization in the report will be used by the executive director and the funders to map the development of the organisation.
- **What is the purpose of the report?** The purpose of the visualization in the report is to enhance the internal working as well as maintaining a continuous relationship with the funders.
- **When is the report needed, and used?** The report is needed depending on the request of the funders, it might be once in a year or might be once in a quarter.
- **Where does the report needs to be delivered and used?** The report needs to be delivered to the executive director which will be further circulated to the funders. This will be used to enhance the funding from the already existing funders and get new funders based on the programs run by the organisation.
- **How many people need to use or view the report?** The report will be used by the executive director to access the different programs run by the organisation. Additionally, it will be used by the funders to map the development in the society from their funding.

Sample



The Analysis and visualization can be generated by selecting the program from the dropdown on the top



Donor Details can be mapped in the donor mapping sheet by selecting the name of the Donor from the dropdown on the top

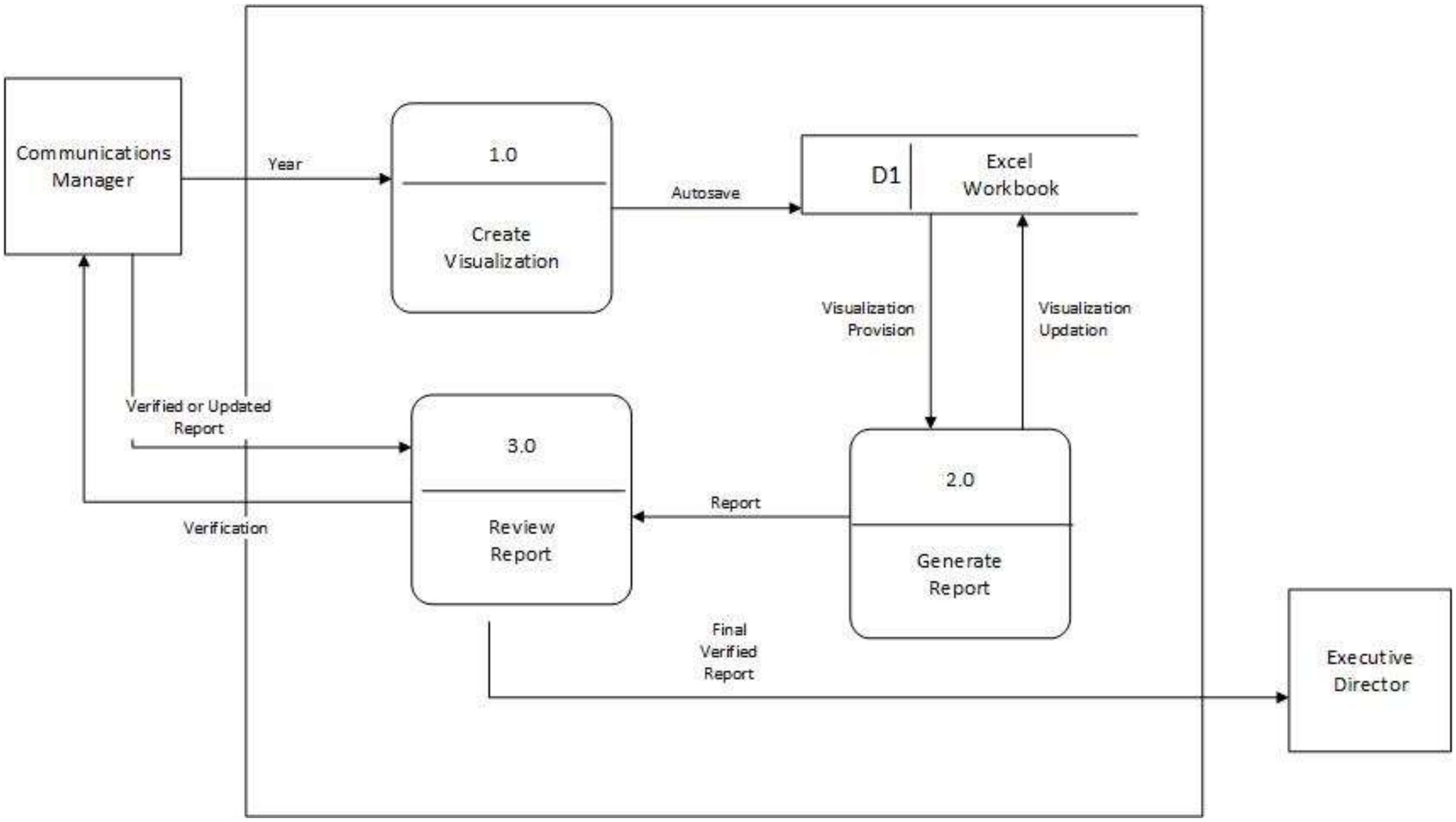
Use Case Diagram

Use Case Title: Visualization
Primary Actor: Development and Communication Manager, Executive Director
Level: Sea Level
Stakeholders: Executive Director, Development and Communication Manger, Funders
Precondition: Development and Communication Manger should have data loaded in Excel
Minimal Guarantee: Data is consistent even if Excel stops working abruptly
Success Guarantee: Proper visualization of the collected data
Trigger: Report Request
