

Client Report: Designing an Effective SharePoint File Management System

In response to RFP
from the Greater Victoria Coalition
to End Homelessness

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Dear Dr. Michelle Vanchu Orosco:

Our team has completed our conceptual SharePoint file management system in response to the Greater Victoria's Coalition to End Homelessness request for proposal. Please find enclosed our report documenting our solution, its feasibility, and our suggestions on implementation.

The new system utilizes a nested folder structure and consistent file naming scheme to provide each document a unique place in the file system. In our research, we determined that these two components satisfy all the required objectives outlined, while remaining simple to use and low-cost. While SharePoint has additional features, we did not find them to improve our solution without unnecessarily increasing cost, complexity, or both.

This project gave our team the opportunity to explore tools available in SharePoint at a much deeper level than otherwise possible. Given the popularity of SharePoint in many workplaces, this will benefit us greatly in the future when transitioning into an existing file storage system or creating a new one with another team or organization.

Team 1 Consulting would like to thank Dr. Kate Skipsey for her support as we worked towards the completion of our solution. Her expertise provided us with valuable feedback through the entirety of the design process, enabling us to better refine our recommendations.

Sincerely,

Antony Xiao, Ariana Allsopp, Bea MacDonald, Nathan Pannell

Attachment: *Client Report - Designing an Effective SharePoint File Management System*

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Executive Summary

A few years ago, a cyber attack on the Greater Victoria Coalition to End Homelessness (GVCEH) diminished the safety, reliability, and useability of their file storage system. These three aspects now require a significant overhaul to return improved functionality to the implemented system.

Our solution utilizes the default feature set offered by Microsoft SharePoint to provide major improvements to these three key measures. In particular, we have identified the following features that will grant the largest improvement to the GVCEH:

- A tiered folder structure
- Administrative privileges
- A standardized file-naming convention

In addition to providing improvements to security, reliability and useability, our research has determined that most individuals can incorporate these features regardless of technical knowledge. This solution directly satisfies the objectives present in the RFP by providing recommendations on how to create an intuitive, organized, and low-cost platform. If the members of the coalition cannot fully implement our solution, the GVCEH may employ the use of a co-op student to complete and assist with the outstanding tasks.

1. File Organization Issues

The Greater Victoria Coalition to End Homelessness (GVCEH) unites organizations, businesses, and governments aiming to help those experiencing homelessness [1]. After someone hacked their physical server and local network a few years ago, the GVCEH moved all documents to Microsoft SharePoint, a web-based collaboration platform for document management and storage [2]. While SharePoint inherently fixed many of their safety issues, they failed to adapt their file system to the new medium, overall resulting in a disorganized file storage structure that made accessing needed documents unintuitive and time-consuming [3]. Thus, via an RFP, the GVCEH asked for a solution that would increase document accessibility while maintaining the security of their information [4].

The coalition needs a new solution for storing and accessing their documents in the cloud. This solution should allow easy file storage and retrieval, make use of administrative privileges to streamline organization and encourage collaboration, and include security features that meet or surpass the organization's requirements. Lastly, due to the GVCEH's non-profit status, the cost of implementing and maintaining the solution must remain low.

Considering these constraints, our team proposes the creation of a tiered folder structure and standardized naming convention to optimize the organization and searchability of files using the current cloud service, SharePoint.

2. Organizational Solution

Our proposed solution would implement a tiered folder structure into SharePoint and create a standardized naming convention for the documents. These key changes will allow for a more intuitive organization system while maintaining the excellent security features offered by default in SharePoint.

2.1 System Solution Description

Our solution consists of two organizational changes. By implementing a tiered folder structure into SharePoint and naming all files using a decided standardized naming convention, the file system will become more intuitive to navigate. The precise implementation of these changes will vary depending on the coalition's existing file structure, but there are some important guidelines and rules to follow.

2.1.1 Folder Structure and Naming Convention

A tiered folder structure organizes files by splitting them into categories and subcategories [5]. This method gives every file a proper location, which simplifies document storage. **Figure 1** shows an example of a tiered folder structure. Depth is the

most important consideration for a folder tree, as minimizing depth ensures more efficient retrieval time [11]. With larger file depth, locating and accessing the desired location becomes more difficult. Ideally, a two-depth folder structure optimizes file lookups, however larger quantities of files make this difficult to maintain. In general, only minimize folder depths to a degree that subfolders do not become overfilled.



