

Web-Based Communication Management Portal

Final Report

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SAUDER SCHOOL OF BUSINESS
THE UNIVERSITY OF BRITISH COLUMBIA

EXECUTIVE SUMMARY

The purpose of the UBC Project Services web-based project management portal project was to improve the effectiveness and efficiency of the communications regarding renovations and construction on campus within Project Services, and with the rest of the UBC community.

We began this project by defining the problems with the current system, while compiling a collection of all functionality that would be necessary for the system to provide. Two problems emerged as the focal points for this study: providing the necessary forum to facilitate collaborative document creation and manipulation for project teams, and making this process as transparent as possible to provide the UBC community with an easy way of finding the most current project information available.

After analyzing a number of different project management alternatives, we recommended implementing a content management system, which would be able to accommodate Projects Services' requirements. A wide range of open source options were available, however Microsoft SharePoint proved to be the most suitable choice. Our selection was based on the software's ability to provide long run technical support at a reasonable cost, versatility in its ability to facilitate document sharing, and the ease in which the system could be utilized to its full potential given the level of available training.

Also included in our analysis is a view of the logical design, outlining the security issues concerning project and document access, as well as the necessary hardware and software upgrades required before the system can be implemented. Finally, a timeline addressing key project steps along with an implementation guide are included to provide guidance for a successful execution.

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ORGANIZATION DESCRIPTION

λ **Introduction:** This project is part of the *UBC SEEDS Projects* in the *Campus Sustainability Office*. It is based on the needs of *Project Services office* in the *Land & Building Services* at UBC.

λ **Land & Building Services – Project Services:** **Land and Building Services** is responsible for campus facility maintenance. Services such as: constructions, renovations and repairs of all the land and buildings of UBC are all a part of this department's major responsibilities. They are also responsible for preparing UBC's Official Community Plan and Governance Study, which is used as a foundation for all development, land use, and transportation activities at UBC.

LBS Project Services is a fee-for-service provider of development, design, and project management services to successfully guide and manage any construction project from inception to completion. In addition to being able to provide tailored services for renovations, restorations, upgrades and new additions to campus buildings, **Project Services** can assist a project team working in a Project Oversight role to ensure that the new or renovated facility complies with UBC's high standards of quality and excellence. **LBS Project Services** has successfully completed hundreds of millions of dollars worth of design and construction to campus buildings. (*Appendix 1* shows the stage-based work breakdown of one project)

λ **UBC Renew:** **UBC Renew** is part of Project Service's work. It is proposing a rehabilitation program that will improve learning conditions for students and faculty members. By utilizing the analytical systems developed through the Facilities Infrastructure Management Plan (FIMP), the UBC Renew project is driven by the academic plan of the university in an effort to match

the long term academic goals of the campus with the required infrastructure renew. It accommodates new academic initiatives and methodologies in existing buildings, and addresses deferred maintenance problems, performance codes, asbestos, and safety upgrade issues at the same time. Its activities are integrated with all other campus initiatives such as the ECOTrek.

λ **Information Flow Issues:** With several construction projects going throughout the UBC campus throughout the year, there are numerous cross-functional work teams requiring communication between teams throughout the progress of their respective projects. In the past, communication between these teams such as the UBC Project services staff and the construction teams have been hindered by a lack of a central communication means. The Management Portal we have proposed will serve to centralise and expedite communication flows between the respective work teams. The primary purpose of this portal will be to increase and ease information flow through means such as online file distribution between the respective various external and internal users which will be discussed in the following section.

λ **People Involved in the Web-base Communication Management Portal**

λ ***Faculty, students, and residents around UBC:*** view the general information of all the constructions, renovations around UBC.

λ ***Design teams, foremen, workers:*** upload and download information, documents, forms, and drawings, exchange information, fill out forms and submit them electronically.

λ ***Office staff, Project manager:*** upload, download and update information, forms, documents, scheduling, billing information, estimates, etc.

λ ***System administrator:*** responsible for regular maintenance and upgrade the system, assign / delete user name, password in the system.

INFORMATION SYSTEM DESCRIPTION

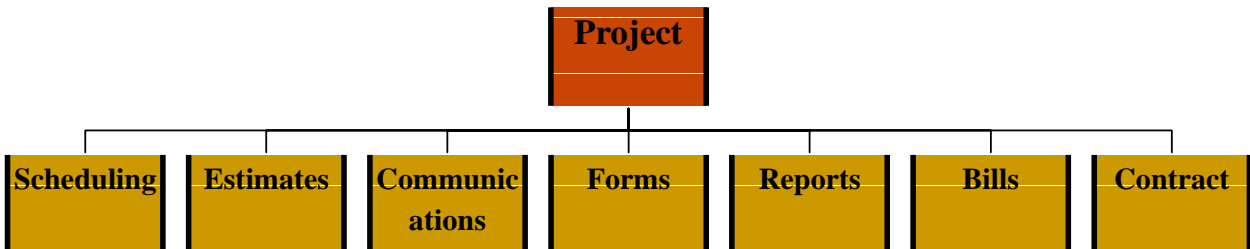
In order to delivery a qualified communication management portal, we need to fully understand the *current electronic filing system* and *software* that the Project Services is using.

λ Land & Building Services – Project Services

Currently, there is one central server shared by all the staffs in the Project Services office. The filing system in the server is extremely disorganized doesn't have any use access control and backup function, everyone in the office can create or delete folders, documents in the server.

Before this project has started, the office staffs used to think about reorganize the filing system into five components, which are *administration*, *associate director*, *design office*, *operating manual*, and *project office*. (Appendix 2 shows the structure of the *electronic filing system*)

Currently, the office staffs are planning to reorganize the system into a different format, so that each project will have one unique folder that contains all the applicable information including: scheduling, estimates, communication, forms, reports, contract, monthly revenue, billing information, etc. Together with the communication management portal, staffs will be able to work in one unique database environment and exchange information, upload and download documents, etc. The idea diagram is showing below:



λ **Software**

The software that Project Service is using can be divided into two parts, as the following suggests:

λ ***Office staff, project manager***: Microsoft Office suite (Word, Excel, PowerPoint), Microsoft Project

λ ***Design team***: Microsoft Office suite, Microsoft Project, AutoCAD

The web-portal communication management portal will bring all the software together into one system, so that staffs can work on a centralized database.

PROBLEM IDENTIFICATION

The problems faced by the Project Services office can be subdivided into two main components: those with the students and faculty, and those with their outside contractors and work teams; but the problems mostly seem to have the common thread of communication at heart.

Concerning the outside contractors, the Project Services office currently uses the traditional, rudimentary means to conduct regular business communications, all of which have significant disadvantages. Using the telephone for regular or conference calls does not allow them the freedom to share documents unless everyone has been faxed or couriered everything before hand, while email does not allow for real-time interaction and can be time consuming. In person meetings are quite expensive on time and co-ordination of schedules difficult. All this added slack in communications greatly lengthens the project development cycle. The Project Services office is looking for a solution that will allow them the freedom of communication and collaboration that in-person meetings allow but without the need for time consuming travel; time being in high demand. According the “*Timeline for Project Delivery*” (in [Appendix 3](#)), other than the actually construction, the design phase is allowed double the time for completion compared to other steps.

Concerning the students, the current resources used to connect with students about the current projects being undertaken by the office are inefficient. The current website is hardly known about and is not visited by either UBC faculty or students. It is also quite difficult to locate, even for those who know about it and are actively trying to navigate to it. It also is not updated regularly with the information relevant to UBC patrons, contributing to its lack of use. The Project Services office would like a tool that would be easy to access by everyone at UBC, and contain up-to-date, relevant information about the projects being undertaken by the Office.

Furthermore, the filing system in the server which is using by the Project Services office is extremely disorganized doesn't have any use access control and backup function, everyone in the office can create or delete folders, documents in the server. These created lots of data redundancies and data inconsistencies in the system.

One major constraint facing the Office that is not communication related, but affects all projects undertaken is resources. The Project Services office seems to have to fight for every dollar, and so any solution proposed must pass rigorous cost/benefit analyses before being pursued. The Project Services office has a budget of \$20,000 to \$40,000 for the necessary upgrades.

REQUIREMENTS

λ Introduction

The Project Services office manages various construction projects at any given time. However, the Project Services office does not have a centralized means whereby parties with an interest in the construction projects can communicate freely with each other. What is required is an online portal that will facilitate communication between external and internal parties.

λ External Users

The external users of the portal need to be able to easily access the portal, and have the information that they need readily available. The front end of the portal needs to have information on current, past, and future projects posted on the page. The user should be able to go into any one of these projects and find detailed information on various things such as potential disruptions, completion times, and road closures. In addition visitors should be able to communicate with the project services office both privately through e-mail, and through a public forum or message board.

λ Internal Users

While the portal serves to inform external users, the main purpose of the portal is to facilitate the communication amongst internal users to facilitate increase in efficiency of the construction project and ease of sharing of information. The portal will allow internal users such as construction teams, office staff, and design teams to upload and download various files and folders, post and respond to an internal message board, and modify and repost files.

λ Requirement Details

Security

As there are many different functions that can be performed on the portal, an authorization for

different users has to be implemented. This has to be done through an initial log-in system. For example, while external users will be able to access basic information regarding the construction project, they will not have access to more detailed information on building layout and designs plans. As there are different unique users requiring varying levels of authorization for each project, at the beginning of each project the office administrator for the project will have to define each user and the access levels attached to that user at the beginning of the project. Therefore this will enable a secure system.

Archive

Additionally, the system should also have the ability to archive and backup completed projects. This means that there should be a way to download all files related to a specific project, so that they can be written to storage media. This should be done so that information is not lost if the system were to crash. Also through the archiving feature storage space on the server is not wasted on files that are no longer relevant.

Online Database

Furthermore, the client requires the implementation of an online database. The client currently maintains files on a common server that is shared with other departments. However, this file system is relatively primitive in that they it is basically just files placed on a server without any resemblance of a structure. Having an online database will reduce data redundancy and will allow increased access to users through better query searches. Currently, they have an electronic filing system which consists of an unorganized mix of files and folders located on a server. They require this database to be available online to enhance information sharing between internal and external parties.

λ **Portal General Requirements**

Overall this portal needs to improve the communication flow between everyone who is in any way involved with or affected by a construction project. This needs to be done to increase the efficiency with which work is done. Instead of sending everything via courier, information should simply be made available through the portal, so that everyone authorized, can access it.

