Department of Information Systems
Project Management *(INF3011F)*

May 2019

Project Report

Homelessness Management System

presented to

By

Team SALT
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The UCT Knowledge Co-op facilitated this collaborative project.
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1. We know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

2. This Business Case Document is our own work.

3. We have not allowed, and will not allow, anyone to copy our work with the intention of passing it off as their own work.

Team Member Name: Shivek Iyer …………...Signature:…………….. Date: 03/05/2019

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1. Background

The Observatory Improvement District was established in July, 2009 after commercial and residential property owners in Observatory partook in a public vote that saw the area becoming a Special Rating Area in an attempt to improve the physical and social conditions of the area.

A Special Rating Area (SRA) or City Improvement District (CID) is a "non-profit organisation operating within a defined geographic area within which property owners agree to pay a levy for supplementary and complementary services set to enhance the physical and social environment of the area." [1]

These services are provided in addition to the services rendered by the City of Cape Town and are known as top up services. The three core services provided are:

1. Cleaning
2. Public safety
3. Social development

In addition to these three core services, which all CIDs offer, OBSID also facilitate projects to foster business development, support Observatory's strong artistic community and pay homage to the area's rich heritage.

2. Introduction

This project will focus on the Social Development programme at OBSID which offers information, referral and support to the homeless, and assists them with access to shelters, rehabilitation programs, and grant applications. In order for this service to work effectively, it need to store data efficiently and allow collaboration with OBSID's partner organisations such as Loaves and Fishes and . The project will greatly focus on improving the capturing, storage and reporting of user data in a way that promotes inter-organisational collaboration and unification of cross-organisational resources.

3. Problem Definition

One of the main issues at OBSID is the inability to generate useful reports and statistics with the data storage system they currently have in use. Both solutions provided in this document will help OBSID better understand the homeless population as well as provide them with better support and care by employing methods which enable OBSID to visualise the data which they capture, and gain invaluable insight into trends and patterns amongst the homelessness.

[1] CIDs. Retrieved March 17, 2019, from http://cityimprovement.co.za/wordpress/

Another big issue is the fragmentation of data across the different partners which try to help the homeless. This results in multiple people from different agencies obtaining data from the same homeless person; subsequently, that data gets stored in different databases. This inefficiency will be addressed in solution two.

Lastly, a requirement raised by OBSID is the need for incorporation of permissions in the solution. The breakdown of permissions is that the field agents may enter baseline inputs only, full records should just be seen by Social Development Managers, and administrative staff must only be allowed to see limited fields. Records must be confidential as to protect and respect the privacy of the homeless.

4. Business Objectives

The business objectives of OBSID are as follows[2]:

- Develop and sustain a safer, cleaner and smarter public space throughout Observatory.
- Nurture the unique ambience, charm and diversity of Observatory village as a meeting place of artists, intellectuals, professionals, workers, residents and visitors.
- Contribute to a commercially attractive, artistically vibrant, ecologically sustainable and family-friendly environment.
- Foster cooperation between residents, ethical businesses, other stakeholders and the City.

5. Assumptions and Constraints

Constraints:

- Bandwidth/Data consumption: OBSID have a low budget. Therefore, the web-application will need to be efficient in terms of data consumption.
- User-friendly: OBSID staff are not very tech-oriented. Therefore, the web-application will need to be user-friendly and easy to use.
- Compatibility: The solution .

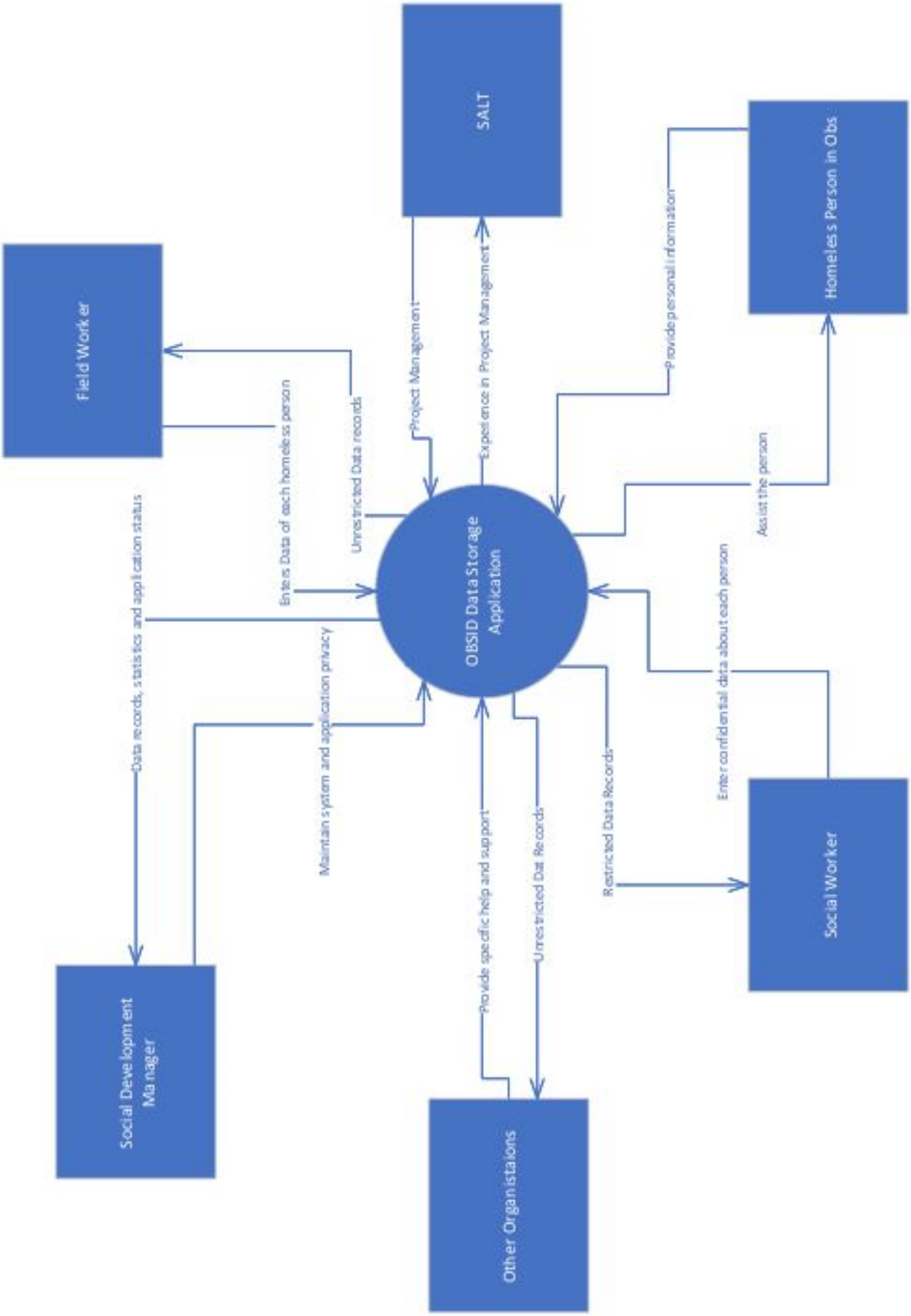
Assumptions:

- We will assume that OBSID will purchase the necessary devices to run the new system.

[2] As per the official mission statement of OBSID: http://obsid.org.za/special-rating-areas-info-map/

6. Stakeholder Analysis (context diagram)

Below is the stakeholder analysis table



7. Solutions

7.1 Solution 1

This solution uses in-house resources to improve the current system of data capture, collection and analysis by OBSID.

Google Cloud Services and Trello

This solution entails using the existing infrastructure being used at OBSID and may be implemented within a short period of time. OBSID recently migrated to Microsoft 365 Suite from Google Cloud Services, and therefore it is essential to see the differences between both services for the solution.

Findings

Requirement	**Google Services**	**Microsoft Services**
Forms	✔	✔
Editable Forms	✔	✘
Linking with Spreadsheet	✔	✔
Subscription	Free (15gb)	Premium

Figure 1: Features of Google Services vs Microsoft Services

Due to limitations within Microsoft 365 Suits which are essentially for form capturing (editable forms as shown in figure 1), a pilot Google Cloud Services will be used for the data capture and Trello for communications between the administrator and the social workers.

Solution

Field workers use the First Contact Form which is made in Google Forms (figure 2). It has all fields as they are in the paper-based capturing process. In addition, the fields have various options such as using checkboxes and/or radio button for quick selection, other fields for any options not in display and data validation such as length of ID number to minimize errors.

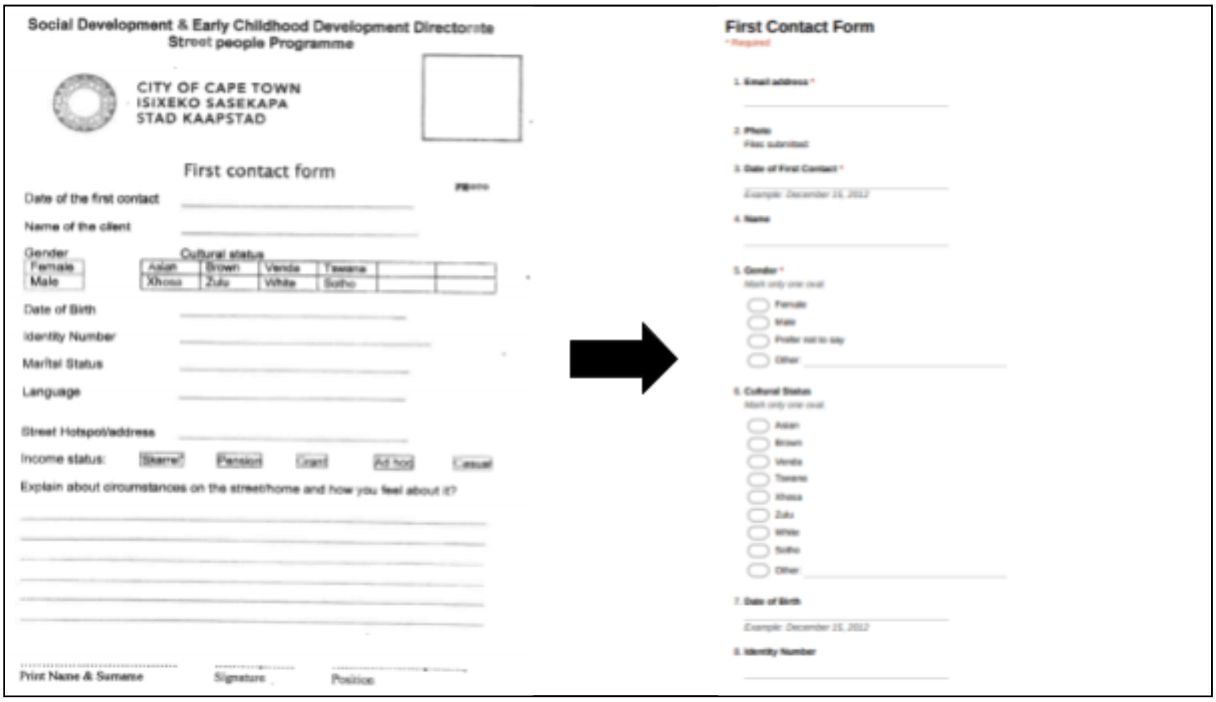


Figure 2: First Contact Form

Field workers receive a copy of the form they submit so they are able to edit the responses whenever new information is available to them (figure 3).

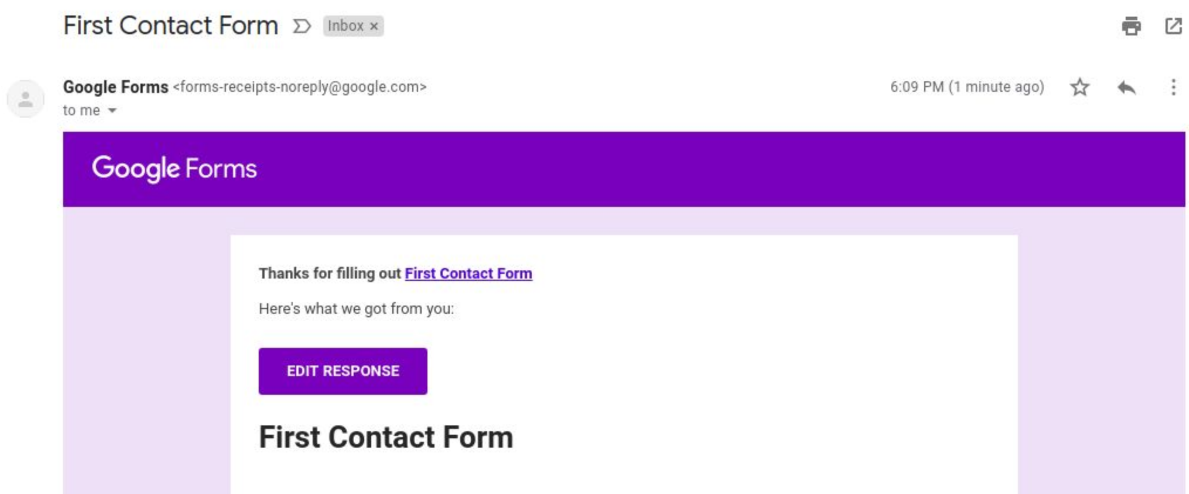


Figure 3: Email received by Social Work of the form submitted

Once the form is submitted, the administrator receives an email notifying of a form being submitted/completed (figure 4).