Main Success Scenario: 1. Manager receives the Excel fill with completed Data. 2. Session time created when the manager opens the excel sheet. 3. Manager loads the data in the excel workbook. 4. Manager selects the domain sheet from the excel workbook to see all the parameters. 5. Manager selects from the program option from the drop down in the analysis sheet to develop charts for that specific program. 6. Manager add filters or specify further details to be shown in the graph (e.g. Total number by age, total number by race, and so on). 7. Manager adds aesthetics to the visualization (changing colors, increasing/decreasing the size of the chart, adding/removing legends, and so on). 8. Manger copies the chart and paste it into the qualitative report for further presentation.

9. Manager closes the excel sheet; excel sheet ask to save the file or not. If no, the original file is saved without visualization and the session expires. If yes, the new file with visualization is saved and the session time expires.
Extensions: 2) Session time cannot be created or excel does not open a) Clicking on excel file does not open or shows an error saying there is something wrong with the excel file. b) Manager checks the expiry of the software, verify the format in which the file was saved or contact an external expert to resolve the issue. 3) Data not getting loaded in excel workbook a) Manager gets a message saying that the file is corrupted. b) Manager tries to load the earlier version, it works. c) If the earlier version does not work, data has to be entered again. 7) Copy and Pasting the data changes the data in the qualitative report a) Once the manager paste the visual chart created on excel, the aesthetics of the chart might change. It might also happen that changing the filters in excel will affect the chart in this report also. b) Manager changes the template of the qualitative report that changes the aesthetics of the charts. c) Manger closes the report file and then add filters on the excel chart, the data is not affected.

