Requirements Document
2Towers Client Management Project

Version 1.0

Michail Roesli (V00853253)
Muhammad Ali (V00854120)
Conor Butte-Landsfried (V00876461)
Gregory O'Hagan (V00836165)
Samuel Tsokwa (V00861810)
Andrew Rose (V00884894)
Annie Zhou (V00890522)
Tony Chan (V00924954)

Hecksoft

5th February 2019

Table of Contents

Tables and Figures

Revision History

Name	Date	Reason for Changes	Version
Initial Draft	**Jan 23**		**0.9**
Revision 1	**Feb 5**	**Backing up older version; first round of editing**	**1.0**

1 Introduction

1.1 Purpose

The purpose of this document is to enumerate the requirements for the Pipeline Manager currently being developed by Hecksoft for 2Towers Debt Consolidation, a company that advises debtors in becoming debt-free . The Pipeline Manager will increase time efficiency of employees at 2Towers, prevent loss of clients, and organize data in a way that is easily accessible to employees at 2Towers. Currently they are using many different softwares to carry out their work and as result have difficulty organizing information and keeping track of clients.

1.2 Project Scope

The scope of the Pipeline Manager system that will be specified in this document includes a scheduling system, debtor information, debtor classification represented by the pipeline (see glossary) and file sharing. The purpose of the Pipeline Manager is to provide one interface for all the debt case information that will be uploaded and retrieved by each Branch Manager and each Debt Counsellor. 2Towers would benefit from unifying existing system features as this would reduce operating costs and simplify business processes.

1.3 Glossary of Terms

2Towers	Shorthand for 2Towers Debt Consolidation, the client company, which advises people in becoming debt-free
API	Application Programming Interface
Branch Managers	2Towers employees responsible for working on difficult cases, reviewing debtor progress, bookkeeping-related tasks including reviewing finances of their branch, and debtor payments What is debtor payments referring to? Managers should be responsible for tracking and handling payments made by debtors to 2Towers.
Debt Counsellors	2Towers employees responsible for one-on-one contact with the debtor. This task includes discussing the debt reduction plan with the debtor, setting appointments with the debtor, reviewing debtor history, and following up with the debtor regarding any changes to the status of their debt reduction plan
Debtor	2Towers customers who are being advised on how to reduce their debt
Event	Scheduled meeting or important deadline within the pipeline. Events should represent real life events (ex. Lead meeting counsellor for the first time, bank meeting counsellor, etc).
Financial Information	A complete enumeration of a debtor's assets and liabilities, as well as every known transaction which reduced or increased their debt a) made since signing up with 2Towers or b) deemed relevant by a debt counsellor It should not matter what makes up financial information, the only important aspect to note is that financial information will always be stored in Excel files.
Lead	A lead is a prospective debtor for 2Towers, and has received a free consultation. Being a lead is the first stage of the pipeline. When a
	lead pays for their first consultation they move to the second stage called "debtor"

MAC OS	Macintosh operating system
NFR	Non-Functional Requirement
Pipeline	As described by 2Towers, the pipeline is a metaphorical description of how every debtor that works with 2Towers goes through the same stages. The stages may change as per 2Towers company policy
Pipeline Manager	The new software system that is going to be implemented and specified throughout this report We would like to stress that this system is responsible for managing the relationship between clients and counsellors. While visualizing the pipeline is a useful feature in this system, it is merely one component of the system. This system should still be extremely useful without a pipeline. Please come speak to us if this does not make sense. Consider changing the system name, as it is misleading.
REQ	Requirement
Recovered Debtor	A debtor who has worked with 2Towers and has completed all stages of the pipeline
Stage	A process within the pipeline

1.4 References

[1] "2Towers Client Management Project Request for Proposals." [Online]. Available: https://kerfootj.github.io/seng321_client/docs/G2_RFP.pdf [Accessed: 04-Feb-2019].