CONSTRAINTS

- λ **Organizational Constraints:** most of the staffs in Project Services office are lack of technical skills, it is possible that they may not accept the new system or the time required to train them may be relative longer than assumed. To mitigate this constraint we will ask our client to increase efforts to educate the staff about the benefits of using this system and once they are educated about the benefits they will be more likely to readily adopt this system and adopt the required training to become proficient in this system.
- λ **Economic Constraints:** the most important issue here is the budget constraint, the maximum expense that Project Services office can accept is \$40,000.
- λ **Technical Constraints:** as Project Services office does not have their own server now, they may need to purchase a new server for their own, due to the storage space limited problem, in order to run the system properly.

CRITERIA

General Criteria: in order to make the web-base communication management portal fully satisfy user's requirements, the following criteria have to be taken into considerations when evaluate each alternative:

- λ Total Cost, include cost for purchasing a new server, system operating cost, implementation cost, maintenance cost, and the cost of retain users.
- λ Relevant & reliable
- λ Support university's growth
- λ Level of user satisfaction
- λ Potential of the system to adapt to future changes (adaptation to change)
- λ Length of time to implement the system
- λ Level of risk
- λ Changes of users' thinking and requirements

Criteria for purchasing off-the-shelf software:

- λ Cost
- λ Functionality – tasks the software can perform and the mandatory, essential, and desired system features
- λ Vendor support – whether or how much support can be provided
- λ Viability of vendor – the software industry is quite dynamic
- λ Flexibility – how easy it is for you, or the vendor, to customize the software
- λ Documentation – user's manual as well as technical documentation

- λ Response time – how long it takes the software package to respond to the user’s requests in an interactive session
- λ Ease of installation – loading the software & make it operational
- λ Compare the cost of developing the same system in-house with the cost of purchasing or licensing the software package (economic feasibility measures)

ALTERNATIVES

λ Reuse/new design & in-house development

Depending on the level of complexity and features required from the web portal, it might be possible to create a satisfactory solution by having resident designers and programmers develop a system from scratch. Project Services could continue to use their existing server, but they would need to reorganize their filing system before implementation. Much effort will be made to use the existing system to ease the burden of completely designing the system from scratch.

There are also several organizational changes that would need to take place before a new system can be implemented. Project Services would need to divide their users into different groups, depending on the access level requirements and strictly adhere to these divides. This is to ensure that only those with the granted access have the appropriate privileges thereby making the system more secure by restricting access to sensitive documents. Regarding designing of this system, UBC has many economical and valuable resources in co-op or internship students with the capabilities to implement this system such as students from the faculty of Computer Science.

After the reorganization of the database in the server, a web portal that could link to the database so that users can have access to the Internet needs to be designed, allowing contractors from remote locations to partake in group design activities and real-time communications.

λ Reuse/new design & hire outside consultants

It is very possible that the development of a system suitable for Project Services could be beyond the scope of what students could realistically develop. This would necessitate contracting out the design and development to an external firm. This solution very much similar with alternative one, differs in that Project Services would seek professionals to implement the system.

λ **WebCT**

WebCT is the learning management software, or “E-learning” system that was developed by faculty at UBC and is currently used by several postsecondary institutions across North America. It allows students to log on using a university-assigned account and access information such as assignments, bulletin boards and grades online for each separate class. WebCT features were very similar to what Project Services was looking for, features such as document posting, modifying, and message boards.

We can demonstrate the conversion from Learning Management Software to Content Management by altering WebCT’s existing components. WebCT contains three levels of user access: system administrators, designer and users. Therefore, we can create one “class section” account for each project, and assign a user name and password to staff and project managers as “designers”, and assign a user name and password to design teams, foremen and workers as “users”, which would be the equivalent to student. Designers can add or delete forms, post messages, and the Users can view information, download forms, post messages, but they cannot add, delete, or alter online documents.

This option would also make it relatively simple to allow for maximum transparency to the public. UBC students, faculty, or even the general population could be granted access to certain “public” pages that describe the working projects in detail, giving the public key information regarding construction schedules or completion dates. This would be a major step towards “[providing] information and create a more cohesive community at UBC”, as originally desired by Project Services.

WebCT was primarily intended as a learning tool and therefore has never been used for anything other than its originally intended purpose of providing a forum of interaction between students and faculty, so there would be no guidelines or example to follow throughout this conversion process.

λ **Open Source Content Management Software**

Content management software (CMS) simply put, is software that allows many people to add or manipulate the content of a website. The software researched for Project Services are more elaborate software applications intended to store and process large amounts of complex information, with the key goal being to take information and organize it so that it is easily retrievable and updatable. The information must also be flexible in how it can be reformatted and retransmitted, and searchable.

All CMS options provide the majority of the same core features (CMS Feature List). Hundreds of possible choices are available to download online for free as open source, each being slightly different as to the level of programming skills needed to operate, the language used to code them, and the ease of use. The three considered for Project Services were chosen on the basis of their operability, their simplistic interfaces, and also the large number of reputable organizations already using this software.

Each selection will be addressed, its key features outlined, and a brief list of known organizations using it.

a) Typo3

Typo3 has a very simple interface, and uses WYSIWYG (What You See Is What You Get) editing. All web page design is done from the perspective of the final user, so that what the

programmer sees is exactly what the user will see. Typo3 also makes use of extensive logging, so that every detail of every change made to a communal page can be traced back to a person, time and location, allowing for perfect record keeping and the possibility of infinite rollbacks. Pentax and VW are two major companies that make use of this free software.

b) Drupal

Drupal, the second open source alternative, sports a robust personalization environment, meaning that both the content and the presentation can be individualized as per user preferences. On top of this, the designers' perspective can also be highly customized, with frequently used tools, applications and templates placed only a click away. It also makes use of what it calls "perma-link" technology. This is the term Drupal uses for its feature that ensures that even though documents or pages get transported around from project to project or folder to folder, links intended to point at that document are never broken. The UBC Commerce Undergraduate Society uses this software to maintain its website.

c) Plone

Plone was developed using the same programming language (Python) as is used by Google, and possesses many features that gear it towards being a timesaving system solution. It features a very extensive array of templates for every possible use, from news postings to bulletin boards to instant messaging, saving the user hours of stylistic hassles. For an open source software package, it sports a surprisingly large number of companies specializing in Plone development and support, meaning that users must not limit their search for aid to strictly message boards or consultants with little experience with this particular CMS. Companies such as NASA, OXFAM, and Vera Wang use this software to manage their content management needs.

λ **Microsoft SharePoint**

SharePoint and its component products facilitate collaboration within an organization as well as with partners and customers. Using the combined collaboration features of Windows SharePoint Services and SharePoint Portal Server, users in an organization can easily create, manage, and build their own collaborative Web sites and make them available throughout the organization. Its ease of use is such that if a user wishes to add a message board the web page for a particular work group, he needs only to drag one from his toolbar onto the page. To reduce the cost of restoring an entire database for a small subset of data, each SharePoint site can be backed up and restored by any individual using the site. Alerts can also be added to any document or page by a user so that they can be notified if any changes are made, and will log these changes.

Alternative Detailed Analysis

	Pros	Cons
<u>Design From Scratch</u>	<ul style="list-style-type: none"> • Hiring UBC students is relatively Inexpensive • All requirements can be satisfied as work starts from scratch • Easy and quick Setup • Relatively simple to use • Reliable (integral part of UBC) 	<ul style="list-style-type: none"> • High risk • Lengthily development time • Potentially high future internal maintenance cost • Still Costly
<u>Reuse & In-House Development</u>	<ul style="list-style-type: none"> • Potential to satisfy most requirements • Low Cost • Student's doing the work have good understanding of requirements • Supports university growth • Adaptable 	<ul style="list-style-type: none"> • Could take a long time • Could be reinventing the wheel • Student's lack real world experience • Project has high risk factor • Solves only surface problems ◊ Structural problems remain in background
<u>Reuse & Consultant Development</u>	<ul style="list-style-type: none"> • Mostly Same As Above • Less Risky • Consultants have more experience • Future Support Available 	<ul style="list-style-type: none"> • VERY EXPENSIVE

<p align="center"><u>WebCT</u></p>	<ul style="list-style-type: none"> • Satisfies all requirements except archiving function • Low Cost • Easy and quick Setup • Relatively simple to use • Reliable (integral part of UBC) • Vendor support • Viable vendor 	<ul style="list-style-type: none"> • Meant for only educational Purposes • Serious problems can be encountered if user IDs are assigned to outside users
<p align="center"><u>Open Source Content Management Software</u></p>	<ul style="list-style-type: none"> • Satisfies all requirements • Fits Budget • Adaptable in future 	<ul style="list-style-type: none"> • Could be complicated to set up • Requires substantial training and difficult to use • Costly Upgrades may be required before install • Vendor may not be viable • Minimal vendor support available
<p align="center"><u>Off-the-Shelf Program (MS SharePoint)</u></p>	<ul style="list-style-type: none"> • Satisfies all requirements • Fits Budget • Easy and quick Setup • Relatively simple to use • Vendor support easily available • Viable vendor • Not difficult to learn • Adaptable in future 	<ul style="list-style-type: none"> • Requires Purchase of new server • Costly Upgrades required before install

λ Detailed Look at Alternatives – Designing New Software:

- **Satisfies Constraints**
 - **Organizational Constraints** – Depending on how well designed the system will be, training can be relatively simple.
 - **Economic Constraints** – Costs could escalate, and end up being well above budget.
 - **Technical Constraints** – May require purchase of new server but this is relatively inexpensive.

- **Criteria**
 - **Cost** – May not fit budget
 - **Not Relevant & Reliable** – Strong possibility of bugs as well as difficulties creating updates, as any changes will require significant programming
 - **Supports University Growth** – Improves efficiency of UBC Project Services
 - **High Level of User Satisfaction** – Users would be heavily involved in the design process and thus satisfied
 - **Low Potential for Adapting** – Any changes require significant programming and significant costs could be incurred
 - **Unknown Implementation Time** - Significant amount of time must be spent on design and implementation, significant delays are also a possibility
 - **Level of Risk** – High Risk, as project failure is a strong possibility
 - **Excellent Functionality** – Everything users need can be made available
 - **Vendor Support** – Designed for UBC, support might be available if built by a consultancy company, otherwise unavailable.