Figure 4: Administrator receives notification of a new submission

Google forms automatically export the forms responses to a Google spreadsheet (figure 5), the administrator has to add 3 columns (first-time only) to assign a Social Worker and a Drive specific folder for the case.

Columns:

1. Case Number (internally generated)
2. Social Worker Assigned
3. Case Folder (Google Drive Link)

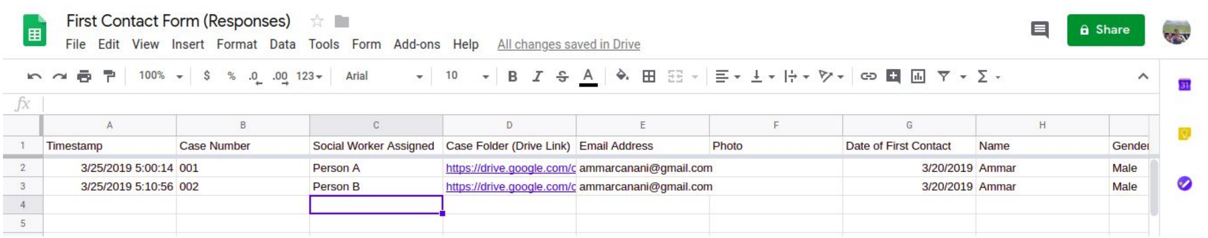


Figure 5: Google Spreadsheet with all responses and the 2 columns added

The admin should create a folder in the drive with case number, download the pdf version of the form submission and add it to the folder, the picture also added to the folder, and create a google doc for the social worker to add case notes to as seen in figure 6.

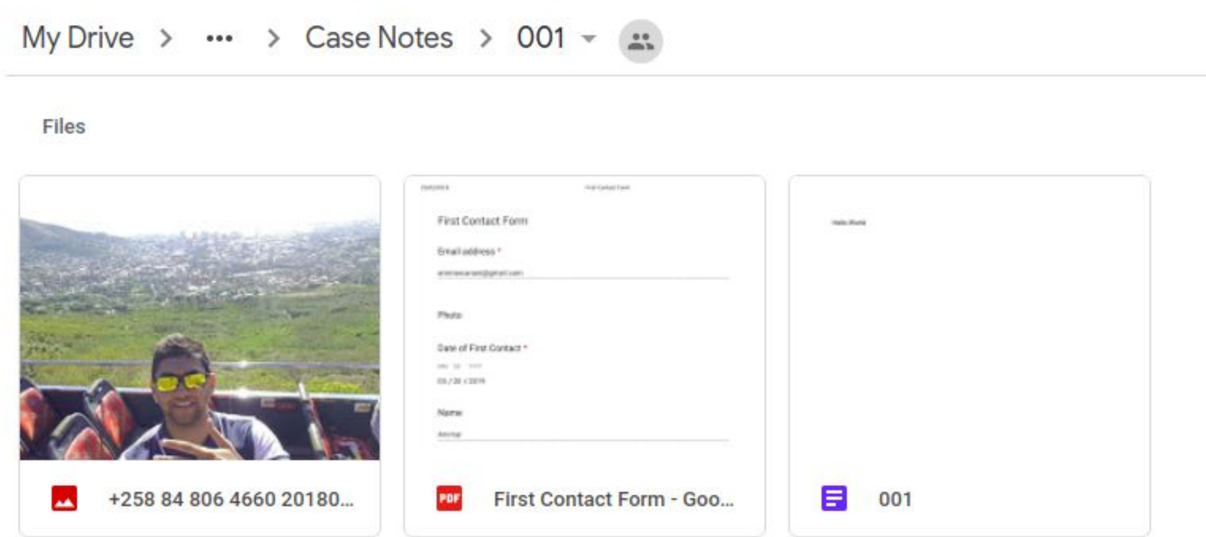


Figure 6: Sample Case Folder 001

The administrator uses Trello to communicate with the Social Worker. The social worker is assigned a board with cases and their descriptions (includes case folder link) and a reminder is added to notify the social worker about the case being assigned. The social worker gets access to that folder only and uses it to record their case notes in the google doc. As seen in figure 7, the administrator assigns a case number to each social worker, links in the description and a time to notify.

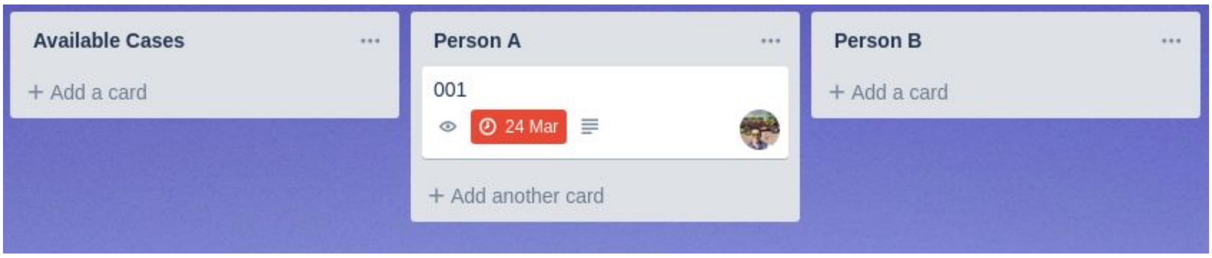


Figure 7: Trello for assigning and notifying social worker

Features:

1. Easy to use and user-friendly
2. Requires little to no training
3. Data saved on the cloud
4. Available on all devices (mobile, tablets and laptops)
5. Allows data filtering by queries (conditions, sorting and filtering)
6. Allows access to other users (limited by Google's access controls)

Limitations:

1. Only a maximum of 10 files are allowed to be uploaded per question on the form which limits the number of pictures to 10.
2. May require some training to get used to the different tools (Trello)
3. Form allows a 1000 responses after which it has to be replicated
4. Requires data to capture information

Future Costs:

It is important to note, for the pilot program, the tools do not require any payment as they are open-source and available for free that meet the requirements of OBSID.

1. After 15gb, 100gb costs R29/month and 200gb R39/month
2. Trello upgrading to business plan costs $9.99/month (about R145/month)

Long-term Additional Feature

If the pilot project is successful, OBSID is growing and will require a database to store, manage and analyze data they are collecting. Therefore, it is recommended to think about add an additional database component to the current solution. This will require further research by the next team that takes the project to understand the needs, requirements and implementation of such a database. Team SALT will not look into this solution due to OBSID having around 250 people they will collect, store. Manage and analyze data of and therefore a database is not needed due to:

1. Time - it will take a lot of time to plan, design and build a database to meet their needs.
2. Value - it will not add value until OBSID has in-house expertise to use the database to its maximum potential.
3. Need - using a spreadsheet will allow sufficient analysis of the data without the need for a database due to the low number of entries of cases.
4. Training - to use a database, admin at OBSID will have to undergo training which may include some technical and software training to learn to effectively use a database.
5. Maintenance - with no in-house expertise, developing a database will not be a viable solution as there will be noone to maintain it and could result to be damaging than valuable to OBSID.

7.2 Solution 2

The second solution entails off-the-shelf, cloud-based solutions which could add value and radically improve the way OBSID capture data, manage case files and .collaborate with other organisations.

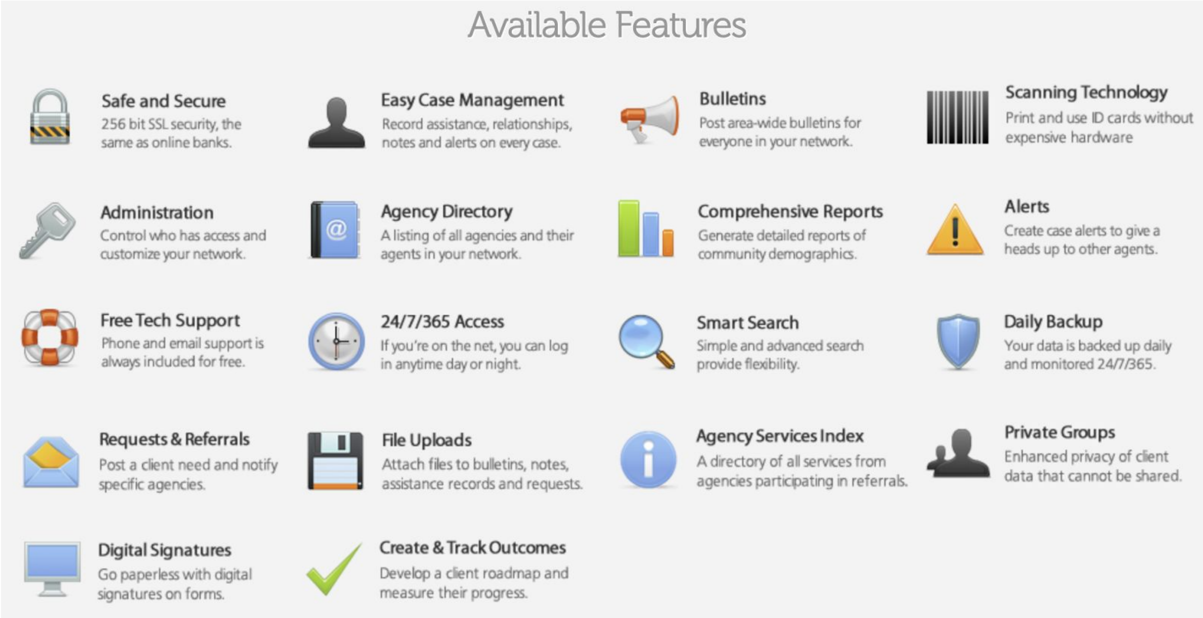
CharityTracker

CharityTracker is an off-the-shelf solution is a SaaS (Software as a Service) application known as CharityTracker. CharityTracker has been specifically designed for Non-Profit Organisations who specialise in case-management making it a notable candidate solution to OBSIDs problem.

CharityTracker offers a range of useful tools which will help to streamline and radically improve the efficiency and ease of both recording and managing client cases. Moreover, the web-based service also promotes collaboration between NPOs in a community by allowing them to share client-related information through a centralised, shared database.

Features:

1. Notifications and community-wide announcements which OBSID can use to notify and alert neighbouring organisations.
2. Data analytics reports, requiring very little technical knowledge, enabling OBSID to visualise their data and view trends.
3. Administration controls allowing OBSID to regulate access and control the permissions of each user.
4. Daily backups which are performed by the cloud service provider.
5. 256-bit SSL data encryption will ensure that OBSIDs client information will remain safe and secure.