[2] "Proceeds of Crime (Money Laundering) and Terrorist Financing Act." [Online]. Available: https://laws-lois.justice.gc.ca/eng/acts/P-24.501/FullText.html [Accessed 05-Feb-2019].

1.5 Overview

In this document, we will cover what the Pipeline Manager's features are, some of the characteristics of the users that will use the Pipeline Manager, where the Pipeline Manager will operate, and what the constraints, assumptions and dependencies of the Pipeline Manager are. Next, we will describe each system feature, their respective priority and list the functional requirements for that feature. Then we will discuss some of the existing external interfaces that the Pipeline Manager will rely upon. Lastly, we will list the non functional requirements for the Pipeline Manager.

2 Overall Description

2.1 Product Perspective

The Pipeline Manager is a replacement for 2Towers existing client management system. 2Towers currently uses 5 different softwares - Zoho, Excel, ShareFile, FreshBooks, and Google Calendar - to satisfy their client management needs. This yields the need for a consolidated software system to merge the individual features of those various systems.

2.2 Product Features

The Pipeline Manager will give Debt Counsellors the ability to track the debtor's progress in the pipeline, view financial data, make and save meeting notes which will enable them to make informed decisions with regards to the debt consolidation process of the debtors. The Pipeline Manager provides each Branch Manager with statistical data they can use to improve the debt consolidation process.

2.3 User Classes and Characteristics

The two user classes, Branch Manager and Debt Counsellor, shall be granted different data access privileges.

Branch Manager

- Able to view and modify every debtors' profile.
- Able to view statistics of all debtor meetings, debtor status, time spent with debtor, and average meeting times.
- Able to view and edit financial data.
- Able to restructure the pipeline should the need arise.

Debt Counsellor

- Able to view all debtor profiles.
- Able to modify only their assigned debtor profiles.
- Able to view statistics on only the debtors assigned to them.

2.4 Operating Environment

The Pipeline Manager is to be used in an office setting; hence, it will be fully operational on MacOS and Windows.

Windows 10 and MacOS 10.13+ must be supported.

2.5 Design and Implementation Constraints

CS-1: Budget: Development must stay within the $50,000 budgetary allocation.

CS-2: Software must be compatible with Mac and Windows.

CS-3: Sensitive debtor information stored on the Pipeline Manager must be encrypted and accessible to only the Branch Managers and the Debt counsellor.

2.6 Assumptions and dependencies

AD-1: This project assumes that commercial licenses will be obtained for integrating the following software into a consolidated system: Excel, ShareFile, FreshBooks, and Google Calendar.

AD-2: This project assumes that the following software systems currently being used by 2Towers are capable of being integrated into a consolidated system: Excel, ShareFile, FreshBooks and Google Calendar.

We do not need integration with Excel, it needs to be able to store Excel files. We do not need to integrate with Sharefile, we would like the system to replace Sharefile. We need to integrate with Freshbooks because we would like every debtor profile to display the money they owe to 2Towers. We need integration with Google Calendar because it is widely used for other office scheduling.

AD-3: The method of data storage is to be decided by 2Towers. Hecksoft assumes that their selected storage medium can store and retrieve data without failure and within the timing specified in section 5.

Similar to the previous comment, we would like you to develop a data storage solution.

AD-4: Only one server of the Pipeline Manager will ever be running for 2Towers. Each 2Towers branch will connect to and use this single running instance.

We want this to be scalable for more users. For example, although this branch only has about 8 counsellors, there are many other branches across Canada, which may result in the system having to support more than 300+ users. We do not ever want to see or maintain a physical server.

3 System Features

This section will provide a description of each system features alongside their respective priority. Each system feature will include some functional requirements that we obtained from the 2Towers RFP [1].