Figure 1. Example tiered folder structure

While folder structure has a significant impact on file organization, an effective naming scheme also increases effectiveness of a document system. Standardized naming conventions outline a method for uniquely naming all files across a file system. All documents must contain keywords that give descriptive, but concise information about what a user can expect to see in the file [10]. These keywords become crucial to taking full advantage of SharePoint’s search functionality. The convention chosen must stay constant throughout all documents, including new and existing files. This allows for a simpler retrieval of files, as the user can simply search for a keyword and find all related documents to that term. Most essentially, a consistent and efficient file storage system requires an effective convention [6].

The naming convention can include many components of a file contents, such as document type, purpose, topic, or file status, as well as many more. The users of the file system decide the components included in their convention, as well as their ordering, which can vary greatly depending on what would benefit their system. For example, using the [document type]-[topic]-[files status] format, a file could have the name “policy-new hires-draft”. SharePoint automatically includes searchable information such as author, date, and filetype when the file gets uploaded to SharePoint, so they aren’t included in the name.

These solutions increase the efficiency and usability of SharePoint, thus significantly improving the organization of the GVCEH’s files by making both storing and retrieving

documents simpler. Each file has a precise location and name, which means every document will get stored in the right place. For example, a request for a proposal could have the name 'RFP-storage solution-version 1' and could get stored in the 'current RFPs' folder nested within an 'active requests' folder in their documents. Users can effortlessly access files of a certain category through the tree-like structure [7], and they can find all files of a certain purpose by searching for a keyword.

Additionally, SharePoint offers the ability to create permissions on different folders for groups and individual members [8]. Therefore, administrators can choose who can access specific documents. This feature makes SharePoint more secure for the organization and allows for increased collaboration, since the administrative privileges encourage simultaneous access of a single file. Together, all the components of the proposed solution work together to not only organize initially, but to maintain the organization structure with only minimal upkeep by each member of the file system.

2.1.2 Comparison of Systems

Because file retrieval serves as a major issue in the GVCEH's current system, minimizing time spent accessing saved files serves as the key objective of our solution. Therefore, we have weighted file retrievals the highest of all criteria present in **Table 1**. We deemed file posting slightly less important than retrievals, as a file only needs uploading only once, but may need retrieval multiple times. Collaboration tied for importance with file postings, and implementation, cost, time, and admin features round off the objectives with the least weight.

Table 1. Weighted objectives chart

Objective (criteria)	Wt. /100	Measurement Parameter	Solution 1: SharePoint with naming system			Solution 2: Keep Current System		
			Mag	Score	Value	Mag	Score	Value
Retrieving files	25	Minutes	0.5	4	100	4	0	0
Posting files	20	Minutes	1	2	40	0.5	4	80
Collaboration	20	# Of additional collaboration features	3	3	60	1	1	20
Implementation	15	Hours	16	2	30	0	4	60
Additional Cost	10	CAD \$	0	4	40	0	4	40
Admin / Group capabilities	10	# Of additional collaboration features	1	2	20	0	0	0
Overall Utility Value:					290	180		

With solution 1, it will take slightly longer to post files but significantly less time to find them afterwards. SharePoint's group [12] feature applies to folders to both increase collaboration and implement admin features/security. As the GVCEH already has a SharePoint subscription, the initial investment towards solution 1 comes at no additional financial cost. We estimate the time spent implementing the new solution at 2 days, but it will vary depending on the experience of the volunteer. Additionally, if the GVCEH continues to use SharePoint, Microsoft has many free resources with instructions, so that someone with limited technical knowledge can easily implement these solutions [9].

2.2 Breakdown of Supporting Research

Research into SharePoint and document management systems has shown that firms can use SharePoint to build large, complex systems [13]. Analysis of case studies provides an idea of effective ways that real organizations use SharePoint as a document management system, such as folder structure and file naming. However, for smaller organizations such as the GVCEH, our team recommends a smaller-scale solution.

2.2.1 Cost-Benefit and Complexity

As an organization with only a handful of members, the GVCEH needs an effective document management system rather than a more complicated intranet platform for coordinating with hundreds of people. This simple use case allows for a simple solution that will keep costs low. A volunteer or co-op student can implement the proposed solution quickly and at minimal additional cost.