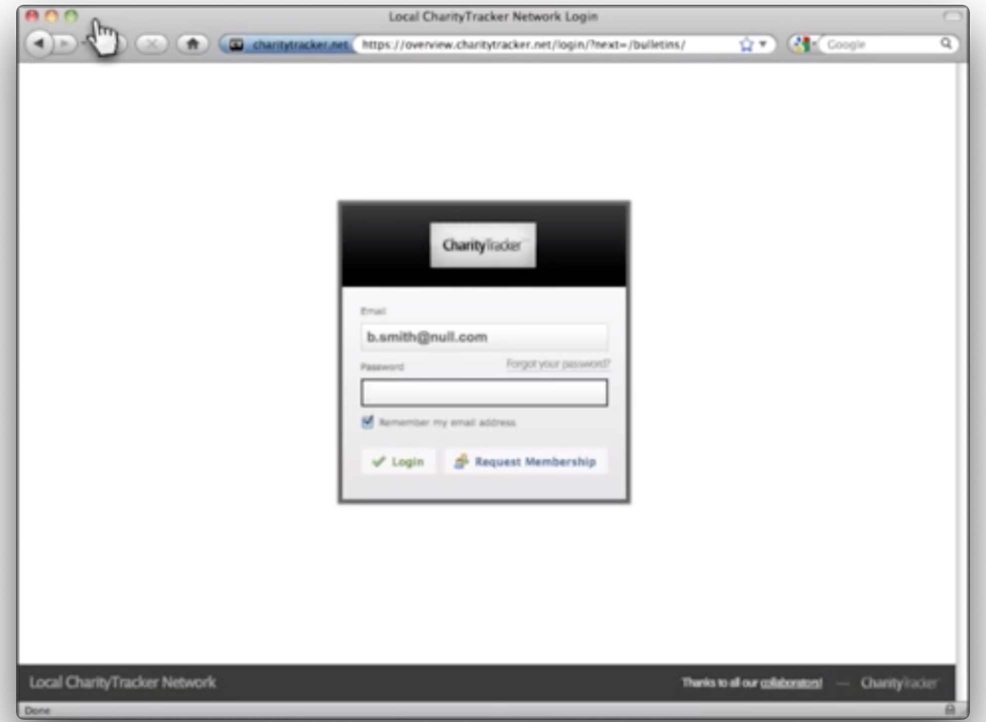


Costs:
CharityTracker is a pay-as-you-go service. The cost of using CharityTracker is $20 per user per month - negotiable.

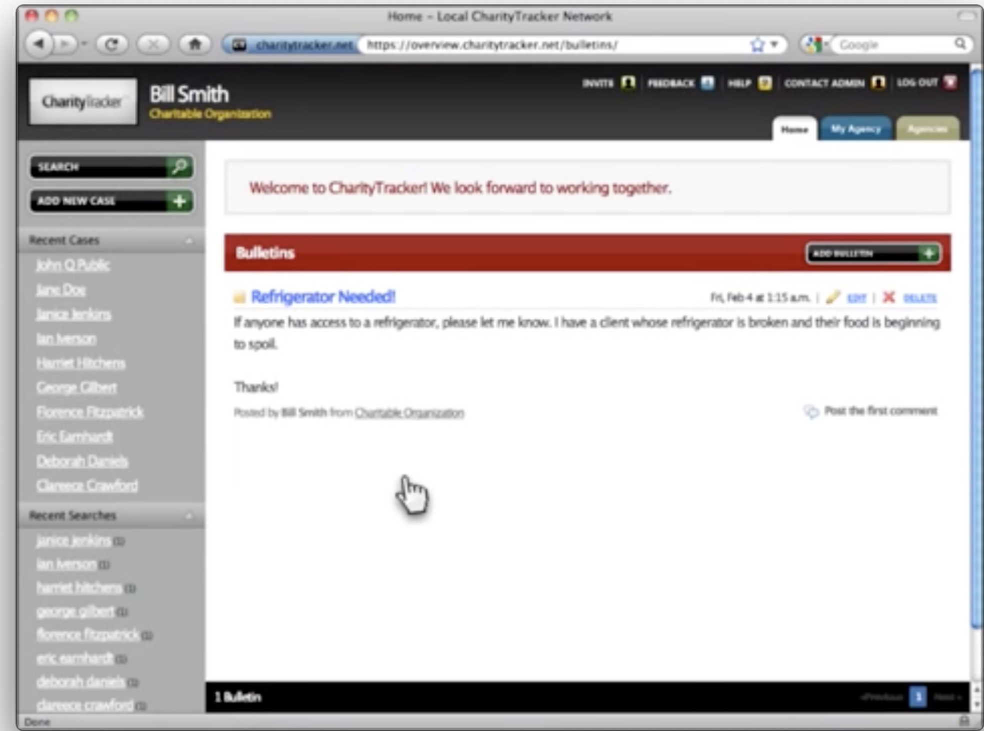
While this monthly cost is fairly expensive, CharityTracker has been proposed as OBSID as the service offers the following key advantages:

1. Routine maintenance is performed by the service provider.
2. No data-storage hardware is required.
3. Fully customisable to suit OBSID’s needs.
4. Web-based application which runs on all types of devices.

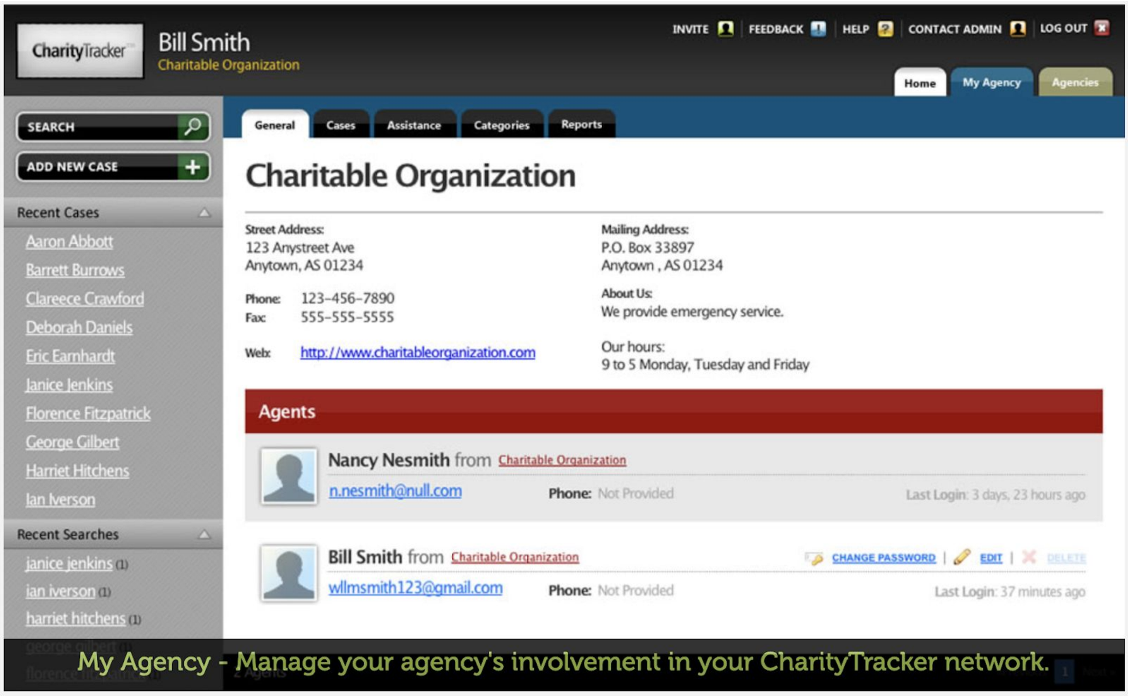
Below are screenshots of the CharityTracker web-application:



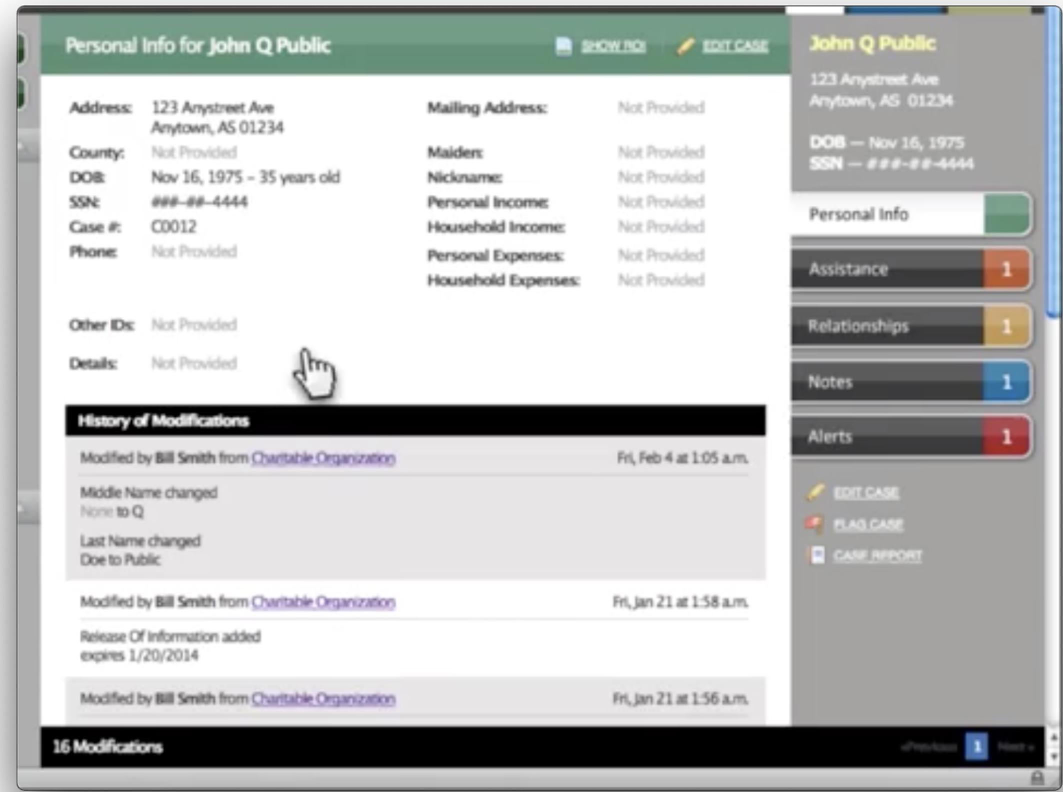
Login Screen: Users are required to enter their username and password to gain access to CharityTracker.



Bulletins: The bulletins board displays community-wide announcements which organisations in the community.Client Case File: Consists of 5 sections - personal information, assistance received, relationships, notes and alerts.



Organisation Home Page: Displays the details and social workers of the an organisation.



Client Case File: Each client has a virtual case file recording personal information, assistance received from organisations, relationship details, notes and alerts.

salesforce service cloud

Comparison with Salesforce

Salesforce is also a cloud-based Platform-as-a-Solution (SaaS) that provides organisations and companies with a platform which they can use to develop fully customisable Customer Relationship Management (CRM) system.

While creating a system, using the Salesforce platform will require technical skills, there are also a number of pre-built salesforce solutions that can be purchased and customised. Salesforce Service Cloud is, perhaps, the most relevant service and can be tailored to suit OBSID's needs of case management. The service follows a subscription based payment model.

Salesforce Essentials	Lightning Professional	Lightning Enterprise	Lightning Unlimited
		MOST POPULAR	
Out-of-the-box service solution for up to 10 users	Complete service CRM for teams of any size	Customizable CRM for comprehensive service	Unlimited CRM power
$25	$75	$150	$300
USD/user/month* (billed annually)	USD/user/month* (billed annually)	USD/user/month* (billed annually)	USD/user/month* (billed annually)
TRY FOR FREE	TRY FOR FREE	TRY FOR FREE	TRY FOR FREE

Based on the pricing scheme, it is quite clear that Salesforce is quite expensive. For a out-of-the-box solution that cannot be customised, it costs $25 per user per month. If customisation is required then a more expensive subscription will need to be upgraded to.

Due to the high level of technical skills needed to configure and setup a Salesforce system coupled with the relatively high subscription cost, CharityTracker will be recommended over Salesforce due to the following reasons:

1. CharityTracker is a pre-built, yet fully customisable, software solution that requires a lower level of technical skills and knowledge to configure.
2. CharityTracker is more cost effective ($20 per user per month - negotiable).
3. CharityTracker is specifically designed for organisations such as OBSID who are involved in case-file management.
4. CharityTracker provides features that perfectly meet OBSID's needs and requirements.

8. Recommended Solution

In keeping with our primary aim of adding value, in the short space of two months over which the project has run, Solution 1 has been chosen as our recommended solution simply because it leverages existing infrastructure at OBSID and uses free software that OBSID have used in the past. In addition, it will require little training to use Trello for communications, however it is very easy to use and can be learnt by experience than having to need a workshop. Moreover, the solution may be implemented at any time with no delays due to it being on the cloud and requiring little to no changes to the current system decreasing integration risks. Likewise, it increases efficiency and improves the current workflow but utilises the same system and therefore not reinventing the wheel. Further, it adds value immediately to OBSID and meets the project objectives set out at the start. Therefore, Team SALT recommends to utilize solution 1 as a pilot program and see how it affects OBSID's day to day operations before implementing it full-time.

9. Project Objectives

- Improve the robustness and reliability of the data storage practices, within the 2 month project schedule, that are currently being used to capture and store homeless' information to mitigate the risk of data corruption, loss or theft.

- Design and implement a centralised, shared data store (not limited to a database), within 2 months, for OBSID and partner organisations thereby creating consistency and eliminating duplication of data.

- Develop a more efficient data capturing tool, within the 2 month project timeline, to help reduce the time required to capture an individual's information.