- **Viability of Vendor** – No vendor
- **Highly Flexible** – Original design is flexible to what the users want, not flexible in future
- **Documentation** – Documentation can be made through out process
- **Response Time** – Real time responses
- **Complicated Installation**
- **Cost** – Expensive
- **Must be rejected because of possibility of excessive costs (implementation & maintenance) and high risk.**

λ Detailed Look at Alternatives – WebCT:

- **Satisfies Constraints**
 - **Organizational Constraints** – The use is relatively simple, familiar interfaces
 - **Economic Constraints** – Free, or very low cost
 - **Technical Constraints** – None
 - **Other Constraint** – WebCT is meant for educational purposes only and user logins cannot be assigned to non members of UBC

- **Criteria**
 - **Cost** - Fits budget
 - **Relevant & Reliable** – Software is up to date, incorporating latest technology
 - **Supports University Growth** – Improves efficiency of UBC Project Services
 - **High Level of User Satisfaction** – Easy to use software that provides everything users need
 - **High Potential for Adapting** – New versions of software regularly released, easy setup for needed uses.
 - **Short Implementation Time** - Easy setup and therefore quick to implement
 - **Level of Risk** – Software is ready made, therefore low implementation risk. Low risk since WebCT is a company that isn't going to disappear and tech support is readily available
 - **Good Functionality** – Almost Everything users need is easily available
 - **Vendor Support** – Readily available

- **Viability of Vendor** – WebCT is a solid company, which will remain in business for the foreseeable future
- **Not Flexible** – Must be used as is
- **Documentation** – Tutorials and instructions available for users only
- **Response Time** – Real time responses
- **Easy Implementation**
- **Cost** – Minimal
- **Must be rejected because outside users cannot be assigned logins**

λ Detailed Look at Alternatives – Open Source Content Management Software:

- **Satisfies Constraints**
 - **Organizational Constraints** – The use of the programs can get rather complicated. Significant training might be required.
 - **Economic Constraints** – Immediate costs are minimal, but customization and future maintenance could prove to be very costly
 - **Technical Constraints** – May require purchase of new server but this is relatively inexpensive.

- **Criteria**
 - **Cost** – Should fit budget
 - **Relevant & Reliable** – Shareware version of software available, updates occasionally available. Vendor isn't responsible for any problems encountered.
 - **Supports University Growth** – Improves efficiency of UBC Project Services
 - **Unknown Level of User Satisfaction** – Use of software could be complicated so some users might refuse to use it.
 - **Potential for Adapting** – All adaptations must be made by Project Services, could be costly.
 - **Short - Medium Implementation Time** - Slightly complicated initial setup
 - **Level of Risk** –Software is ready made, therefore low implementation risk. Higher risk into the future, since software is free, and vendor isn't responsible for any problems encountered
 - **Good Functionality** – Almost everything users need is easily available

- **Vendor Support** – Available but costly.
- **Viability of Vendor** – Software is free, and future of vendor is unknown
- **Highly Flexible** – Allows for some customization
- **Documentation** – Comes with instructions
- **Response Time** – Real time responses
- **Relatively Easy Installation**
- **Cost** – Considerably cheaper than hiring people to design from scratch
- **This must be rejected because of the low vendor viability and unavailability of Vendor Support**

λ Detailed Look at Chosen Alternative: Microsoft SharePoint:

- **Satisfies Constraints**
 - **Organizational Constraints** – The use of the program is very similar to the use of any other Microsoft program. Thus training requirement is minimal as most users are already familiar with the interfaces
 - **Economic Constraints** – All required upgrades, setup and installation come in well below the maximum budgeted amount of \$40,000
 - **Technical Constraints** – Does require purchase of new server but this is relatively inexpensive.

- **Criteria**
 - **Cost** - Fits budget
 - **Relevant & Reliable** – Software is up to date, incorporating latest technology
 - **Supports University Growth** – Improves efficiency of UBC Project Services
 - **High Level of User Satisfaction** – Easy to use software that provides everything users need
 - **High Potential for Adapting** – New versions of software regularly released, easy setup for needed uses.
 - **Short Implementation Time** - Easy setup and therefore quick to implement
 - **Level of Risk** – Plus software is ready made, therefore low implementation risk.

Low risk since Microsoft is a company that isn't going to disappear and tech support is readily available
 - **Excellent Functionality** – Everything users need is easily available

- **Vendor Support** – Readily available
 - **Viability of Vendor** – Microsoft is a solid company, which will remain in business for the foreseeable future
 - **Highly Flexible** – Allows for easy customization
 - **Documentation** – Comes with clear instructions
 - **Response Time** – Real time responses
 - **Easy Installation**
 - **Cost** – Considerably cheaper than hiring people to design from scratch
-
- **Recommended solution as this best satisfies the users needs and requirements**

Solution: Microsoft Sharepoint Portal Server 2003



- **Site Directory** – You can use to aggregate, organize, find, and manage Web sites, including Windows SharePoint Services sites (available within Windows Server 2003).
- **Automatic Site Creation** – Users and teams can easily create sites as they are needed.
- **Document Libraries** – You can create, edit, and upload documents, check documents in and out, and track past versions of documents.
- **Lists** – Windows SharePoint Services sites can store lists of information, including announcements, tasks, contacts, and custom lists.
- **Workspaces** – Create a site or workspace when you want a new place for collaborating on Web pages, lists, discussions boards and document libraries.

Allows Users to:

1. **Create a complete view of the business** – Useful for every aspect of an operation
2. **Share knowledge across the organization** – Allows easy access for all users of information, through file sharing, instant messaging, chats and conferences.
3. **Easy to Search** - Allows users to find anything they need quickly and easily
4. **Create self-service portals** - Easily create new sites
5. **Automate business processes** – Performs tedious tasks that users might otherwise have had to do manually
6. **Speed adoption by using familiar interfaces and tools** – Easy to learn
7. **Reduce development time and cost** - Quick to implement and low cost
8. **Ease deployment with flexible options** – Readily available customization

System Logical Design

λ Introduction to Construction Project



In order to make the construction project more effective and efficient, we need to redesign the database and install the Microsoft SharePoint Portal Server 2003, and these processes are based on the understanding of the construction project processes. (**Appendix 1**)

In general, a construction project has five major steps:

λ ***Business Planning***: initiate project & form concept, analyze project alternative and risks, prepare regulatory strategy, develop business plan, secure pre-construction financing

λ ***Project Development***: select design manager / consultants, prepare project implementation plan, investigate site and environments, schematic design, design development, quality management plan, plan for risk and project delivery, master project plan, approvals for development

λ ***Preparation for Construction***: modify design team, technical documents for permit & construction, schematic design, prepare QA program, municipal building permit, preparatory construction plan, secure financing for construction, procure owner-supply

λ ***Construction***: detailed construction plan, shop drawing process, owner-supply management, construction work, quality management, construction safety, administer schedules, changes & payments, field reviews

λ ***Commission & Completion***: commission building systems, occupancy permit, substantial performance of work, handover to property management, permanent records and spare parts, financial and admin. closure, project review for lessons learned, settle warranties

λ **Redesign the Database**

Before we implement the Microsoft SharePoint to Project Services Office, the database in Project Services Office needs to be redesigned first.

λ **Administration:** Filing System (Office Filing, Archiving), Clerks (Tests, Job Descriptions, Proposals), Contractors on Campus, Forms, JV's (Consultants, Couriers, Project Office Fees, Design Office Fees, Conversion of Old, TS-CO-MFJVs), Labels, Meetings (Quarterly Forum, Post Mortern), Minutes (Caucus Meetings, PM Meetings, Strategy Meetings, M&P Meetings, PM Round Table, UBC Renew), Office Assignments, Project Consolidations, Vacation Schedules.

λ **Associate Director:** Budgets, Business Plans, Estimates, Strategic Plan

λ **Design Office:** Estimates, Monthly Revenue, Project Status Summary, Schedules, Title Blocks, UBC Administration Levy Billings

λ **Operating Manual:** Administrative Manual, Construction Manual, Definitions, Design Manual, Flow Charts, Forms, Project Management Manual

λ **Projects Office:** ecotrek, Estimates, Monthly Revenue, PSR Downloads, Schedules, Tenders Tracking, UBC Renew

λ **Additional Requirements of the System**

This method of designing the database is only good for office staff to manage those documents; however, it is not a really effective design for project management. This is simply because all the files allocated to a single project are distributed throughout different locations on the database making it hard for the Project manager and project group members to find.

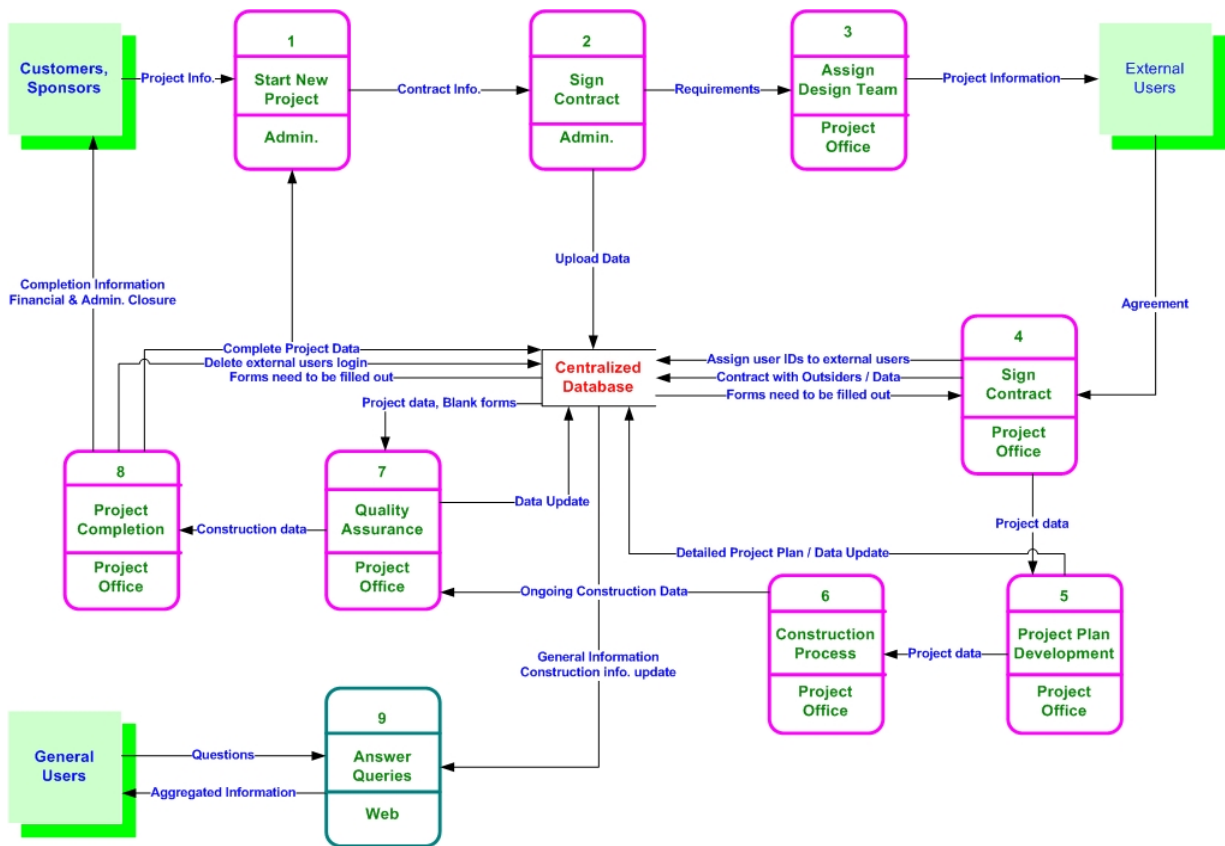
In order to solve this problem, a built-in function which will retrieve all the documents under one project ID will be assigned to the system. For example, a project manager creates an icon on the table / desktop called project #1, and behind this icon is the built-in function, so whenever people click on this icon, all the documents that have the same project ID – project #1 - will be retrieved to the folder, and after people have done their work, closed the project folder, the changes they made to the documents will be saved in the centralized database. Also, the use access level control will ensure that only certain amount of users have the access right to certain information, and they are not allowed to view any internal documents after finish their works.