Larger, more involved solutions may implement more features, but higher complexity comes with many caveats. Most significantly, complicated solutions come with difficulties when implementing and teaching new users. In addition, longer implementation time and potential external tools come with higher costs.

The proposed solution will significantly improve user experience when navigating SharePoint and will remain extremely easy to implement and learn for new users. This balance works best for a team in need of a simple, effective document management platform.

2.2.2 Historical Usage of SharePoint

Some organizations have developed highly specialized SharePoint solutions [14], but, as mentioned in the previous topic, the complexity exceeds what the GVCEH needs. Large companies who need specific features and workflows historically use SharePoint, thus numerous IT companies specialize in creating custom, expensive SharePoint solutions.

2.2.3 Possibility of Hiring a Co-op Student

It is possible and within the scope of our solution to hire a co-op student. The co-op student should either write a program that automates the file renaming process and folder restructuring to a specification, or manually apply the aforementioned changes if creating a program for such a task proves too difficult. Because programming and software development knowledge is crucial to this task, we recommend hiring only co-op students at least in their second year of studies in a Computer Science or Software Engineering program. We recommend a co-op term of 4 months, as we believe that the student can fully implement our solution in that timeframe. The co-op student will first implement the proposed solution, then for the remainder of the co-op term, they will teach the new implementation to the members of the coalition, produce a comprehensive manual for the new implementation, and modify the implementation as needed.

2.3 Implementation Steps

There exist a variety of ways to implement the proposed solution, such as hiring a co-op student or volunteer. Either way, a few steps must take place before reorganization begins.

First, the GVCEH must determine which precise folder structure and naming convention to use. Folder structure will depend heavily on common tasks and files used by the coalition, but generally they get broken down by team, document type, or project.

The standard naming scheme for files will also change based on the coalition's needs. Including document type, version number and a meaningful (but brief) description in the file's title will make it easier to find and understand in the future.

With the rules laid out, we recommend creating a manual that outlines all the standards and structural fundamentals for the new folder structure. This document will act as reference for teaching coalition members and reaching a consensus among the entire team. If everyone follows the same guidelines on posting files, the variance in how the storing of documents gets reduced. In addition, having a record of how members add files to SharePoint makes it easier to locate those files in the future.

Once the manual has been created and distributed, GVCEH members should educate themselves on how to post files correctly according to the new system. Those adding documents to SharePoint must know how to add them properly as this removes the need for long-term maintenance (i.e., large cleaning processes every 6 months). Education on the new system can consist of sending an email outlining the new procedure, or a SharePoint workshop can teach SharePoint fundamentals at a fuller capacity.

Finally, migrating the current system into the new structure will take time. The GVCEH may consider hiring someone dedicated to cleaning up the file system quickly, as completing this stage as fast as possible will immediately benefit those searching for files. Despite this, reorganization does not block access to the file system, as other members may continue to work on files as they get moved.

In short, to implement the proposed solution, the GVCEH must (1) determine which folder structure and naming convention to use, (2) create a shared manual outlining these standards and educate members on its usage, and (3) reorganize existing files within SharePoint to match the new standards.

3. Conclusion

The RFP issued by the GVCEH [4], along with a presentation [3], expressed concerns with SharePoint's current usage as a document management system and the adverse effects of the current solution. Our proposed solution involves a hierarchy of folders and standard naming conventions that will save significant time and energy in the long-term according to our research results. Our research identified the most realistic and effective strategy to solve the GVCEH's problem and to streamline their workflow.

4. Recommendation

In response to the RFP issued by the GVCEH, we recommend the implementation of a tiered folder structure and file naming scheme. Despite the amount of work required to implement such a structure, this solution ensures efficiency in document lookups, intuitive file uploading, and security, while satisfying the constraints of the project by staying low-cost and maintainable. To implement such solution, we recommend the members of the GVCEH complete the following tasks:

- Agree on a naming convention that provides relevant information to the contents of the file, without providing redundant information already included in SharePoint file metadata
- Determine an effective folder structure which provides each file a unique location, minimizing tree depth where possible
- Reconsider the chosen schemas while migrating existing files into the system to better satisfy the coalitions' needs

While we believe that existing members of the coalition can complete these tasks, the GVCEH may wish to hire a coop student to complete the work of file migration or folder setup. While this will increase cost, the implementation becomes more correct and complete.