3.1 Notification System

3.1.1 Description and Priority

The main goal of the notification system is to notify debt counsellors of debtors who have been stuck in a critical stage of the pipeline for the time frame specified by the branch manager. This directs the debt counsellor to book meetings with their debtor, therefore the notification system will be linked to the calendar to notify debt counsellors of important business dates such as upcoming meetings. **Priority: High**

The counsellors must be notified at any stage if the debtor has been in the stage over the specified timeframe for that stage. Also true for REQ-NS-1.

3.1.2 Functional Requirements

REQ-NS-1: The Pipeline Manager must notify the Debt Counsellor when their debtor has been stuck in a critical stage in the pipeline for a given time frame specified by the Branch Manager.

REQ-NS-2: The Pipeline Manager must notify the Debt Counsellor of upcoming scheduled meetings.

REQ-NS-3: Each Debt Counsellor will have their own calendar in the Pipeline Manager.

REQ-NS-4: The Debt Counsellor must be able to create their own calendar events in the Pipeline Manager's calendar.

REQ-NS-5: Each calendar can be modified only by the calendar's owner.

REQ-NS-6: The Debt Counsellor must not be able to see another Debt Counsellor's calendar in the Pipeline Manager.

2Towers employees should be able to see each other's calendars, but we would like the functionality to make some events 'private' (where no one can see the event except the person who has created it).

REQ-NS-7: A notification will be displayed only at the present time.

REQ-NS-8: The Branch Manager can view all calendars.

3.2 Configurable Pipeline

3.2.1 Description and Priority

Organization and prioritization are very important to 2Towers' business. The configurable pipeline will allow 2Towers to increase understanding of debtor progress towards recovery from debt, increase relations with debtors to prevent the loss of debtors, and increase prioritization of stages to promote efficiency.
Stages are not prioritized, but some stages will take longer than others.
Priority: High

3.2.2 Functional Requirements

REQ-CP-1: 2Towers must be able create new stages, modify existing stages, and move existing stages within the pipeline.

This should be Branch Managers who would have permission to do this. 2Towers is too broad.

REQ-CP-2: Each debt counsellor can assign any stage of the pipeline to their assigned debtor.

Ambiguous requirement when you have not seen CP-3. Only one stage of the pipeline can be assigned to a debtor at one time. Also, this operation can be done at any time, i.e. there are no other checks by the system to make sure certain meetings have occurred etc.

REQ-CP-3: A debtor should be assigned to only one stage at a time.

REQ-CP-4: 2Towers must be able to see the percentage of all debtors currently in each stage.

REQ-CP-5: 2Towers must be able to see which stage of the pipeline each debtor spent the most time in.

REQ-CP-6: 2Towers must be able to see the average time each debtor took to complete the pipeline.

Branch Managers can see all debtors, Debt Counsellors can only see their debtors.

3.3 Information Consolidation and Storage

3.3.1 Description and Priority

Information on debtors will need to be safely and securely stored and retrieved for other features. 2Towers currently has information stored in 5 different software systems that need to be consolidated; therefore, the existing data needs to be preserved and transferred into the Pipeline Manager. **Priority: High**

3.3.2 Functional Requirements

REQ-ICS-1: Store the following data about each debtor: first and last name, facial photograph, telephone number(s), email address, assigned debt counsellor, meeting notes, all scheduled meetings, financial information, and miscellaneous documents.

This information should be supported but it is not necessary to provide all of these fields in every debtor case.

REQ-ICS-2: Store all of a debtor's data indefinitely after the debtor is debt-free.

Ambiguous, data is stored indefinitely whether or not the debtor becomes debt free.

REQ-ICS-3: Keep the following statistic-related data indefinitely: client progress history and waiting times.

First highlight: Is client the same as debtor?

Second highlight: We are not sure what you mean by waiting times. We would like to track how much time a debtor spends in each stage.

REQ-ICS-4: Restrict access to each debtor's profile data to those authorized to access it, as detailed in the privileges feature.

REQ-ICS-5: Keep a complete list of timestamped revisions made to a debtor's profile and allow counsellors to revert to any past revision at any time.