λ **Security**

λ **Logical Access Control:** there are three levels of user access within the system. First level is system administrator, who is responsible for maintaining the system regularly. The second level is office staff and project manager, senior management, etc. They are the group who needs to access the information system everyday. The lowest level users are those outside contractors, who work for Project Services Office on certain construction projects. They are the special group that accesses the system for a short period. The project manager can assign a user ID to them after signing of the contract. However, Project manager / IT staff must make sure their user IDs are disabled after they finish their specific project.

λ **Auditing:** the IT staff needs to check and make sure no outsider can log into the system. There should be frequent audits performed by IT staff to ensure the security of the system. For example, the IT staff could perform random checks of users to determine whether they currently are still working on projects for the office and whether or not the access authority they have been given is appropriate. This will done quarterly after implementation.

λ Data Flow Diagram (also see Appendix 4)



λ **Start New Project**: after the initial meeting with clients, the project manager can create a “new project” in the system, by simply clicking the icon on the menu, and all the files belonging to this project will have the same project ID.

λ **Sign Contract**: once Project Services and their clients come to an agreement, they need to sign a contract, for any construction renovation. The data will be uploading to the database, and also passed on to the next stage.

λ **Assign Design Team**: the project manager starts looking for design and construction teams for the project. The project manager will have meetings with them to further discuss the project.

λ **Sign Contract**: if the outside contractors agree with the particulars of the contract, they will need to sign a contract with the Project Services office, fill out certain forms, and those all have to be uploading to the database.

λ ***Project Plan Development***: all the information about the particular project will be retrieved from the database and the detailed project plan development starts. At this stage, all the preparation has to be done in order to start the actual construction process, and all the information will be uploaded to the database.

λ ***Construction Process***: the actual construction process starts, the ongoing status will be sent to the database and the quality assurance department, in order to tracking the status.

λ ***Quality Assurance***: retrieve all the necessary information from the database and get certain data from the construction process. The QA people make sure all the ongoing construction process is on schedule, and within the construction quality standard.

λ ***Project Completion***: the construction is finished, consolidate all the financial data, arrange final meeting with client, close the contract with design teams, construction teams. Indeed, all these outside contractors' user IDs in the system will be cancelled or disabled, so that they are no longer able to login into the system unless they have other contracts to fulfill.

λ **Required Hardware**

Due to the technical constraints and problems that the Project Services Office faced, a new server has to be purchased as soon as possible. The cost of purchasing a new server is between \$5,000 and \$6,000. Right now, the Land and Building Services is using an HP server and the overall performance is quite good. Therefore regarding hardware, we recommend purchasing an HP server, other reliable brands recommended are a Compaq server, or an IBM server.

Other than the pricing range, storage space and vendor support will be taken into consideration when purchasing a server. Since the server will be purchased for long term purposes, vendor support is crucial and there we recommend HP and IBM both with great vendor support.

λ Required Software

After purchasing the server, the IT staff needs to install the operational system on the server first. In order to run Microsoft SharePoint, the operational system has to be Microsoft Windows Server 2003. If the Project Services Office could purchase the server and the operational system as a bundle, this bundle could probably be obtained at a cheaper price than if the two software were purchased separately. Additionally, because Microsoft Windows Server 2003 has several versions, the correct version for SharePoint is Windows Server 2003 Standard Edition. If the Project Services Office purchases a web edition of Windows Server 2003, they have to purchase another Microsoft SQL Server 2000 and install it before they install Microsoft SharePoint.

After installing the operational system and ensuring the system is running properly, the IT staff can start installing Microsoft SharePoint. To be safe, the IT staff can install a trial version first and test it, if the Project Services Office is satisfied with it, then they can purchase the license and additional user IDs. The detailed implementation information is presented in the next section.

Implementation



Install SharePoint Trial Version

We recommend that the Project Services Office first install the 120-day trial version of Microsoft SharePoint Portal Server 2003. It can be downloaded off the following web address:

<http://www.microsoft.com/office/sharepoint/prodinfo/trial.aspx>

By first using the trial version, the users can better ascertain how effective this software application is in addressing their needs. Furthermore, as it is a free trial version, users are not obligated to use the system and can try alternative solutions without additional cost.

Buy Licenses

When using the trial version, there is no product support from Microsoft and the trial software can only be installed on up to four computers. Each installation must be activated through the online Microsoft Office Activation Wizard or over the telephone to function properly. This greatly limits the scope of testing the system. Thus, if the project service office does think the software fits into their requirements after trial for one to two months, the office should purchase the software and the correspondent licenses. A Server License with 5 Client Access Licenses (CALs) cost about USD \$5,619. Each additional CAL costs USD \$71. The associated license fee is quite expensive but under their budget.

License can be purchased at Microsoft website:

<http://www.microsoft.com/office/sharepoint/howtobuy/default.aspx>

Microsoft Vancouver Office

1111 W. Georgia St. Suite 1100 (11th floor)

Vancouver, BC V6E 4M4

Tel: 604-688-9811

Fax: 604-688-3680

Conduct Training at Early Stage

Training is very important and should be conducted at an early stage of the whole process. Many users are reluctant to add new software let alone new systems, so it is important to inform them of the benefits of implementing this new system. This can be done by holding a seminar or through meetings. It is important to show them a video of SharePoint to give users a general idea of the system. Some introduction videos can be accessed from:

<http://www.microsoft.com/office/sharepoint/prodinfo/videos.mspx>

Many training kits of SharePoint are provided by Microsoft and these can be downloaded free of charge. Early stage training can be done through these training kits. A training kit called TechNet Virtual Lab provides users full access to SharePoint Portal Server's features and tools through ten modules. TechNet Virtual Lab can be accessed from:

<http://www.microsoft.com/technet/traincert/virtuallab/sps2003.mspx>

Moreover, users should be trained at different levels of administrator, team leader and user. Administrators need to be trained firstly, and they need to know all the features of SharePoint, and they can also take the responsibility to train team leaders and users later on. Some other training kits can be found under the “*training*” title at the following web address:

<http://office.microsoft.com/en-ca/FX011442341033.aspx>

Conduct Phased Testing

Testing is crucial in successfully implementing the system. The purpose of testing is to confirm that the system satisfies requirements and testing must be planned. We suggest that the test be done in three phases:

- 1st phase: small group of people (a team) test one of their projects
- 2nd phase: multiple teams testing multiple projects simultaneously
- 3rd phase: final testing, all users completely testing the system use actual data

Each phased testing should be done at least three times to test potential errors. The 1st phase testing should be done during using the trial version of the system. 2nd phase may also be done during the free-trial period. All 3 phases need to be conducted again after the purchase and installation of the SharePoint software.

Careful Plan of Implementation

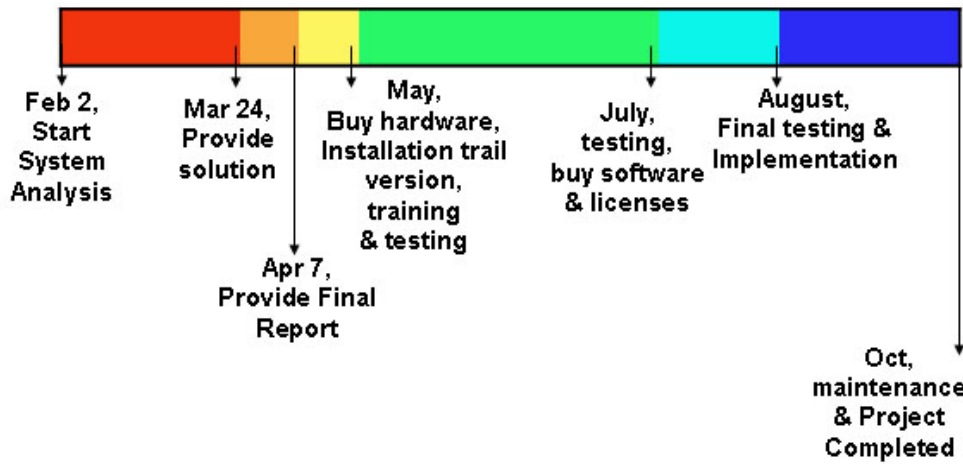
Implementation is a very expensive and time consuming phase during system life cycle, because so many people are involved and all the work has to be completed. During installation, the installer needs to ensure all computers have installed required software and also that user authorization is assigned correctly.

Documenting the system is another important factor during implementation. A system documentation and user documentation are required for convenience to developers and users. System documentation records detailed information about a system's design specifications, its internal workings and its functionality. User documentation is written or other visual information about how SharePoint works and how to use it. The latter will be provided by Microsoft's help functions.

Scheduled Maintenance

Scheduled maintenance should be done either by UBC IT Service or an in-house IT technician. As the database is extremely important, it needs to be maintained and frequent data backups should be performed. A maintenance schedule should be developed by managers along with technical staff. Maintenance personnel must be prevented from making unapproved changes to a system. We recommend the office assign one technical staff, typically a senior programmer or analyst, to serve as the system librarian to control the checking out and checking in of system modules.