- Improve the integration between digital tools currently being used by OBSID by redefining and improving organisation workflows in an attempt to improve efficiency and organisation to allow OBSID to find and reference client case files faster.

10. Stakeholder Analysis

Below is the stakeholder analysis table depicting the various stakeholders involved in the project:

Name	Position	Role	Contact Information	Requirements	Expectations	Influence	Classification
Amanda Kirk	OBSID Management and Operations	Project Sponsor	amanda@obsid.org.za	Sign off on major project decisions	High project involvement	High	Important
Jodi Allemeier	OBSID Business Development Portfolio	Influence decision making	jodi@obsid.org.za	Oversee project progress	Moderate project involvement	Moderate	Semi-important
Barbara Schmid	Knowledge Co-Op Projects Manager	Project Manager	knowledgecoop.admin@uct.ac.za	Approve project	Moderate project involvement	High	Important
Team SALT	Project Members	Development Team	iyrshi001@myuct.ac.za	Project involvement over the life of the project	High involvement	High	Important

12. Risk Management

Brief

In finalising the planning phase for the OBSID Homelessness Project, SALT will be required to conduct an assessment of their current system and context to devise a way to improve their case file storage and management system. The expectation is that at the end of the project, OBSID will be able to have enough information to make a decision on an easy to use tracking system for the homeless community, be able to exchange information with partnering organizations while maintaining integrity and security of the data.

Risk Identification

1. **Scope:** Due to the client having many problems in mind, SALT may want to try to solve all the problems and thus increasing the scope to try to capture as many problems in a solution. Trying to go the extra mile could result in scope creep which could have a knock on effect on the project schedule and change the project to best effort basis.

2. **Cost:** Due to the nature of the uncertain political environment of South Africa, the currency exchange changes on a daily basis and inflation ever increasing, all estimates made could result in being less than the future value of the project.

3. **Human Resource:** Implementing a new system brings change to the working environment. Many employees may be resistant to the changes (some may prefer the old-fashioned paper-pen way) and could be against learning new skills to use the new system. The resistance may result in conflict affecting the OBSID culture and environment.

4. **Integration:** OBSID's CEO wants a fresh start with very minimal usage of previously captured data - which is very complex and can only be understood by a few employees (Social Worker Manager). Integrating this data with the new system may be very difficult as it will require careful analysis and understanding of how it works which could possibly delay the project.

5. **Technical Skills:** OBSID have minimal technical skills, therefore, any solutions which require technical skills could be difficult to operate by OBSID staff which, in turn, lead to project failure.

6. **Time:** Load-shedding stages have been very erratic and unpredictable making it almost impossible to pre-empt and plan around. This could affect the timelines as deadlines may be affected due to power outages which could cause delays and affect productivity.

7. **Quality:** Team Salt are students that are working on this project, with already several other projects, tests, deadlines etc., it will be very difficult to give a 100% and only focus on

this project. Therefore, it is likely the project does not meet the standards expected by OBSID.

8. **Communication:** With only a semester available and several other assignments, essays, tests and courses happening concurrently, it is very likely that communications happen slowly, assumptions are not disclosed properly, or assuming that 'everyone knows this' when in fact it isn't a known fact occurs and thus leading to a failure to grasp the project requirements entirely.

9. **Vulnerability:** The project is very sensitive in terms of data gathering which could be used for positive or negative reasons. There is a risk of the project's deliverable having vulnerability allowing the data to be used beyond the authorized scope.

10. **Legal:** Team Salt does not have any legal expertise, the key stakeholders involved in the project have little to no legal expertise as well. The new system being implemented may unintentionally be touching on grey areas of the data collection laws or worst case being illegal.

11. **Human Resource:** The users of the system are being represented by one person that is the sponsor (CEO). While they are consulted, there is a risk that the there is still a gap between the communication which could be essential in fixing on the main requirements.

12. **Sponsor Expectations:** The sponsor (OBSID) may be expecting a quick fix to their problem in the short amount of time. The risk is a rejection of the project due to their expectations in mind of the team delivering a product or at the very least changing the whole system in a matter of a month since the team is composed of UCT students.

13. **Time:** With min-vac very close to the submission, getting SALT together will be difficult as some members may go home for the break. Therefore, communication will be slower resulting in availability issues and thus making it hard to schedule meetings and deadlines.

14. **Integration with Partner Organisations:** Other NGOs will also require some form of training which could either result in delays of completing the project requirements. There is also the risk of the sponsor reject the proposal all together.

15. **Cost:** With the nature of the solutions, there are monthly fees for subscription which could become expensive in the long run if OBSID can't secure yearly budgeted amounts for payments.

13. Prototyping & Testing

13.1 Prototyping

Google Form

Since OBSID has experience with Google Cloud services, this form will not explain how to add/remove blocks for a question on the form. The traditional data capture process (physical paper) has been transformed to a digital Google form with exact questions and details being captured in the form. Furthermore, the form does minimal data validation such as length of ID being 9 characters, it also allows for other options for several questions which the physical form does not have space for.
Note: Drive does not allow downloading of a form and thus the prototype link is can be found here.

OBSID Data Capture Form

The first contact form consists of the following sections:
Section 1: First Contact Form
Section 2: For Office Use
Section 3: Street People 201 - About Interviewer
Section 4: Street People 201 - Personal Details

The Street People form is editable by the field worker as they will be able to edit the form once they submit. It is all in one form to allow data collection for the same person to be stored in the same location on the Drive thus allowing for faster and easier collation, searching and analyzing.

Field Worker

A field worker must have a valid google account (Gmail) that allows to sign in to the form, OBSID workers all have a google account and therefore, no new account creation will be required.

Every Field Worker needs to bookmark the form link to their browser of desired device to be used for data capture.

Link: https://forms.gle/wQvxhj9ivHJNEfNP9

Step 1: Click on Link

A field worker will have to click on the link or bookmark every time they want to fill in a form. Clicking on the link directs the field worker to the google form page. The field worker will be required to sign in as shown in figure 1 (if google account isn't signed in on the device's browser).

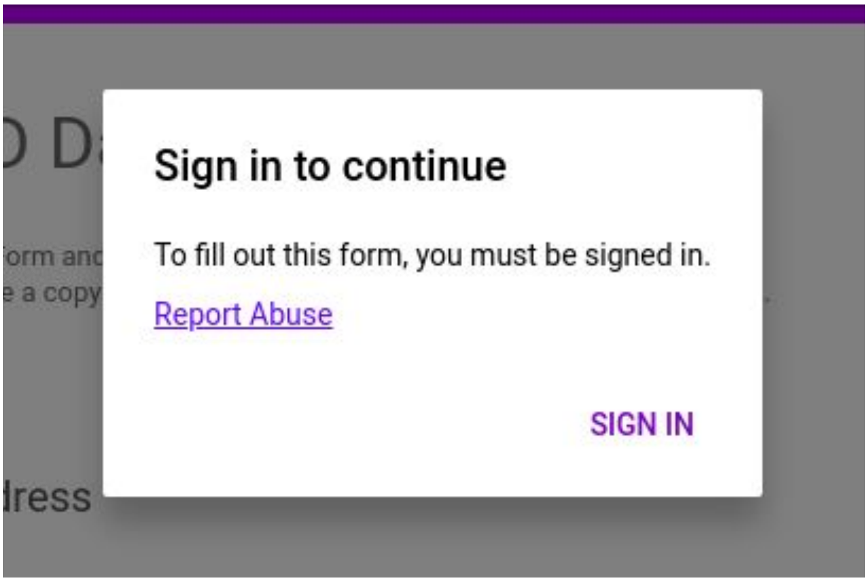


Figure 1: Sign to form to continue

Step 2: Sign in to Google Drive (if not signed in)

Assuming OBSID field workers are experienced to sign in, they will be shown the form figure 1 to fill by capturing data of anyone they have met.

Note: Almost every field is not compulsory due to the nature of the data capture at OBSID.
Note: Permissions will be required to be granted to the browser to allow use of camera and file storage to upload picture of person and signature of the field worker.

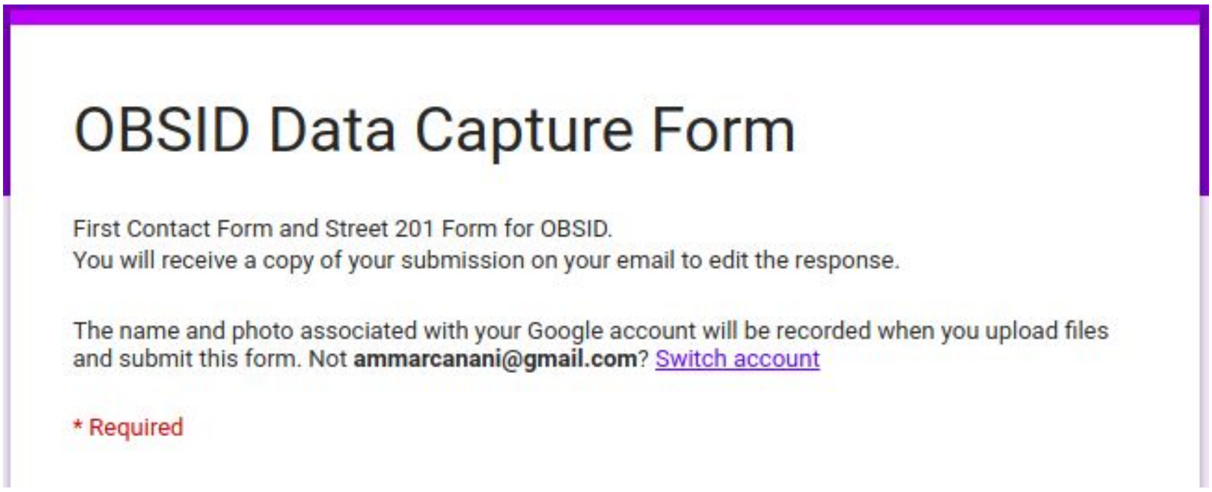


Figure 2: Google form to capture data

Step 3: Submit form

Assuming field workers have filled in all sections, they will submit the form and receive a confirmation of the submission of the form. It also allows to edit the current submission or a link to make a new submission as shown in figure 2.

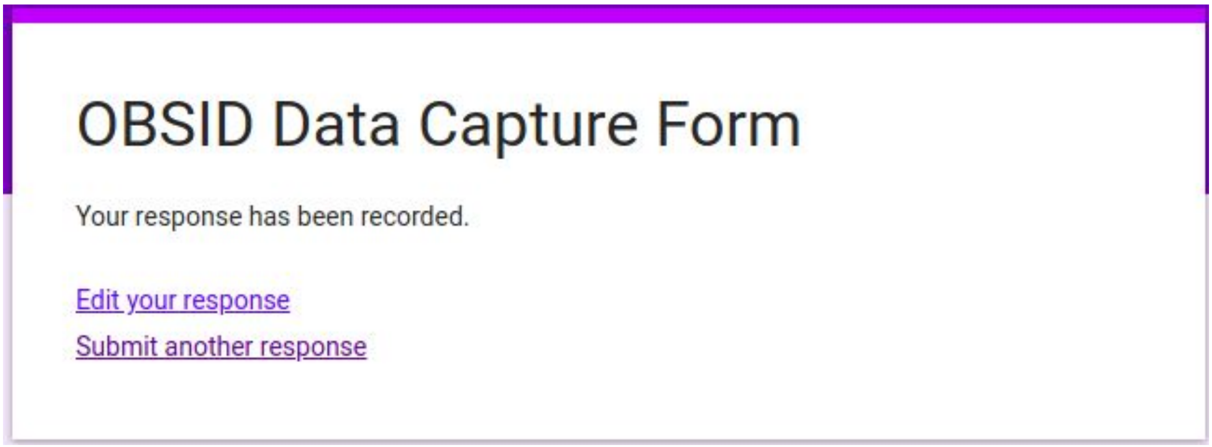


Figure 3: Form Submission Confirmation

Upon submitting, the field worker will also receive an email confirmation along with the submitted form as shown in figure 3.