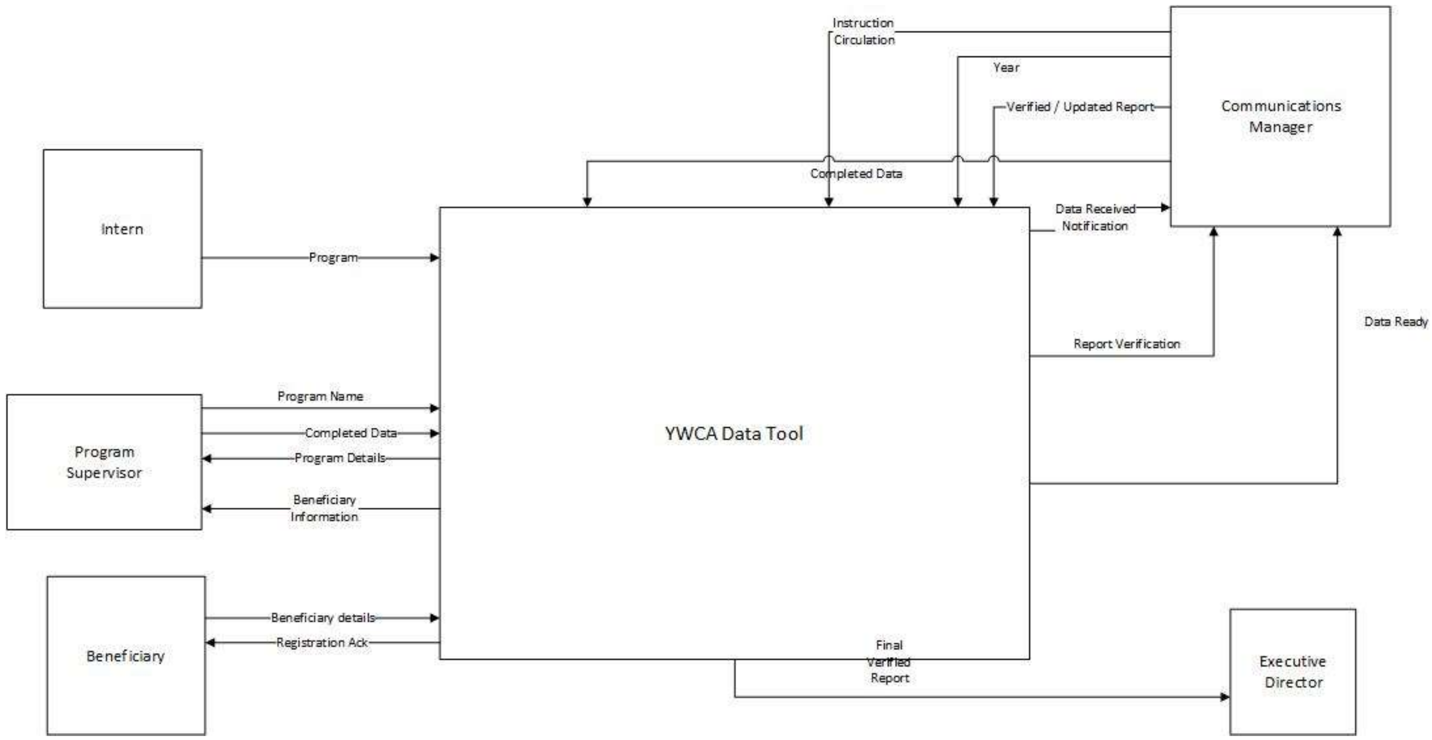
Context Diagram

Data Flow Diagram

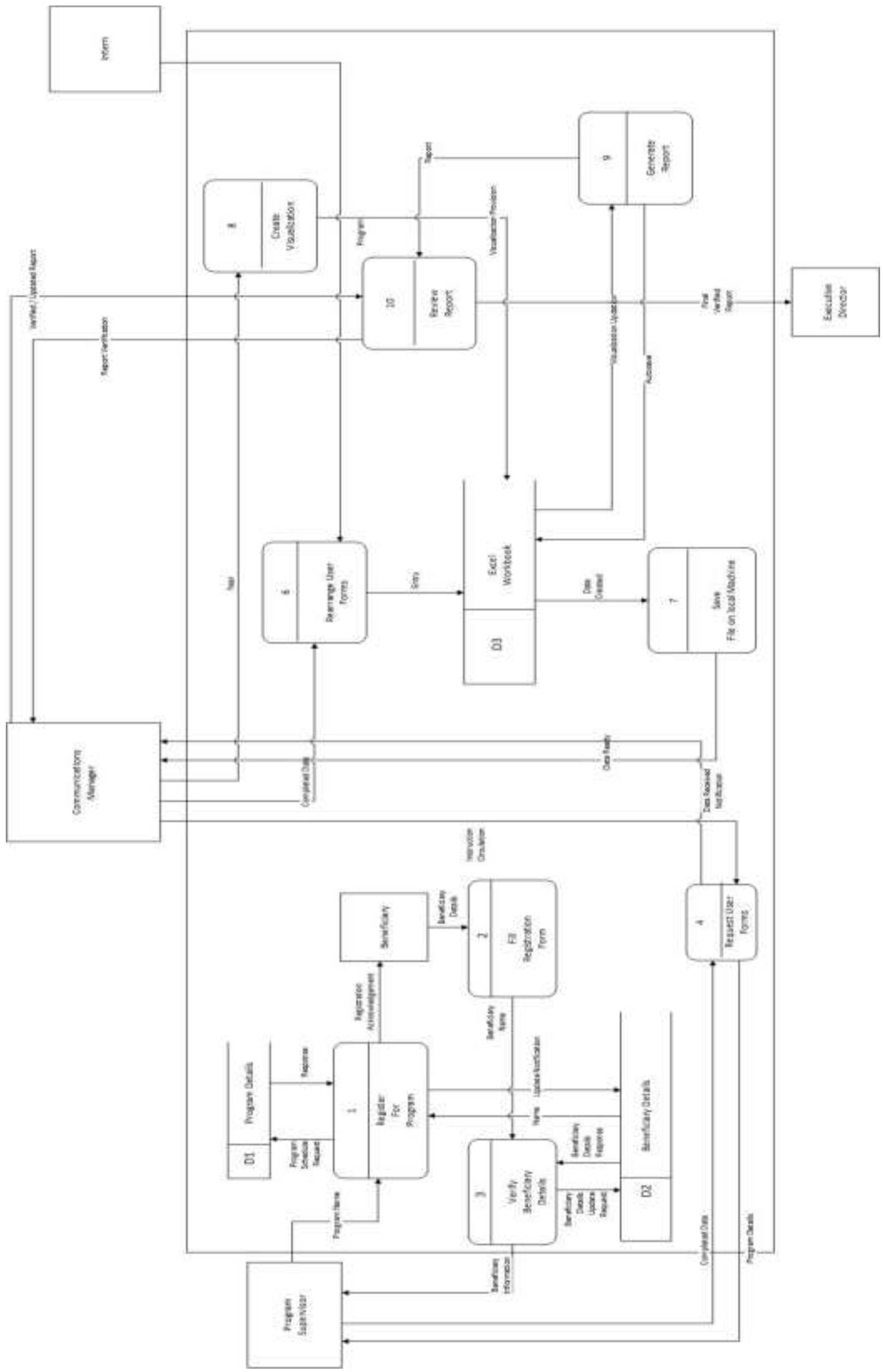


Integrated

Context Diagram


Instruction Circulation
Year
Verified / Updated Report
Communications Manager
Completed Data
Data Received Notification
Intern
Program
Data Ready
Report Verification
Program Name
Completed Data
YWCA Data Tool
Program Supervisor
Program Details
Beneficiary Information
Beneficiary details
Beneficiary
Registration Ack
Final Verified Report
Executive Director

Combined DFD



Additional Directives

It is recommended that when the user wants to paste some data, there is an option under file "Paste". Use this function to paste as value, otherwise any subsequent change in the filter will change the data copied from the original place. A shortcut for doing this is Alt+H+V+V.

In case the user wants to add additional years in Donor Sheet and wish to wish to map it on the "Donor Mapping" sheet. The steps are mentioned as follows:

1. Open the Excel Workbook.
2. Open the "Sponsor Database" sheet.
3. Select "Review" from the taskbar.
4. Choose "Unprotect Sheet" using the password to edit the sheet.
5. Go on the last empty column and write the year you wish to add (for example 2018).
6. Now, go on sheet "Donor Mapping" and follow the 3rd and 4th step again.
7. Go on the last empty row in column "B" to add the year to be mapped (2018)
8. Go on "G21" and press "F2" and copy the whole code. The code will look something like this:

   =VLOOKUP($G$2,'Sponsor Database'!$A$3:$V$1000,'Sponsor Database'!$L$2,0)

9. Paste the code in front of the year you just entered. In this code, replace the alphabet V with the alphabet where new year has been added, similarly, replace L with the alphabet where user is entering the new year in the sheet "Sponsor Database".
10. To rectify the uneven formatting of the chart on the cell, go to "Home" and select conditional formatting and choose the third option from data bars.

Annexure

Interview Outline