Recommend Timeline:



Feb 2: Our group started to do system analysis

Mar 24: Solution of using Microsoft SharePoint Portal Server 2003 is provided

Apr 7: Final report of system analysis is provided

May: Buy hardware (server), install trial version of the software, start early stage training by using training kits and conduct 1st phase testing

July: conduct 2nd phase testing, if the software fit into user requirements buy the software and correspond licences

August: install the purchased software, conduct 1st, 2nd and final phase of testing, write system documentation and on-going training with users

Oct: ongoing scheduled maintenance, select system librarian and project is completed

Project Overall Scheduling

February 2, 2005	First Meeting with Brenda and Mike
February 2-4, 2005	Work on Project Description & Requirement
February 4, 2005	Project Proposal
February 5, 2005	Group Online Meeting, discuss on problems, requirements, alternatives and criteria
February 5-12, 2005	Work on Interim Report, information gather, separate the works into two parts (Angelina, Celina – criteria & alternatives; Daniel, Ilya, Jan – problems & requirements)
February 16, 2005	Second Meeting with Mike and Kelly
February 17, 2005	Group Online Meeting, discuss about the interim report
February 18, 2005	Third Meeting with Mike
February 19, 2005	Group Online Meeting, discuss about the interim report
February 22, 2005	Interim Report, e-mail to Mike and Carson
February 12-28, 2005	Work on detailed analysis of each alternatives, decision making
February 19-28, 2005	Contact the operator of WebCT in UBC, contact Ben
March 1-15, 2005	Meeting with Mike (one or two times)
March 1-15, 2005	Start writing and editing final report
March 15-30, 2005	Last meeting with Mike
March 15-25	Continue working on final report
March 25 – April 5	Final review of the Project Report
March 22 – April 5	Project Presentation, invite Brenda and Mike
April 5	Hand in Final Reports, to Carson, Brenda and Mike

Appendices

Appendix 1 Stage-based Work Breakdown of one project

Appendix 2 Electronic Filing System

Appendix 3 Timeline for Project Delivery

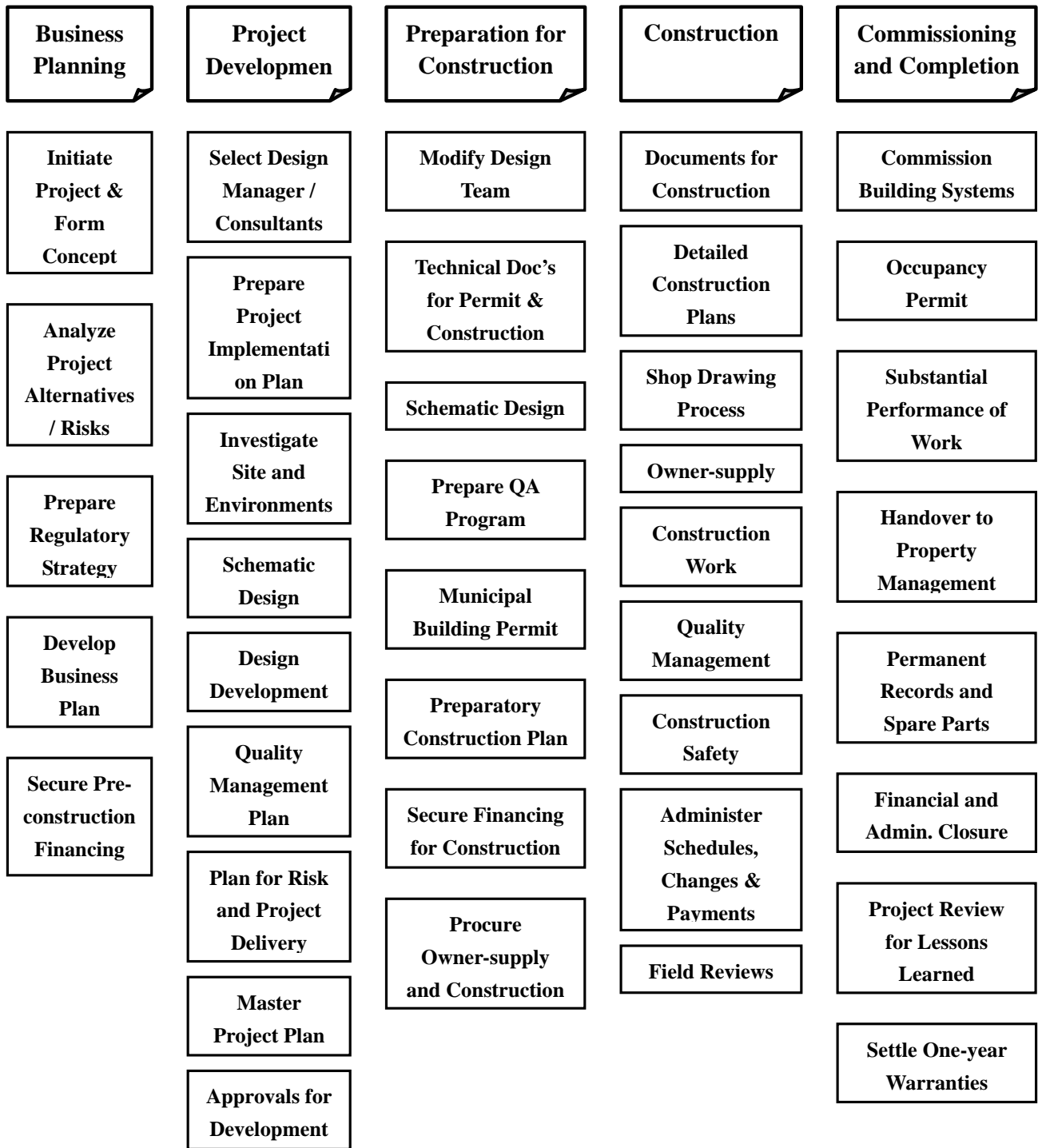
Appendix 4 Data Flow Diagram

Appendix 5 WebCT

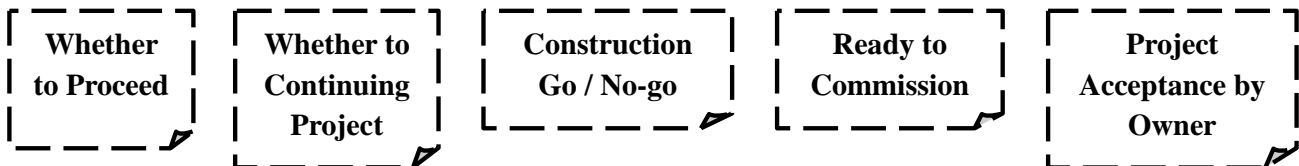
Appendix 6 Content Management Software

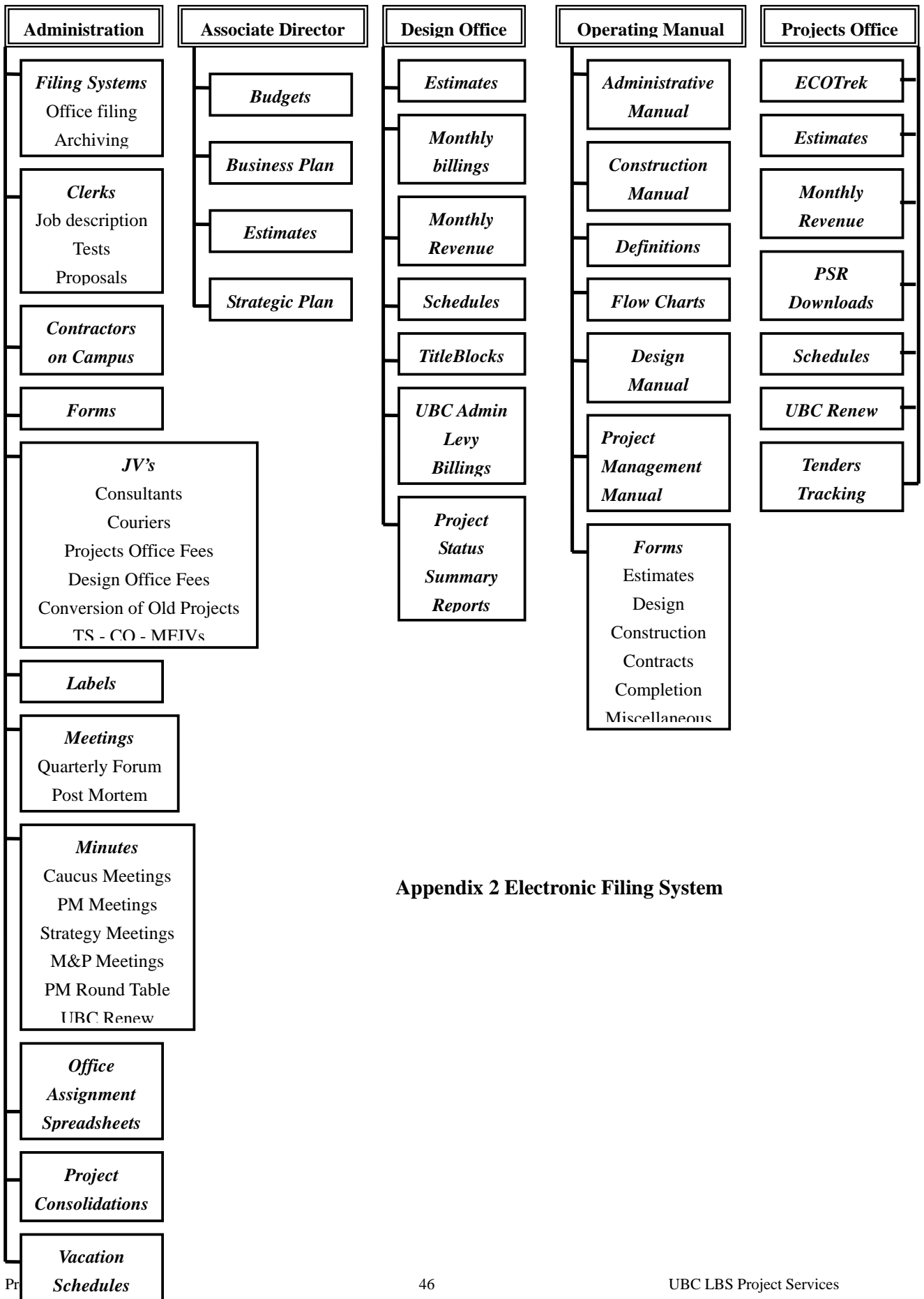
Appendix 7 Microsoft SharePoint Portal Server 2003