5. References

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Appendix A – Work Logs

Table 2 outlines the work logs for all members of our team, and includes the date completed and time spent for each task.

Table 2. Team worklogs for client report

Task	Assigned to	Date completed	Time spent
Research Sources	Ariana, Nathan, Antony	Nov 12	3.5 hr / 3 hr / 2 hr
Letter of Transmittal	Bea	Dec 2	2 hr
Executive Summary	Bea	Dec 1	2 hr
Introduction	Ariana, Antony, Nathan	Dec 2	3 hr / 3 hr / 3 hr
Solution Description	Ariana, Nathan	Nov 30	7 hr / 1 hr
WOC	Ariana, Bea	Nov 29	1 hr / 1 hr
Research Section	Nathan, Antony	Dec 2	4 hr / 2 hr
Conclusion	Antony, Nathan	Dec 3	1 hr / 1 hr
Recommendation	Bea	Dec 2	2 hr
Appendices	Ariana, Bea, Nathan	Dec 5	2 hr / 2 hr / 1 hr
Final formatting (TOC, document design, etc.)	Bea	Dec 5	2 hr
Content Editing	Ariana, Bea, Nathan, Antony	Dec 5	6 hr / 6.5 hr / 5 hr / 3 hr

Appendix B – Objectives Scoring Criteria

Table 3 defines the criteria which we used to score our solutions in the weighted objectives chart.

Table 3. Scoring system for objectives

Score	Posting	Retrieving	Collaboration	Implementation	Additional Cost	Admin
0	>3 minutes to post files	>3 minutes to retrieve files	0 collaboration features	Requires hiring co-op student	>\$1000 per year	Lacking all important admin features
1	2 - 3 minutes to post files	2 - 3 minutes to retrieve files	1 collaboration feature	2 - 7 days of work	\$500 - \$1000 per year	N/A
2	1 - 2 minutes to post files	1 - 2 minutes to retrieve files	2 collaboration features	1 - 2 days of work	\$100 - \$500 per year	Basic admin features (permissions)
3	30 seconds - 1 minute to post files	30 seconds - 1 minute to retrieve files	3 collaboration features	<1 day of work	\$0 - \$100 per year	N/A
4	<30 seconds to post files	<30 seconds to retrieve files	4+ collaboration feature	No work needed	\$0 per year	High security and full admin features

Appendix C – Team Charter

Table 4 describes the expectations for each team member throughout the semester.

Table 4. Team charter containing criteria outlining team expectations

Criteria	As Expected	Needs Improvement	Unacceptable
Regularly Attends Meetings	Attends all Team Meetings on time, and gives suitable notice for all missed meetings	Misses occasional meetings without informing teammates, or not providing enough notice.	Makes no effort to attend meetings
Meets Deadlines	Submits all tasks to the team by the agreed upon deadline	Regularly submits work after deadlines	Did not complete their task
Responsive-ness	Typically within 24 hours, unless notice has been provided	Regularly over 24 hours, but within 2 days	After 2 days
Preparedness for Meetings	Fully Prepared	Lack of preparedness causes minor disruption	Lack of preparedness causes major disruption
Behaviour	Safe, respectful, good attitude. actively say “please” and “thank you”	Lack of cooperation, interrupting other team members, showing frustration inappropriately, poor manners	Physical aggression, dishonestly, harassment, stealing, threatening other team members
Contribution/ Effort	Contributes to an equitable amount of work to an effort fully reflective of their capability	Contributes partially, although other members must remind the individual to contribute their share	Hitchhiking behaviour or consistently submits work needs requiring major rewrites due to lack of quality
Feedback	Gives helpful and constructive feedback when necessary and receptive to all feedback received	Gives minimal or unhelpful feedback or only occasionally receptive of feedback	Does not provide feedback and ignores all feedback given by team members
Open-mindedness	Always open to new ideas and willing to peacefully discuss and accept change without excessive frustration	Resistant to others' ideas to a point that stalls progress or causes small amounts of frustration	Does not compromise with others, causing major conflict that leaves the group divided.