Interviewee: Ms. Liz Wierbinsk	Interviewer: Raghav and Rajat
Location/Medium: YWCA OFFICE	Appointment Date: 09/22/2017 Start Time: 12:00 PM End Time: 12:45 PM
Objectives: 1. Understand the working of the organization 2. Get more clarity on the expectations from the project 3. Develop a timeline of the process	Reminders: 1. Ask who uses the data 2. What is the data used for?

Agenda:	Approximate Time:
Introduction	4 min
Clarity on the project	3 min
Overview of Interview	
1. About the Organisation	3 min
2. Present State of data	2 min
3. Current Problems	2 min
4. Desired State	2 min
5. Objective from data	2 min
6. Success Metrics	2 min
7. Identify who will use it	2 min
Summarize the understanding	3 min
Questions from Interviewee	3 min
Close	1 min

About the Organisation

1. What all activities does the organisation perform?
2. How many members are there?
3. What is the hierarchy/How does information flow in the organisation?
4. Any specific incident that you would want to share?

Present State of data

1. Who uses this data?
2. What form of data is collected currently?
3. How is it collected?
4. How do you use this data?

Current Problems

1. What was the most frustrating moment interfacing with the system?
2. What do you think about the current system?
3. What problems should the new system solve?
4. Do you see any areas where data gathering is difficult?

Desired State of Data

1. How would you like information to be captured?
2. What functionalities do you need from the system?
3. Who will have access to the data?
4. Is the decision metric already decided?

Objective from Data

1. What is the reason behind getting this system?
2. What is expected from the system?
3. How is the data supposed to look after capturing?
4. How is the data projected? (Tables, graphs, and so on)

Success Metrics

1. How is the metrics decided?
2. What is to be accomplished to make this system a success?

Identify who will use it

1. Identify the users/administrator?
2. How much technical knowledge do they have?
3. How much are they open to learn?