Appendix 1 – Business Process



Decision / Result





Appendix 2 Electronic Filing System

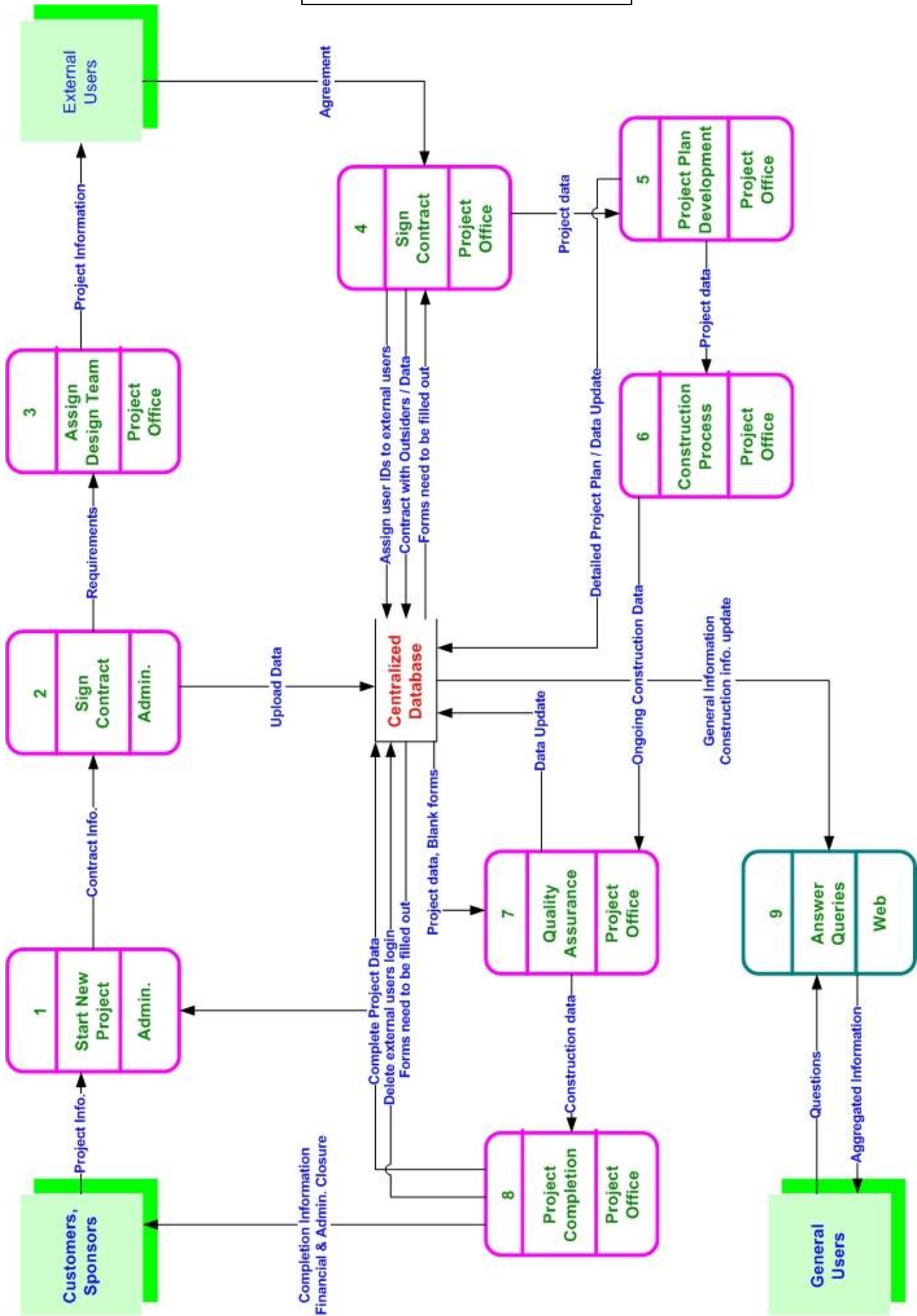
Appendix 3 Timeline for Project Delivery

	Phase	Timeline		Comments
		Min	Max	
1	Initiation by Client/FM Project Estimate	1 wk	4 wks	Process is client driven
2		1 wk	6 wks	
3	Design	4 wks	3 mths	Cannot start until client approves Project Estimate. In extenuating circumstances, this design phase can be longer.
4	Tender/Permits Construction	2 wks	6 wks	
5		2 wks	8-12 mths	Depends on size and space coordination
6	Commissioning	2wks	4 wks	Depends on complexity
	Project Duration	3 mths	16-20 mths	

The summary table above shows the range that project durations can cover. The range is dependant on a number of factors:

- λ **Value of the work** – the greater the cost the more effort and time is required to complete. This is especially the case when you are working in a restricted space of an existing building where only a certain number of people can operate effectively.
- λ **Complexity of work** – if there are a high number of trades that need sequencing and one trade is dependant on another to complete before starting.
- λ **Other users** – work may be required in one area of the building while others need to conduct their daily business. In order to accommodate your neighbours it is often the case that the building HVAC or electrical system cannot be shut down at a convenient time for the on-going project.
- λ **Specialty items** – the ordering of special equipment, finishing's or fixtures such lights can create a delay in the manufacturing and delivery. These items sometimes are required before other portions of the work can be started, creating delays.
- λ **Code impacts** – if the project requires changes in use, exiting issues, electrical and plumbing , hazardous materials, exterior changes to the building, structural or ventilation changes, designers will be required to analyze the circumstances and appropriately design a solution that will not only work for the client but be compliant with the necessary codes and guidelines.

Appendix 4 – Data Flow



Appendix 5 - WebCT

The screenshot shows the WebCT Course Access and Resources at UBC website. The browser window is titled "e-Learning at UBC - Mozilla Firefox" and the address bar shows the URL: https://www.elearning.ubc.ca/home/index.cfm?menuClicked=2%2F&p=main/dsp_webct_index.cfm. The website header includes the UBC logo, "e-Learning@UBC enhancing teaching and learning connecting communities", and "WebCT". Navigation links include "WebCT Feedback", "Sitemap Search", "Events Contact", "UBC NEWS", "UBC EVENTS", "UBC DIRECTORIES", "SEARCH UBC", and "myUBC LOGIN".

The main content area is titled "WebCT Course Access and Resources at UBC" and includes a navigation menu on the left with links to Home, WebCT, Students, Instructors, WebCT Contacts, e-Portfolios, Learning Objects, Vista Pilot, Wikis and Weblogs, Learning Online, Teaching Online, Community, News and Events, Search, Contact, and Site Map. A "Download it now at www.download.ubc.ca" button is also present.

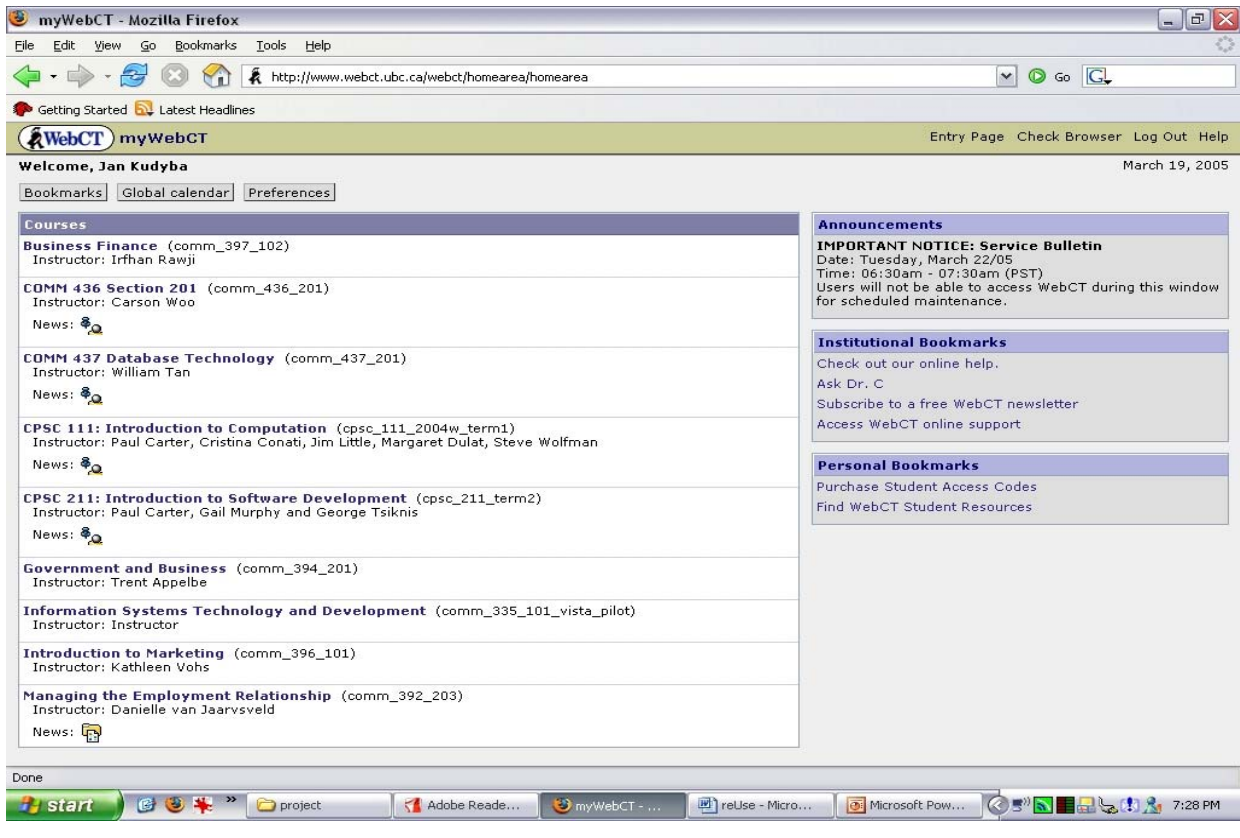
The central content area features a "Login to your Courses" form with fields for "Login ID:" and "Password:" and a "Login" button. Below the form are links for "Register for CWL ID" and "Forgot CWL ID Password?". To the right of the login form, the "WebCT server status:" is shown as "Low Usage". An "IMPORTANT NOTICE: Service Bulletin" is displayed, dated Tuesday, March 22, '05, with a time of 06:30am - 07:30am (PST). The notice states: "Access to WebCT will be unavailable during this window for scheduled maintenance."