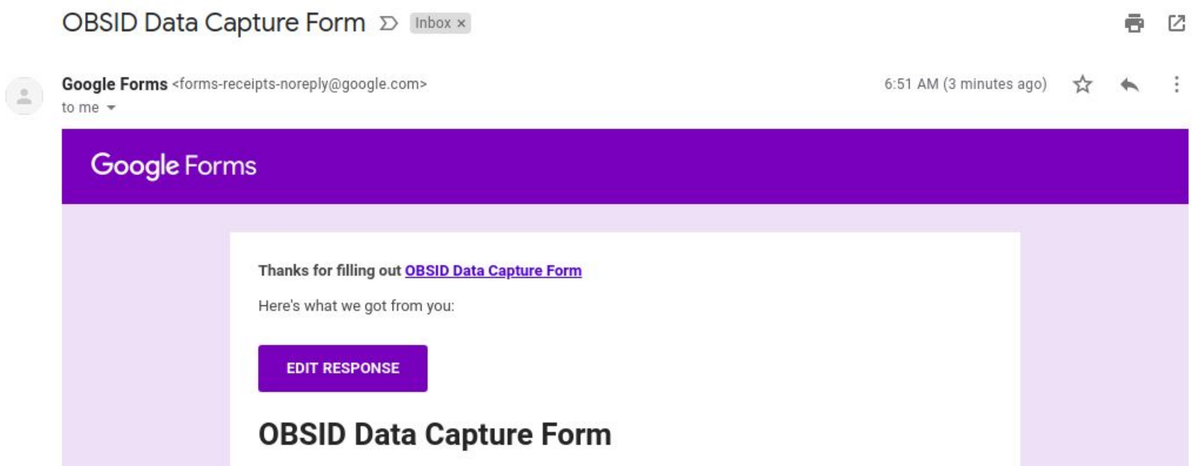


Figure 4: Email Confirmation for form submission

Step 4: Edit a submission

Due to the nature of data capture, the homeless people don't always give all the information at once and field workers have to go back to gather more data.

To find the person they are going back to, field workers need to search for the data capture form confirmation they received in their gmail. This is easily done with only one search answer from the form being added to the search bar as shown in figure 4.

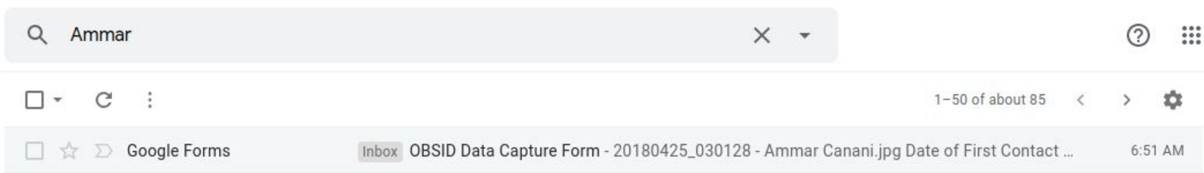


Figure 5: Searching for a person

Opening the email gives you the option to edit the form figure 6. Clicking on it directs to the form which is then editable as shown in figure 7.

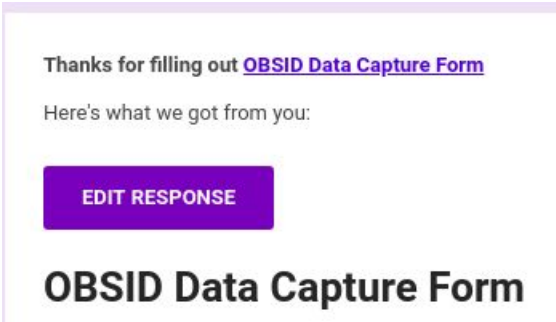


Figure 6: Edit Response

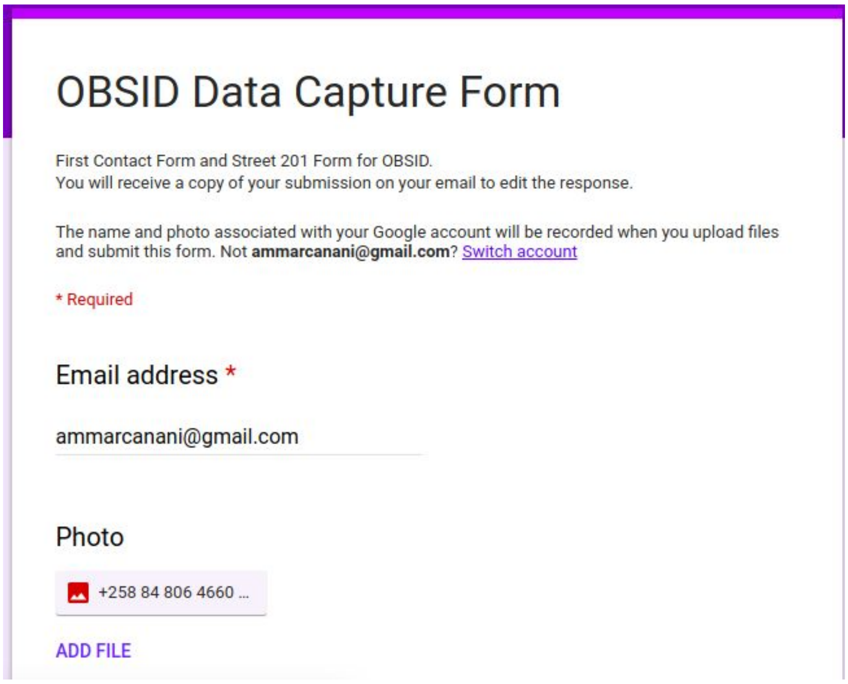


Figure 7: Form editable

Once the new data is captured, the form is submitted and step 3 is repeated again followed by step 4 if need be.

Social Worker Administrator

Like the field worker, the social worker administrator must have a google account, and be the administrator of the form and the documents which accompany it. Although this solution automates several aspects of the current data capturing system, it still requires the admin to do some of the work manually on the drive.

Note: Step 1 and 2 are only done once for each google form created.

Step 1: Create Spreadsheet for Google Form

Every google form allows responses to be filled to an excel sheet. This is done by selecting the Sheets button on the response tab beside the three vertical dots (figure 8).

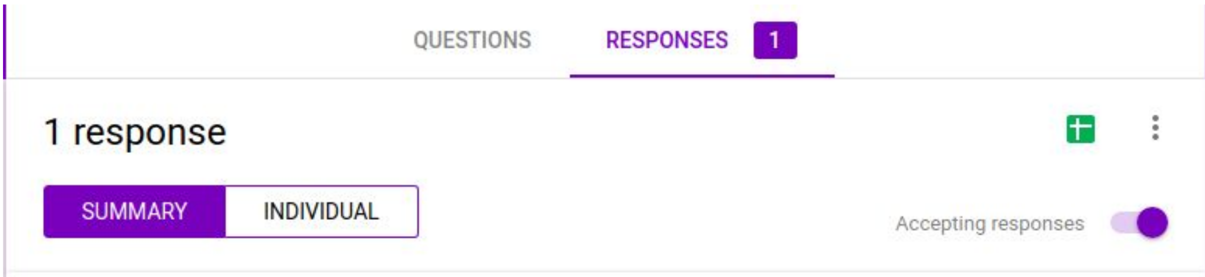


Figure 8: Spreadsheet button to create a spreadsheet

Upon clicking, all responses are populated in the spreadsheet as shown below in figure 9.

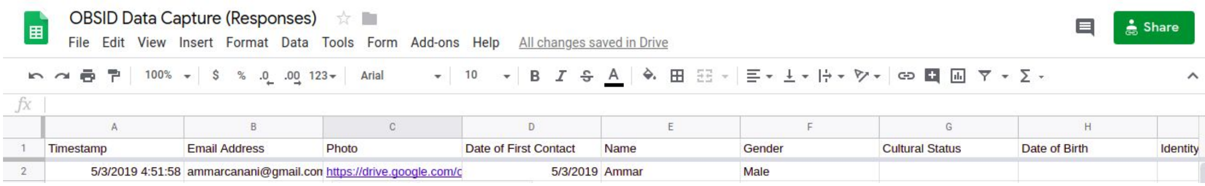


Figure 9: Spreadsheet created

It is important to also enable notifications to the admin whenever a form is submitted or edited. This is done by going to Tools -> Notifications Rule and adding a rule as shown below.

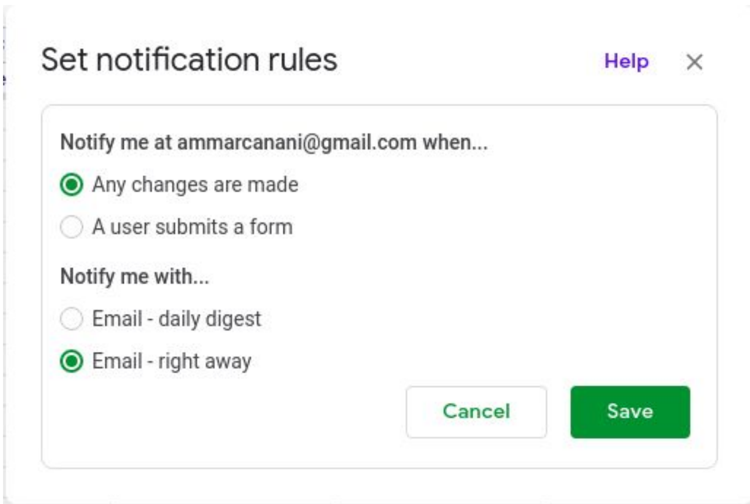


Figure 10: Set notification rule

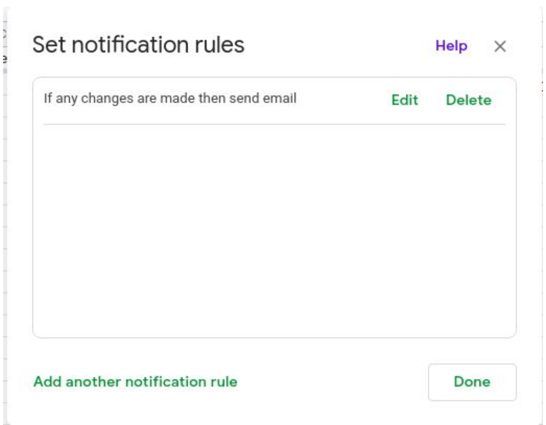


Figure 11: Notification rule set

Therefore any submission/edit will immediately notify the admin by email as shown below.

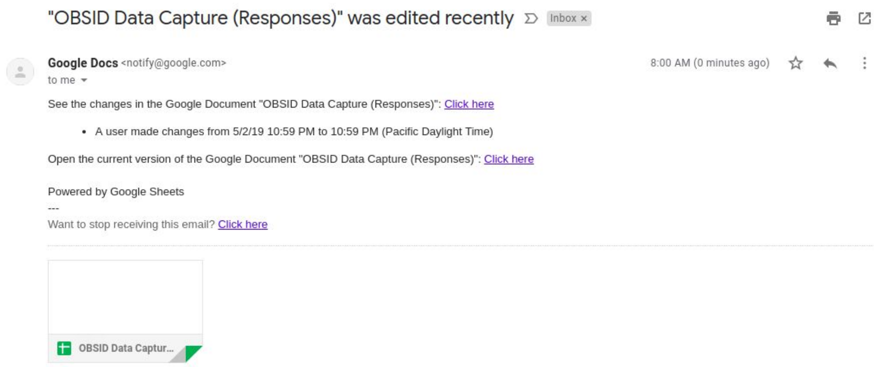


Figure 12: Notification of form change

Step 2: Add Case Number, Assigned Social Worker and Case Folder Columns

To help keep track of each response from the field worker, the admin must assign case numbers (generated in-house) to each case, assign a social worker and create a case folder in the drive to share to a social worker (figure 13). All of this information will be stored in the spreadsheet allowing all the information to be in one place.

Columns to be added:

1. Case Number
2. Assigned Social Worker
3. Case Folder (Drive link)

A	B	C	D	E	F
Timestamp	Case Number	Social Worker Assigned	Case Work Folder	Email Address	Photo
5/3/2019 4:51:58				ammarcanani@gmail.con	https://drive.google.com/c

Figure 13: Columns added

Step 3: Assign Case Number, Social Worker and Create Case Folder

The admin will assign a case number and assign a social worker to the response (figure 14), and create a Case Folder on the drive with the case number as the name of the folder as shown in figure 15.