REQ-ICS-6: When a reversion is made, the action should be listed as the most recent revision, and the contents of that list should remain accessible.

REQ-ICS-7: Each debtor profile should contain a list of every pipeline stage the debtor has passed through in the order that they were visited, including multiple visits to a single stage; the list should be ordered in the order that the stages were visited.

REQ-ICS-8: A calendar event must record the event's date, start time of day, end time of day, location, and description [text field containing up to 200 characters].

This is an unnecessary constraint. It was never specified.

REQ-ICS-9: Each debtor's financial information must be viewable in Microsoft Excel.

There is no need to view financial information in Excel. We only need the capability to store Excel files to later download them.

3.4 Limit System Access Using Privileges

3.4.1 Description and Priority

Only Branch Managers and Debt Counsellors (and not other 2Towers employees) should have access to the Pipeline Manager because confidential debtor information will be stored therein. Each Branch Manager should have access to all of the Pipeline Manager's data.
Priority: High

It was specified in the RFP that there were only two user types Branch Managers and Debt Counsellors. There are no other user types.

3.4.2 Functional Requirements

REQ-LSA-1: Each Branch Manager and Debt Counsellor should be required to sign in to use the Pipeline Manager.

REQ-LSA-2: Each Branch Manager and Debt Counsellor should be able to see every debtor's profile.

REQ-LSA-3: A Debt Counsellor can only modify their own debtors' information.

REQ-LSA-4: Each Branch Manager can modify any debtor's information.

3.5 Meeting Notes

3.5.1 Description and Priority

Each Debt Counsellor and Branch Manager should be able to enter notes taken during a meeting into the Pipeline Manager, where they are automatically linked to that meeting.
Priority: Medium

3.5.2 Functional Requirements

REQ-MN-1: The Pipeline Manager should be able to record notes taken during meetings with debtors.

REQ-MN-2: The Pipeline Manager should associate meeting notes with the meetings to which they refer.

REQ-MN-3: The Pipeline Manager should restrict access to meeting notes following functional requirements; **REQ-LSA-3** and **REQ-LSA-4**.

REQ-MN-4: Meeting notes should be accessible from a debtor's profile.

4 External Interface Requirements

4.1 User Interfaces

When a Branch Manager or Debt Counsellor is viewing a debtor's profile, the user interface must include a visual representation of the pipeline complete with a debtor's current stage. This pipeline would be modifiable only to Branch Managers. Imitating ZOHO's layout would help 2Towers employees adjust quickly to the Pipeline Manager because 2Towers currently uses ZOHO.

"Only by Branch Manager"