Below the login form, there are four columns of "Quick Links":

- Quick Links:** [See Courses on This Server](#), [Enroll in a Workshop](#), [See your SIS courses](#), [Browser Setup](#), [Printing Help](#)
- Students:** [Student Help](#), [FAQ](#), [WebCT Documentation](#)
- Instructors:** [Instructor Help](#), [FAQ](#), [WebCT Documentation](#), [Respondus](#), [WebDAV Set Up](#)
- Administrators:** [CTconnect](#), [CTconnect Help](#)

On the right side of the page, there is a "Logging into WebCT for the first time since the upgrade?" section with links for "Changes and benefits of version 4.1" and "For more information, please click here." Below this is an "Introduction to WebCT 4.1" section with links for "for Students" and "for Instructors". Further down, there is a "Firewall Programs & Browser Issues" section with a note that "WebCT requires firewall programs such as Norton Internet Security to be closed to use the discussion boards or quizzes." and a link to "www.webct.com/tuneup". A "Secure Your Information: Always log out after using WebCT" section is also present, along with a "Problems or Feedback?" section and a "Forgot a password or having access problems? Contact the ITServices Help desk:" section. At the bottom right, there is a "Student WebCT Help" section with contact information: "Phone: 604-822-2008", "Mon. - Fri. 8:00 AM - 4:30 PM (phone/email/walk-in support)", "Mon. - Thu. 4:30 PM - 9:00 PM (extended hours - phone/email support)", and "Extended hours are only in effect during the Winter session (September - April)".

The browser's taskbar at the bottom shows the "start" button and several open applications: "project", "Adobe Reads...", "e-Learning at...", "reUse - Micro...", and "Microsoft Pow...". The system clock shows "7:28 PM" and the address bar shows "www.elearning.ubc.ca".



Appendix 6 - Content Management Software

navigation

limi's Home

- Up one level
- Ordinary view

about

Folder

Created by:
* limi

Last modified:
05/13/2002 04:34 AM

related

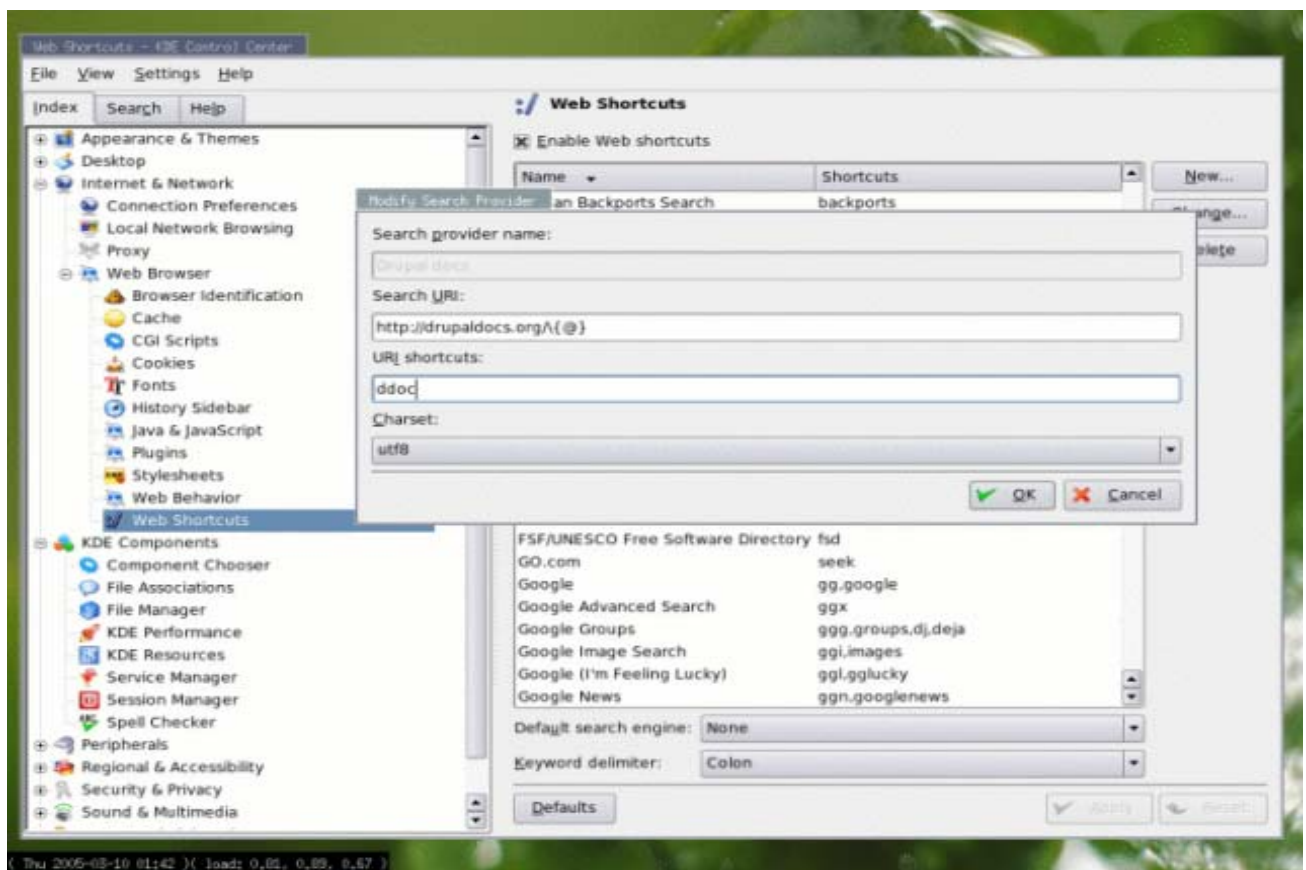
External links

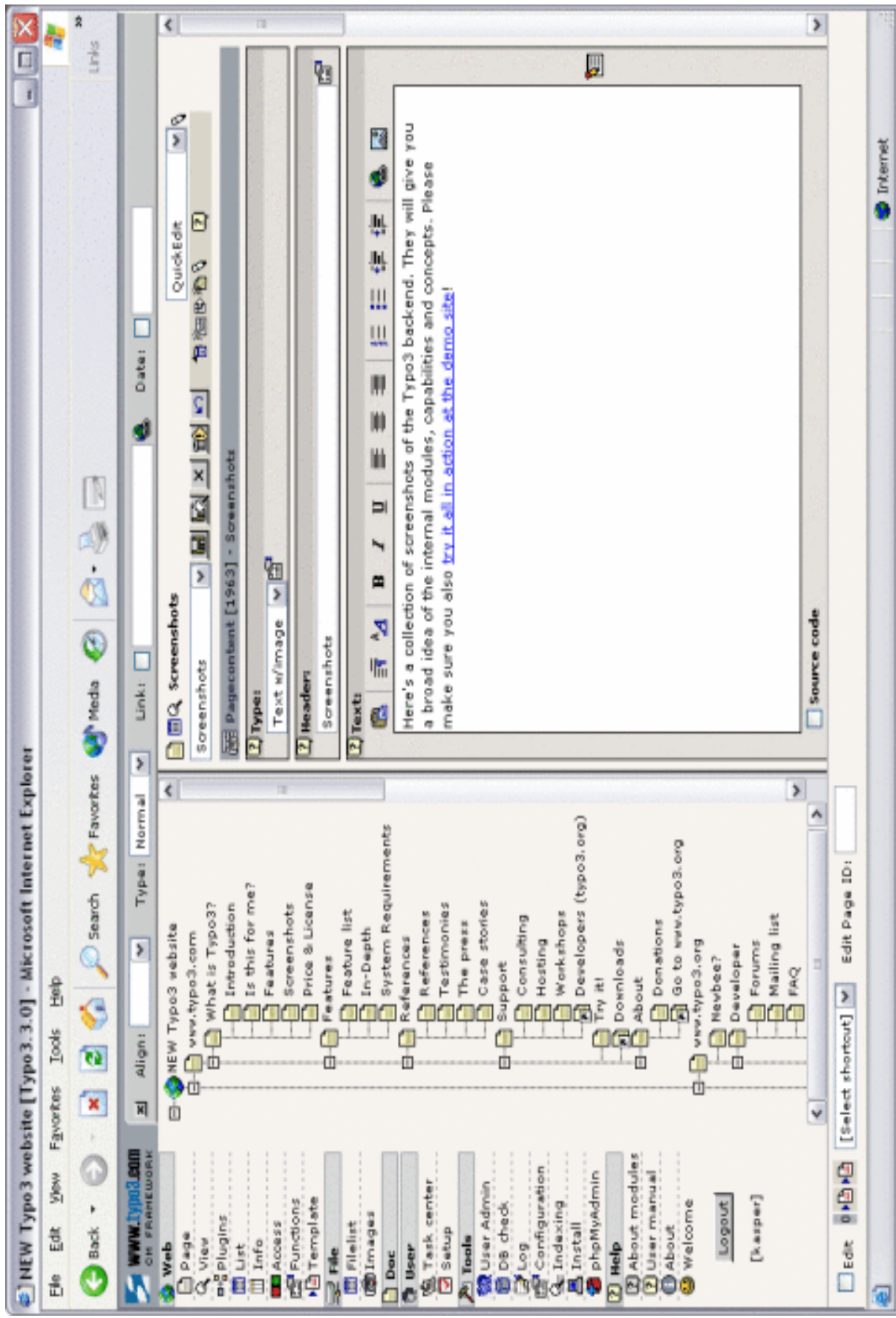
folder contents view edit local roles

My Stuff

	title	type
<input type="checkbox"/>	.personal	Folder
<input type="checkbox"/>	A Big Image	Image
<input type="checkbox"/>	Empty folder for testing	Folder
<input type="checkbox"/>	Favorites	Folder
<input type="checkbox"/>	Just a document that will stay in review queue :)	Document
<input type="checkbox"/>	link	Link
<input type="checkbox"/>	News items	Folder
<input type="checkbox"/>	Plone home of Alexander Limi	Document
<input type="checkbox"/>	Rules for how ID's should be handled	Document
<input type="checkbox"/>	Things to do for Plone 1.0	Document

rename cut copy delete change status





Appendix 7 - Microsoft SharePoint Portal Server 2003

The screenshot displays a SharePoint Portal Server 2003 interface for the 'Vitamin Sales Team'. The browser address bar shows the URL: `http://server/sites/VitaminSalesTeam/default.aspx`. The page title is 'Vitamin Sales Team Home'.