	B	C	D
	Case Number	Social Worker Assigned	Case Work Folder (Drive
8	001	Jane Doe	

Figure 14: Case Number and Social Worker Assigned

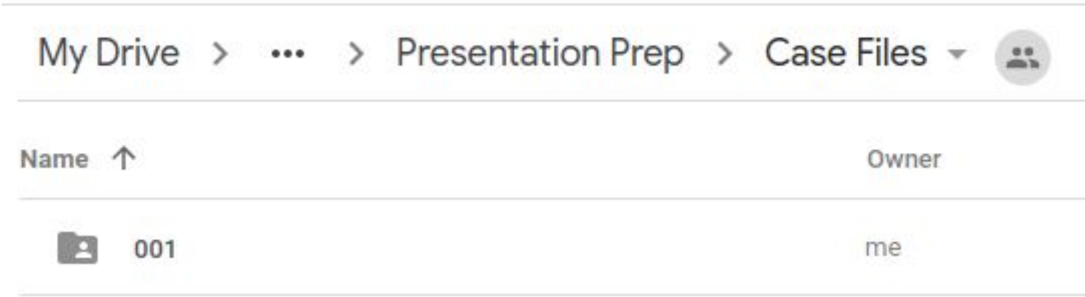


Figure 15: Case Folder for Case Number 001 created

Step 4: Add Case Folder Link to Spreadsheet

Once the case folder is created, the admin needs to get the shareable link for **view only** to added it to the column in the spreadsheet. This is done as shown below:

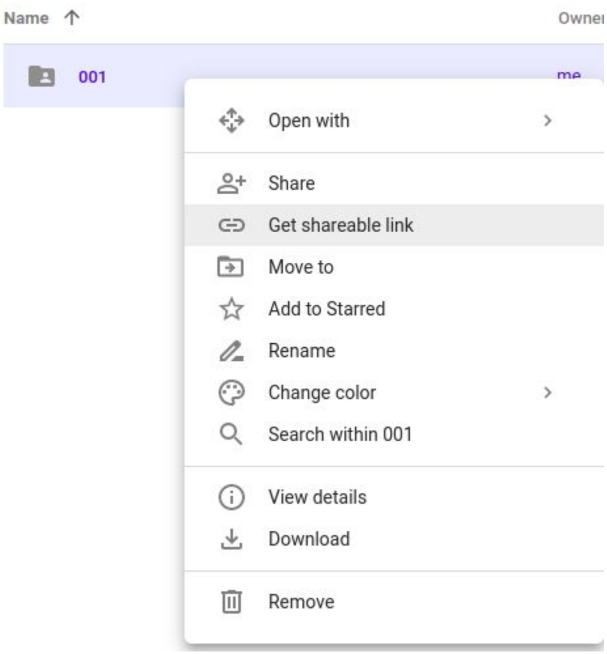


Figure 16: Right-click and select get shareable link

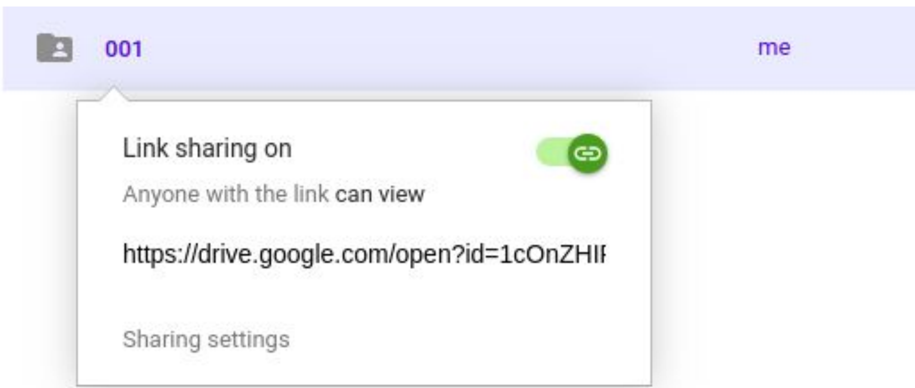


Figure 17: Copy the shareable link and add it to the spreadsheet

A	B	C	D
Timestamp	Case Number	Social Worker Assigned	Case Work Folder (Drive
5/3/2019 4:51:58	001	Jane Doe	https://drive.google.com/c

Figure 18: Case Folder Link pasted to the spreadsheet

Step 5: Creating a Case Notes Doc

Every social worker has to make notes about a client. Therefore, they will require information about the client which includes the data capturing form, pictures (step 6) and a doc to add their notes too..

In the 001 case folder, the admin must create a Google Doc folder and label it as 001 - Case Notes (figure 19) or any other variation which he/she would like to use which allows for easy searching when needed.

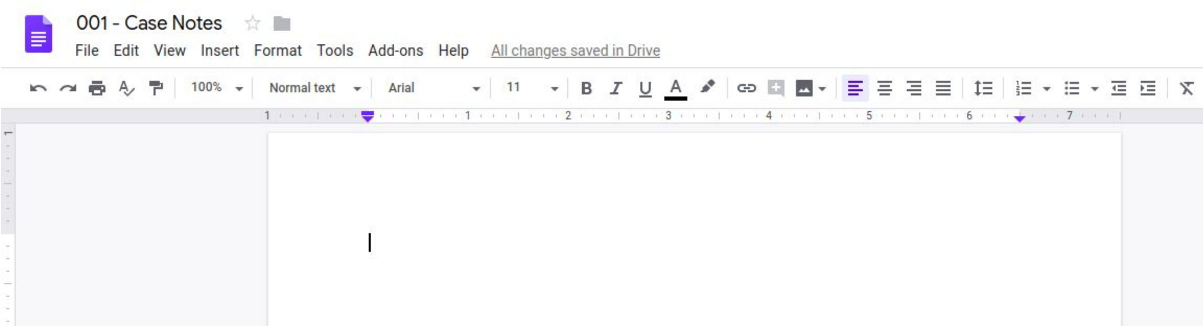


Figure 19: 001 - Case Notes Document for Social Worker

Step 6: Add relevant documentation to Case Folder

All forms responded have to be added to the case folder and updated whenever a form is edited. This is done by selecting the print icon on the response from the form **individual** response section (figure 20).

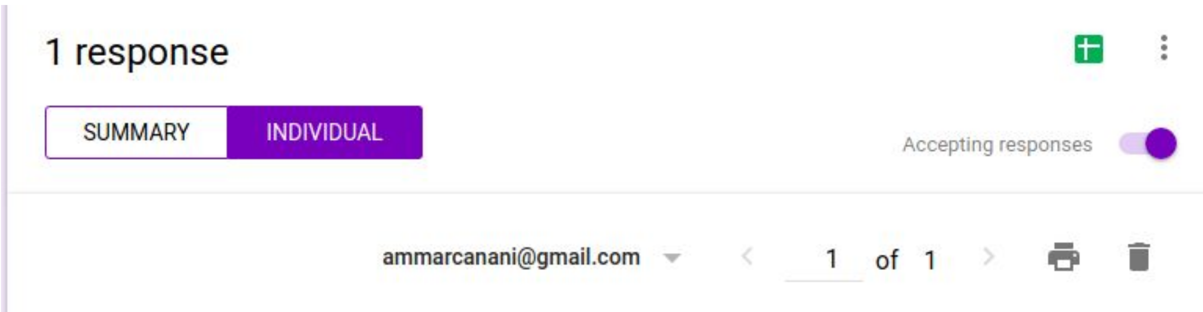


Figure 20: Press print to save the response form

Clicking on destination as pdf will begin the download as shown below. This is uploaded to the Case Folder 001

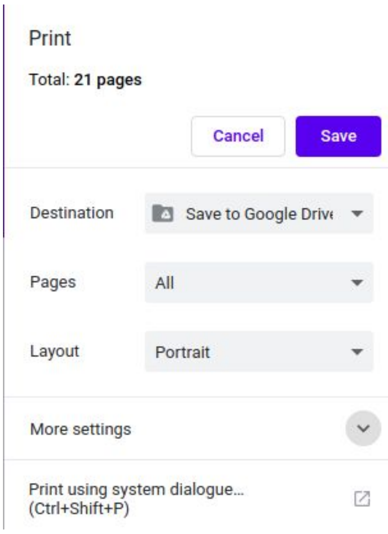


Figure 21: Download Pdf

Next, the admin needs to go to the spreadsheet, click on the link for the photo of the person. Downloading it and uploading it or simply copying it to the case folder 001 will complete all relevant submissions for the social worker (figure 21).

Figure 22: Case File for 001

Step 7: Assign Case Folder to Social Worker

Once the folder has all the documents, the social worker must be given access (enter email address) and permission to view and **edit** it so they are able to use the notes document. This is done by right-clicking on the case folder 001 and clicking on share. Make sure to **tick** notify people as shown below.

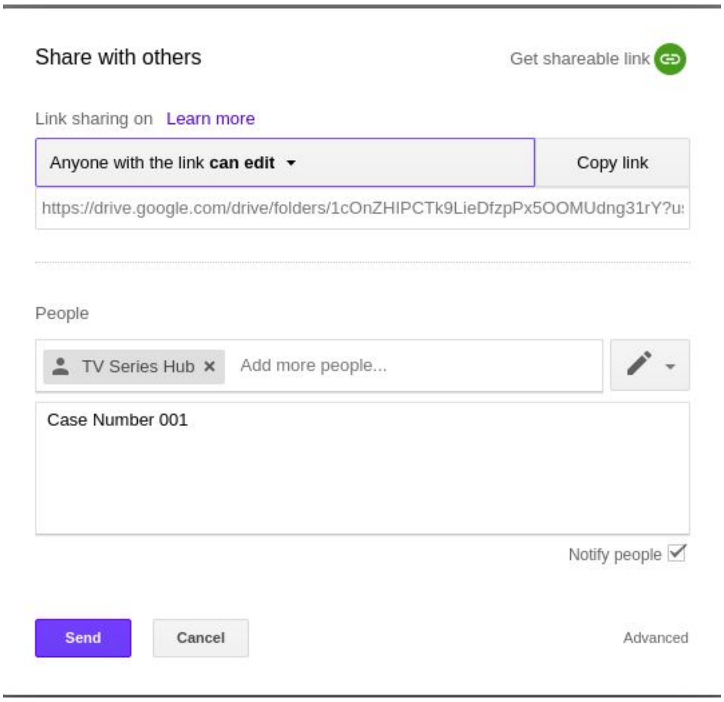


Figure 23: Sharing access to social worker

Step 8: Form edited

Whenever a form is edited, an email notification is sent to the admin. The admin then needs to repeat step 6 to upload the latest documents for the social worker.

Step 9: Finding a Person, Query and Analysis

This step is whenever OBSID needs information on any client. There are several ways to find a person:

1. Search by any response field.
2. Search by looking for which social worker was assigned to them.
3. Search by case number.

For queries, google spreadsheets offers filters which color a field in the excel spreadsheet to indicate if a response matched the query. For analysis, the spreadsheet can be downloaded and uploaded to any data visualization software such as Tableau or formulas can be written in the spreadsheet to give results. These formulas are easily found by a google search if any support is needed.

Step 10: Hitting 15gb or 1000 response in form

If the drive has used up 15gb of space, OBSID has to either purchase more space or open another google account and use it for storage.

If the form has a 1000 responses, the admin will have to duplicate the form and use the new link and link it to the existing spreadsheet. To duplicate see below:

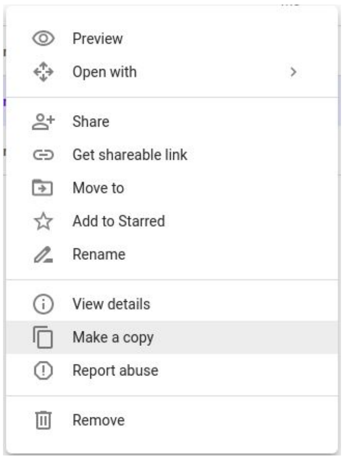


Figure 24: Duplicate Form

Social Worker

Social workers work directly with the client. Their first interaction begins by receiving an email notifying they have been granted access to a case folder they have been assigned to (figure 25).