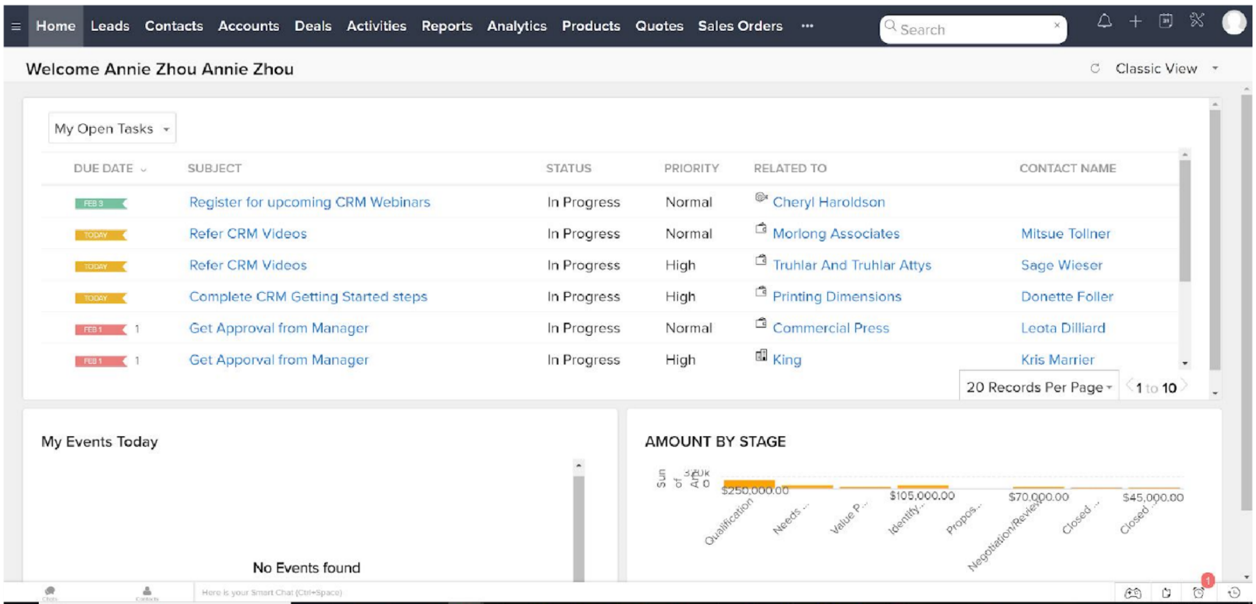

Figure 1.0 ZOHO UI example.

Figure 1 shows ZOHO's homepage. Currently, 2Towers uses ZOHO to keep records of all debtors' contact information, events and notes. 2Towers emphasized the importance of listing all debtors on one page, and customizable ordering and filtering features would complement the list nicely. ZOHO lacks both a notification system for stagnant debtors and a pipeline showing the stages a debtor would go through; these two features should be present in the new application.

The notification system should alert a Debt Counsellor if one of their debtors has been stuck within a pipeline stage for more than a period of time specified by the local Branch Manager. These notifications should name the stage in question.

The medium of the notification must be customizable to each debtor by the debt counsellor. An ordered history of each debtor's progression through the stages of the pipeline should be shown in their profiles. Many of ZOHO's features are not needed by 2Towers, so to reduce complexity, the navigation bar could be reduced to only 4 categories for debt counsellor accounts: Debtor Profiles, Leads, Financial Information (which would boot Excel to view the information), and Events. Branch Manager accounts should get a 5th category, Pipeline, from which they could edit the branch's pipeline on the rare occasion that it is necessary.

This sentence gives the impression the debtors are getting notified which is not the case. Only debt counsellors should receive notifications.

4.2 Hardware Interfaces

No hardware interface is being designed, to our knowledge.

4.3 Software Interfaces

Currently, 2Towers is using 5 different software applications: ZOHO for handling debtor info and meeting notes, Microsoft Excel for calculating financial data, ShareFile for storing document scans, FreshBooks for bookkeeping, and Google Calendar for scheduling. Using so many different programs is inefficient; therefore, consolidating the relevant features of all 5 programs into a single program is the main goal of the Pipeline Manager.

2Towers' existing records are stored in Excel documents. For this reason, it would be easiest to store all financial information as .csv files within 2Towers' database. Microsoft's Excel API can handle the intake and output of .csv files into and out of the application.

Similarly, both Google Calendar and FreshBooks' APIs would need to be integrated into the application in order to retain old data.

4.4 Communications Interfaces

Each employee's computer that is using the Pipeline Manager will require communication over the internet with the Pipeline Manager's centralized server. This traffic includes all debtors' data that is in the Pipeline Manager, which must be secured. All communications and file transfers will be encrypted following standard internet security practices.

Citation needed for review. Unclear what standard internet practices are.

While the Pipeline Manager will store debtors' contact emails, it will not interface with email servers. The email addresses will be manually copied into a traditional email client when email communications are required.

5 Other Non-Functional Requirements

5.1 Performance Requirements

REQ-NFR-P-1: No statistical calculation should take more than 5 seconds; this includes retrieval of the amount of time a debtor has spent in each stage, the percentage of the current client base held by each stage, and other calculations.	
Rationale:	Each Debt Counsellor needs to be able to do their jobs efficiently, and excessive time spent waiting for routine calculations is a waste of their time and 2Towers' money.

REQ-NFR-P-2: A person accustomed to their computer should be able to create, view, and update debtor profiles with an error rate of less than one in four given half an hour or less of training. Seems like this is quite high	
Rationale:	A numerical specification of onboarding time ensures unambiguously that the system is sufficiently easy to use.

REQ-NFR-P-3: The Pipeline Manager must be able to support at least [TBD-1: see Appendix 1] active users at one time without delays longer than the maximum specified delay length and without an increased frequency of crashes or errors.	
Rationale:	Multiple debt counsellors and branch managers will use the Pipeline Manager as part of their daily work, and we must support all of them without problems.

5.2 Safety Requirements

REQ-NFR-SA-1: Debtor identity verification is required when uploading documents associated with that specific debtor.	
Conflict Behaviour:	When a Debt Counsellor or Branch Manager attempts to upload a document, they will be warned which debtor's profile they are about to upload to. If they have the right debtor, they will simply ignore the warning; if not, they will be able to cancel the upload.

REQ-NFR-SA-2: Each Debt Counsellor and Branch Manager should not be able to save blank, nonsensical or improperly-formatted data in debtor profiles.	
Conflict Behaviour:	When creating or editing debtor profiles, the presence of any information fields that are empty or contain incorrectly-formatted information should a) be clearly marked in bright red on the screen and b) prevent the user from saving the new or edited profile. Not all fields should have to be filled out in order to save. There is some information that makes sense to be filled out (ie name) but a lot of other info should not be required as sometimes debtors forget to bring information to meetings but we still want to input everything else.

REQ-NFR-SA-3: It should be impossible for Debt Counsellors and Branch Managers to accidentally overwrite edits made to currently-displayed profiles by other Debt Counsellors and Branch Managers.	
Conflict Behaviour:	The user should be informed if another user saves edits to a currently-displayed profile.

5.3 Security Requirements

REQ-NFR-SE-1: All client information and files are encrypted when transmitted and saved.

REQ-NFR-SE-2: Each Debt Counsellor and Branch Manager must sign in to use the system.

REQ-NFR-SE-3: Each Debt Counsellor and each Branch Manager have the credentials to use the system.

Each branch manager and debt counsellor should have their own unique set of credentials

REQ-NFR-SE-4: The threat of unauthorized access must be mitigated by following the best standard security practices.

REQ-NFR-SE-5: This system must abide by all restrictions, record-keeping, and protocols defined by Canadian law [2].

5.4 Software Quality Attributes

Maintainability

- The Pipeline Manager must not exceed $1000 in annual costs to maintain.

Portability

- 2Towers can access the Pipeline Manager on all versions of Windows and MacOS published since 2015.

Windows 10 and OS X 10.13 was requested in section 2.4

Reliability This section details availability not reliability. It is not discussed how the system is reliable.

- Pipeline Manager downtime must not exceed 24 hours per calendar year.

I would say downtime should not exceed 24 hours for unscheduled downtime. More than that is definitely acceptable when it is planned (little to no use outside of business hours is expected for the system)

Usability

- A new user can navigate to any desired information in the Pipeline Manager within 1 min.

6 Other Requirements

There are no additional requirements.

Appendix: TBD List

TBD-1: How many users (both debt management counsellors and branch managers) should the Pipeline Manager handle at one time?
We are currently a small team, but we intend to grow, so the system ideally will be very scalable (upwards of 100’s of concurrent users)

Missed Requirements

We are not sure if this was mentioned before, but the branch managers needs to be able to reassign a debtor to a new counsellor (for example, in the event a counsellor leaves, goes on vacation etc)