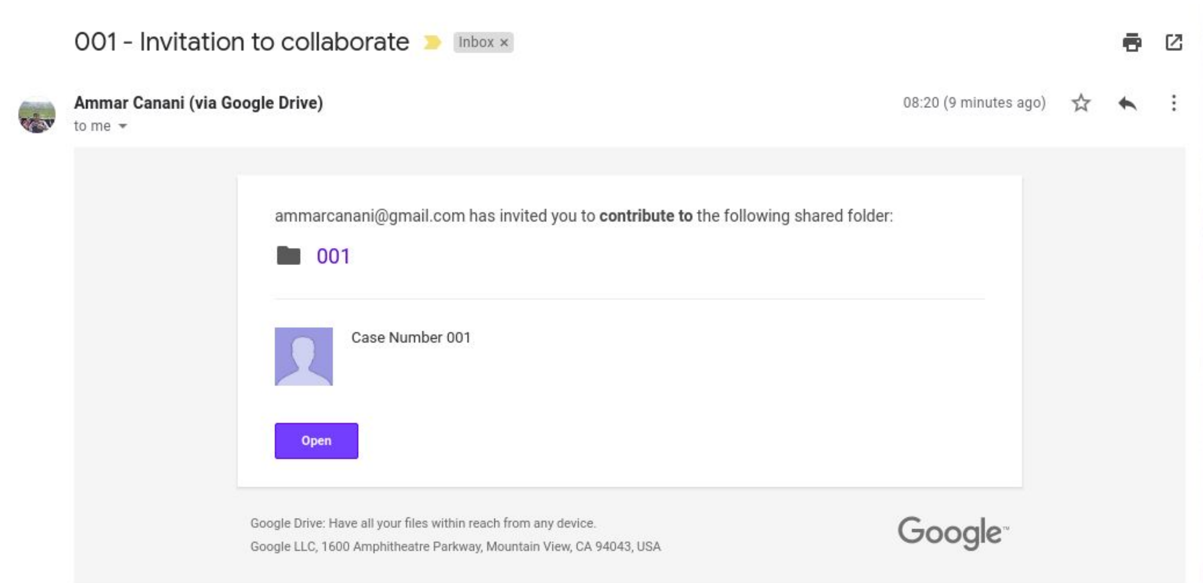


Figure 25: Access granted to Case Folder of 001

Step 1: Open Case Folder

Clicking on open shows all the folders the social worker administrator uploaded as shown below.

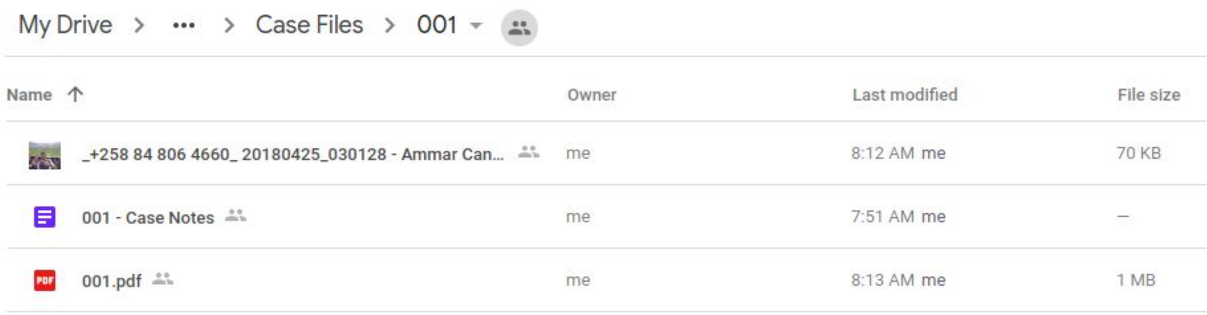


Figure 26: Case Folder assigned to Social Worker for Client 001

Step 2: Case Notes

The social worker will use the Case Notes doc to add his/her notes and compile it there for later use or revision. Only the admin and social worker have access to this folder.

Trello

OBSID needs a task management system for the social administrator to manage the cases and track the social workers. This tool solves the notification problem as it send push notifications on a mobile device and browser notification on a laptop/desktop. All social workers and the administrator will have to sign up for Trello.

Note: Jane Doe is a social worker in this scenario.

Sign Up/Register

Step 1: Visit Trello Website/Download Trello

Trello is available for all devices and platforms. Visit https://trello.com/ or download Trello from the Play-store or App-store.

Step 2: Create an account/Register

Creating a username or signing in with a google account will allow an account creation. Visit https://trello.com/signup to sign up.

Social Administrator

Step 1: Create Team for OBSID

Creating a team for OBSID to manage all social workers as shown below.

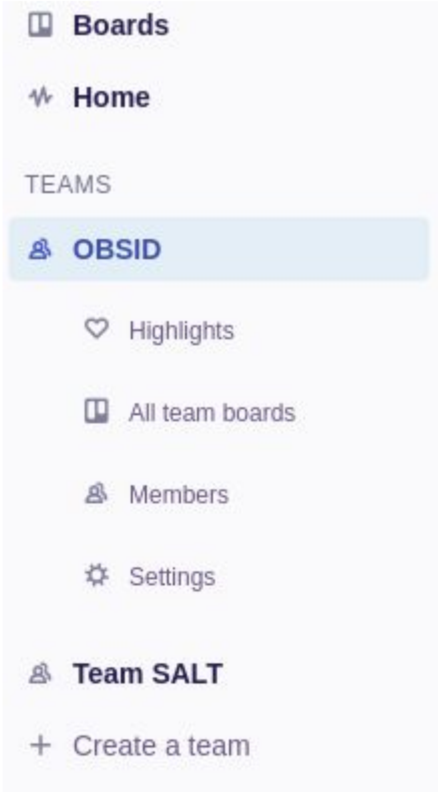


Figure 1: Click on + Create a Team

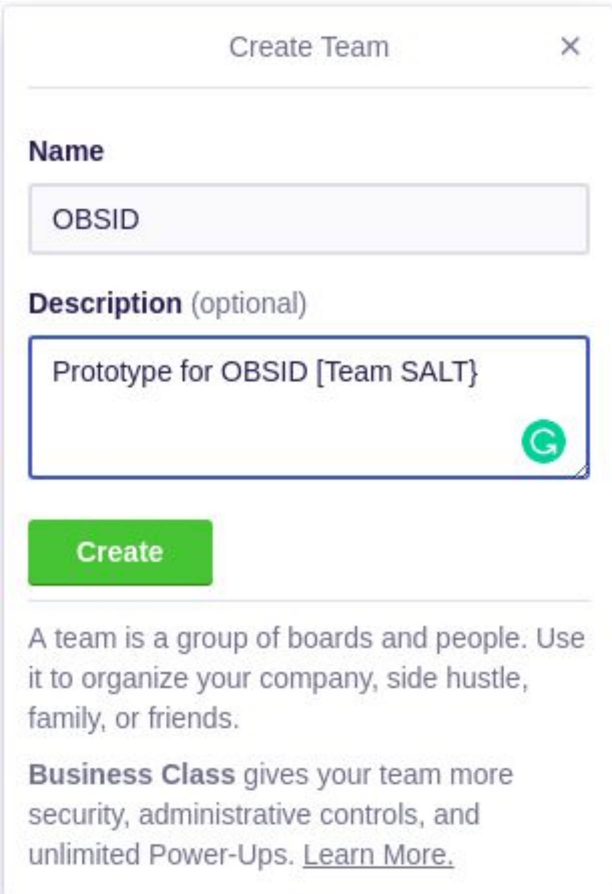


Figure 2: Add Team Name and Create

Step 2: Create a Board for each Social Worker

OBSID has less than 10 social worker and can therefore utilize a board for each social worker. However, if there are more than only 1 board should be created and every social worker will have a list as shown below.

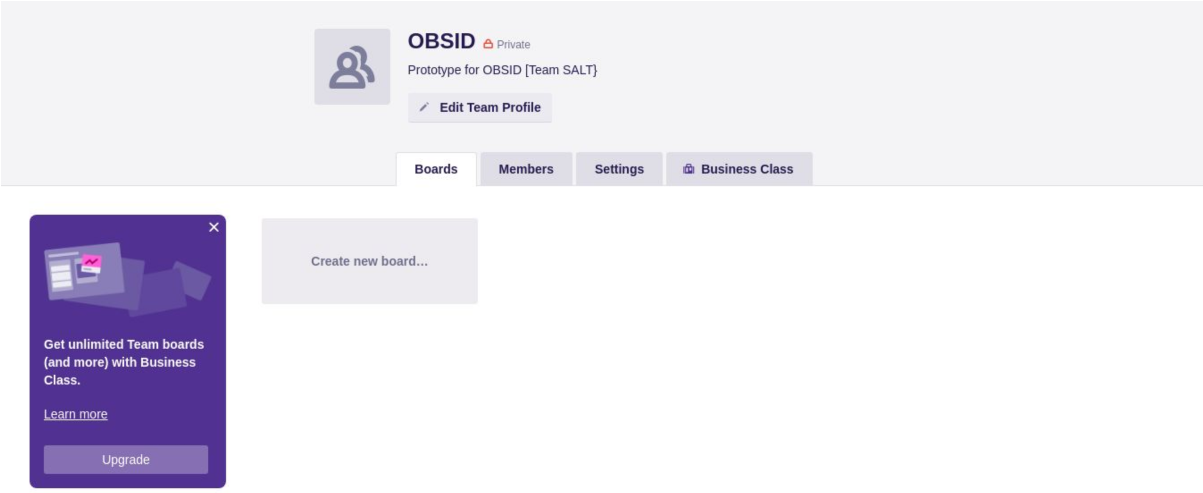


Figure 3: Create a board for Jane Doe (Social Worker)

It should be set to **private** so only the admin and Jane Doe have access to it.

Figure 4: Jane Doe Board

Step 3: Add List for each Social Worker

Every social worker will have a case, therefore, each social worker should have their own list of activities to do. In Jane Doe's Case it will be the assigned case as shown below.

Figure 5: Assigned Case List

Step 4: Invite Jane Doe to the board

Before assigning a case, Jane Doe must be added to the board to allow her to view her tasks as shown below. She can either be invited or sent a link to join.

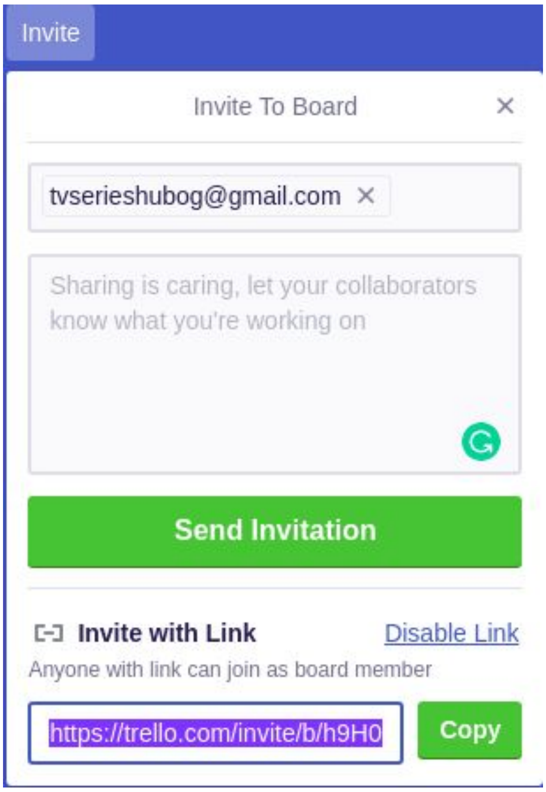


Figure 6: Invite Jane Doe to the board.

Step 5: Assign Case by adding card

Add a card for client 001 as shown below.

Figure 7: 001 assigned to Jane Doe

Step 6: Add Jane Doe to task, details about the task, notification and link to case folder

Click on the pencil button on 001, change members and add Jane Doe to the task as shown below.

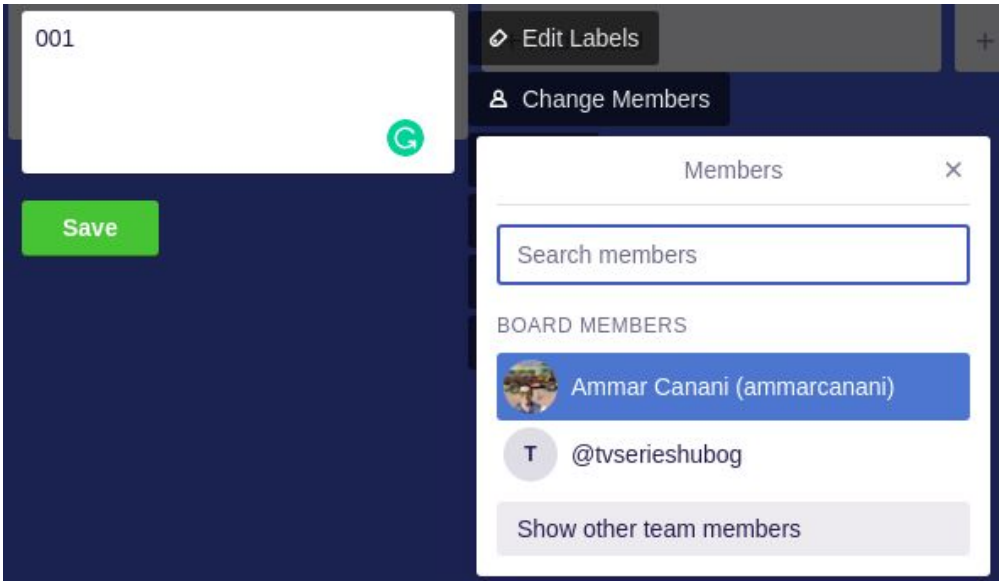


Figure 8: Adding Jane Doe to the task

Clicking on the pencil button again, then on change due date to set a due date to notify the Case Worker after a period of time as shown below.

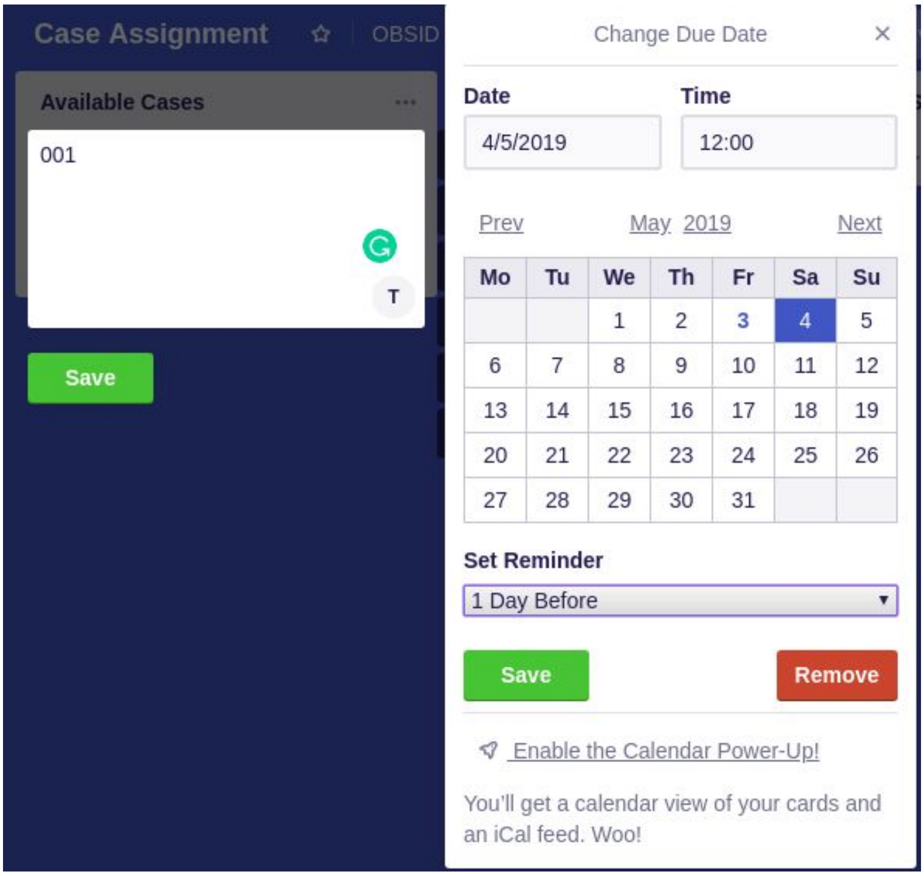


Figure 9: Set Notification for Social Worker

Next double click on the card and set the description for the task as. Click on attachment and paste the link of the case folder from the drive assigned to the social worker which is in the spreadsheet in Step 7 under Google Form above as shown below.

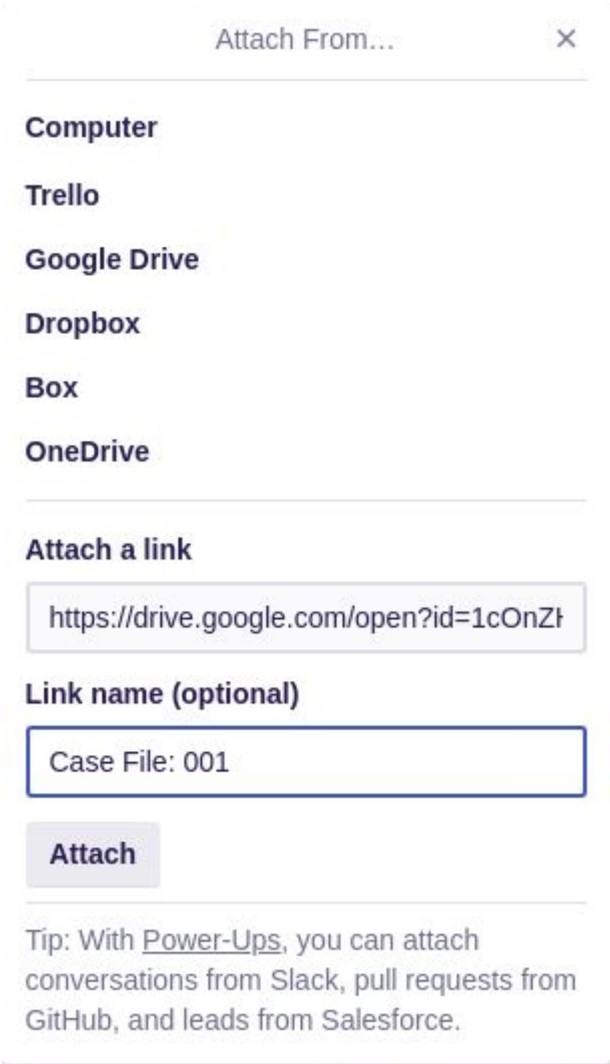


Figure 10: Social Worker has easy and quick access to link for Case Folder

The admin and social worker can communicate using the comments and other actions can be done as well as shown below.

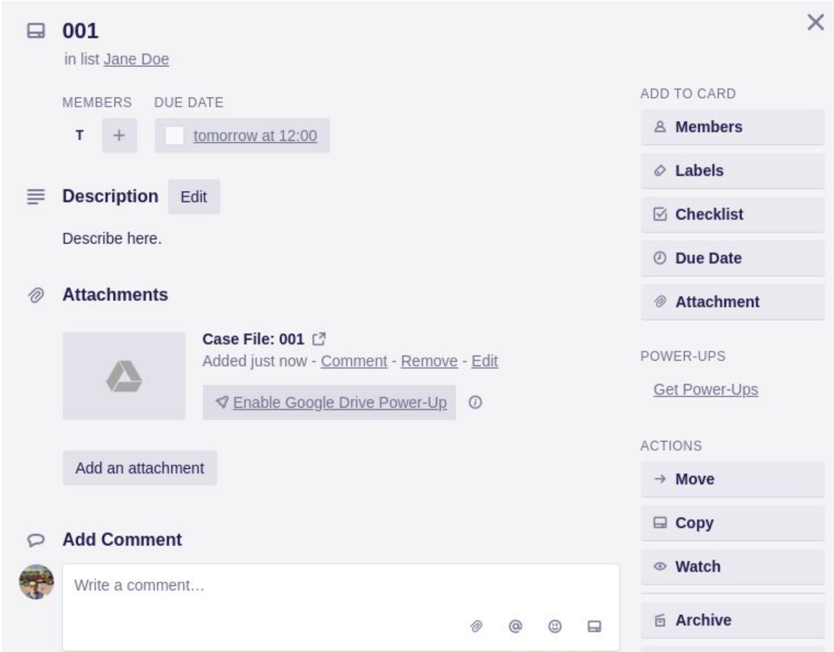


Figure 11: Other functionalities to use

Step 7: Track Progress

The admin can add other lists for the social worker to indicate if they have accepted the task and if work is in progress. Comments can be made along the way and therefore, communications remain intact.

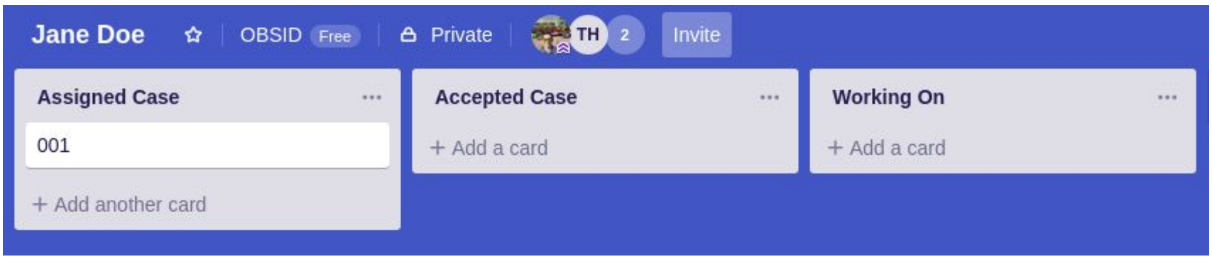


Figure 12: Lists to indicate progress

Step 8: Archive Case

Once a client is no longer part of OBSID, the case can be archived.

Social Worker

The social worker will be invited to a board and will be notified by email as shown below.

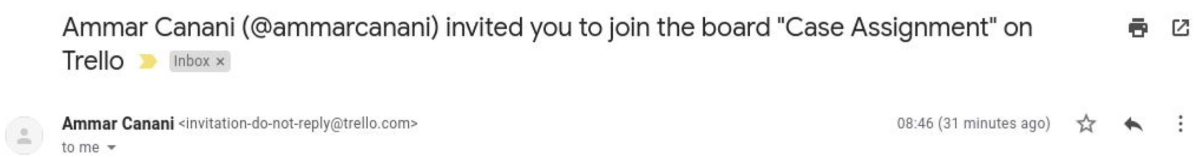


Figure 13: Email notification to join board

Step 1: Join Board

Clicking on the board will take to the and shows the board assigned for the social worker. Looking at the assigned list shows all the available lists available.

Step 2: Accept a case

The social worker will accept a case and move it to the accepting case list so that the administrator is aware of progress and possibly leave comments to update on progress as shown below. Double clicking on the card will show the description and link that the admin shared for the case file.

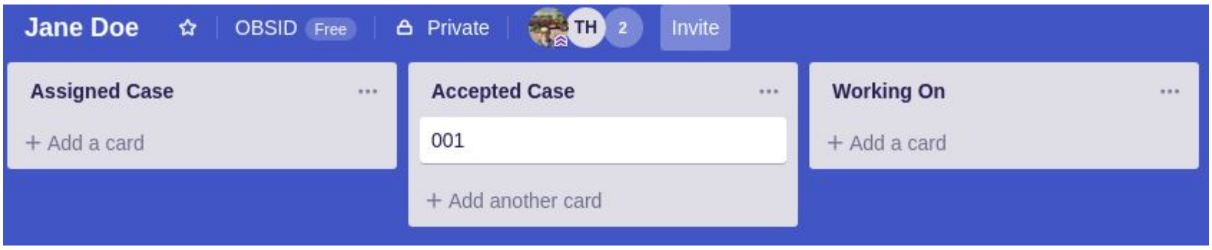


Figure 14: Case Accepted

Step 3: Progress

Once the social worker starts working on it, they can move card to working on and constant update their progress by using the comments.

13.2 Testing

Example Testing

While preparing the documentation above, the prototype was tested with a single value and did not crash and is therefore considered as a success in one scenario.

Integration Testing

The prototype solution uses google forms, spreadsheets, docs and Trello which work hand in hand. These tools were tested while being developed and the Data Capture Form created the spreadsheet, the docs were created and Trello shares those links passing the integration test.

Compatibility Testing

The prototype was tested using a laptop and mobile to fill the forms, access the drive and use Trello. Due to the services being used are of big corporations, it passed the compatibility tests. Different operating systems were used (Linux, Mac and Windows) and browsers (Safari, Edge, Chrome and Firefox) to test the prototype and it was successful.

Security Testing

The drive folders were tested by trying to access using the links with google accounts not part of the shared access folders. At the same time, the Trello boards were tested to see if other social workers would be able to access another social worker's board. Both tests passed successfully as the permissions settings were private and didn't allow uninvited access.

14. Outputs/Exhibits

The team produced outputs including: a prototype for solution 1 for which there are screenshots and explanations under the heading **Prototype & Testing**. This includes a detailed guide in order to show how the solution works and how it must be used. The screenshots provided for each step of the guide show the opportunities but also limitations of the solution.

15. Challenges and Limitations

Challenges:

- Ambiguity and confusion regarding certain documentation/diagrams to be produced
- Finding appropriate and convenient times for group members and stakeholders to hold meetings
- Formulating project solutions that were not only IT solutions but also benefited the stakeholders and their business in a more profound way

Limitations:

- It was difficult to find times where all group members were available for meetings and collaborations on documents
- In order to avoid scope creep, it was necessary to pay attention to distinct problems
- One solution, although almost perfectly fit for the project, was not entirely feasible because even though OBSID could afford it, it would not benefit in terms of the collaboration with partners
- The total time to carry out this project was limited as a result of the course lasting only one semester