Left Navigation Panel:

- Documents
 - Shared Documents
- Pictures
 - Vitamin Lab
- Lists
 - Contacts
 - Tasks
- Discussions
 - General Discussion
- Surveys

Main Content Area:

Selling Contoso Vitamins worldwide.

Announcements (6/23/2003 11:57 AM)

South Region Vitamin Forum *NEW*
 by Contoso Administrator
 Please register early if you plan to attend this event. Travel arrangements will be made for you by our travel desk. For more information and registration forms please see the receptionist for your building.

■ Add new announcement

Shared Documents

Type	Name	Modified By
Document	Annual Report <i>NEW</i>	Brian Hodges
Document	Case study rmn <i>NEW</i>	Brian Hodges
Document	Case study wjc <i>NEW</i>	Brian Hodges
Document	Contoso Org chart <i>NEW</i>	Brian Hodges
Document	Expense Report <i>NEW</i>	Brian Hodges
Document	Senior Vitamin Product Announcement	Brian Hodges
Document	Senior Vitamin Study Results	Brian Hodges
Document	Sales Figures	Brian Hodges

■ Add new document

Contoso Sales Reports (XML)

Type	Name	Modified By
Document	Alex Hankin Sales Report - NW <i>NEW</i>	Brian Hodges
Document	Brian Hodges Sales Report - South <i>NEW</i>	Brian Hodges
Document	Carol Phillips Sales Report - Children Vitamins <i>NEW</i>	Brian Hodges
Document	Mike Fitzmaurice's Sales Report - East Coast <i>NEW</i>	Brian Hodges
Document	Carol Phillips Sales Report - Children Vitamins <i>NEW</i>	Brian Hodges
Document	Mike Fitzmaurice's Sales Report - East Coast <i>NEW</i>	Brian Hodges

■ Add new link

Right Sidebar:

Vitamins

Vitamin Sales by Region

Region	Percentage
East	24%
South	18%
North	21%
West	37%

Links

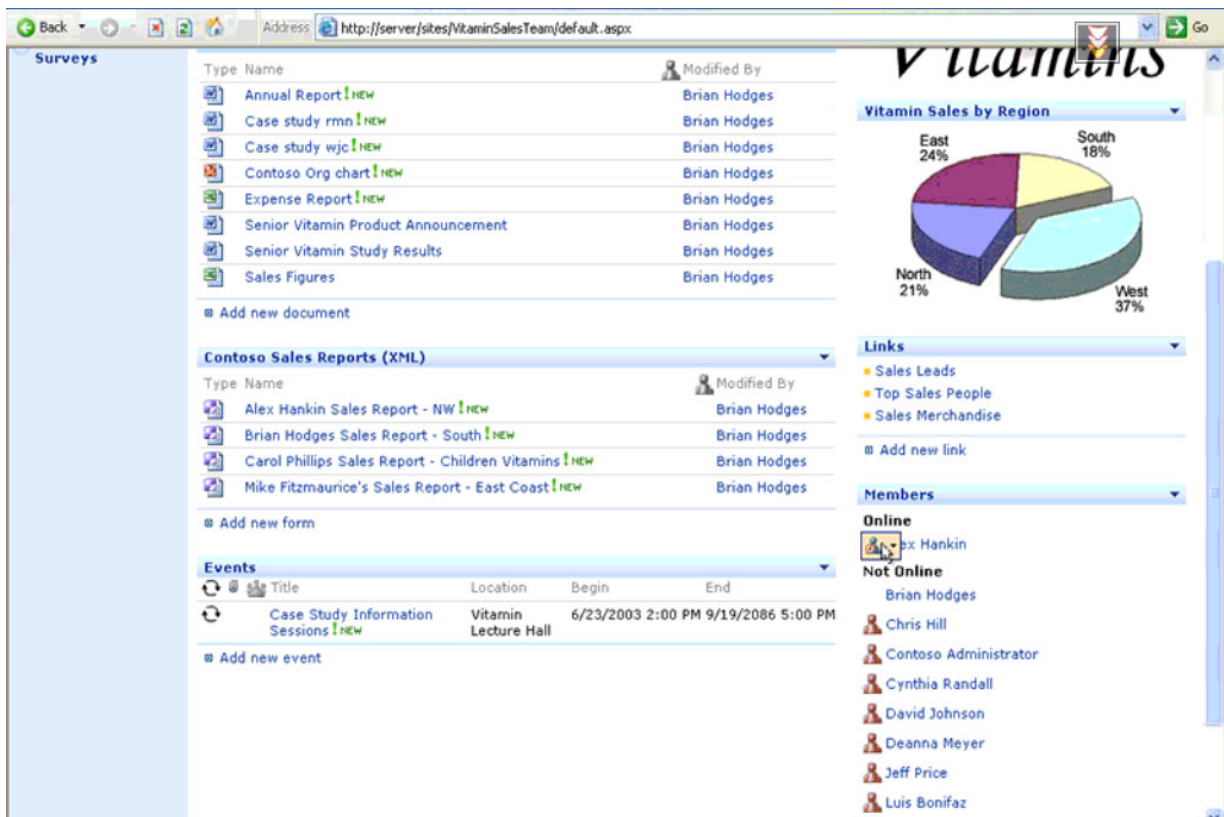
- Sales Leads
- Top Sales People
- Sales Merchandise

■ Add new link

Members

■ Add new link

Members



Benefits of Microsoft Office SharePoint Portal Server 2003

White Paper

What Is SharePoint Portal Server 2003?

Microsoft Office SharePoint Portal Server 2003 is a collaborative portal solution that connects people, teams, and information. SharePoint Portal Server 2003 builds on the Microsoft Windows® SharePoint Services platform to enable organizations to integrate business processes and applications, as well as to provide a full set of collaboration and personalization features for end-users. SharePoint Portal Server 2003 is scalable, reliable, easy to use, and easy to manage.

Components of SharePoint Portal Server 2003

SharePoint Portal Server 2003 builds on Windows SharePoint Services to provide a scalable collaborative portal experience. Together, SharePoint Portal Server 2003 and Windows SharePoint Services compose a portal solution for organizations of any size.

Windows SharePoint Services

Windows SharePoint Services is the engine for creating Web sites that enable information sharing and document collaboration, increasing individual and team productivity. Windows SharePoint Services is a key piece of the information worker infrastructure delivered in Microsoft Windows Server™ 2003.

Windows SharePoint Services provides:

- Additional team services and sites to Microsoft Office and other desktop applications, and serves as a platform for application development.
- The core functionality for SharePoint sites, including lists, document libraries, calendars, and contact integration, and is closely integrated with Microsoft Office 2003.
- The tools that teams need to quickly and easily create and work within collaborative spaces by using a Web browser or a rich client, such as Microsoft Office Word 2003.

SharePoint Portal Server 2003

SharePoint Portal Server builds on Windows SharePoint Services by using SharePoint sites to create portal pages for people, information, and organizations. SharePoint Portal Server extends the capabilities of Windows SharePoint Services by providing organization and management tools for SharePoint sites, and by enabling teams to publish information captured in their SharePoint sites to the entire organization.

In addition, SharePoint Portal Server:

- Adds entire classes of additional functionality to the enterprise, connecting people, teams, and knowledge across business processes.
- Integrates information from various systems into one solution with flexible deployment options and management tools.

- Facilitates end-to-end collaboration by enabling information workers to find and leverage people, information, and SharePoint sites across the enterprise.
- Delivers personally relevant information through audience targeting and through personalization and customization tools.

Business Value of SharePoint Portal Server 2003

Organizations must evaluate software investments based on many criteria. Not only do they need to ask if an investment meets particular needs and requirements, but they also need to ask if the investment will benefit their business as a whole in the future. SharePoint Portal Server 2003 fulfills this need for future business benefits by helping employees and decision makers be more productive, while allowing organizations to take advantage of their investment in existing systems. SharePoint Portal Server 2003 adds value to your business by:

- Connecting islands of data
- Integrating business practices
- Helping users collaborate

Connecting Islands of Data

Many organization store information in multiple locations - on file shares, on individual users' hard drives, in multiple business applications and formats, or locked away in databases. This information contains a wealth of data about how the organization operates, about emerging trends in the marketplace, and about best practices and business processes. Frequently, users must search multiple locations to find the right piece of information. This can be time-consuming and difficult, and sometimes users abandon the search before they find useful information.

To understand their business and carry it out effectively, organizations must unify this information with a single point of access. By tying together disconnected islands of data, SharePoint Portal Server 2003 helps organizations capture and maintain the competitive advantage. The result is a more effective organization that can identify trends and react to them quickly.

Integrating Business Processes

No portion of an organization's business is carried out in isolation. However, many business applications use proprietary protocols, do not integrate with other applications, and require their own user credentials to sign in. More and more organizations are looking for ways to integrate their business processes so they can streamline operations and share information more effectively. Microsoft SharePoint Portal Server 2003 is designed to act as a platform for this type of integration. In many cases, you can integrate your business processes without abandoning your investment in existing systems.

SharePoint Portal Server 2003 supports emerging standards such as XML and integrated technologies such as the Microsoft .NET Framework. These technologies provide an integrated environment for new and existing applications. With broad integration services and single sign-on capability, you can use SharePoint Portal Server 2003 to integrate multiple applications into the portal. This makes your applications easier to use and support, which helps your organization create an integrated solution without abandoning its existing investments.

Helping Users Collaborate

Teams need to communicate, share tasks, and work together in order to get their work done. Additionally, team members often need to work with people from other teams and divisions to complete tasks. This is even more difficult when people are located in different locations. SharePoint Portal Server 2003 helps you find, communicate, and collaborate with people no matter where they are located.

SharePoint Portal Server 2003 and Windows SharePoint Services provide teams with the tools and services they need to work together, both in the ongoing context of a team and in the context of ad-hoc tasks and projects. SharePoint Portal Server 2003 makes creating and managing collaborative sites and workspaces easy by facilitating communication throughout the organization. The searching and indexing features in SharePoint Portal Server 2003 can help you find the people and teams who have the knowledge and information you need. The end result is an organization that is more efficient and effective in its work, which translates into better productivity and higher employee satisfaction.

Business Solutions with SharePoint Portal Server 2003

The needs of each organization are different. SharePoint Portal Server 2003 can serve as the platform for many solutions, including these examples:

- Corporate search portal
- Enterprise application integration
- Extranet

Corporate Search Portal

A corporate search portal takes the wealth of information, data, and expertise within an organization and provides a single gateway to that information. Information is useless if nobody can find it. When information is too difficult to find, users waste time searching for it or (more likely) spend time and resources recreating work that has already been done.

SharePoint Portal Server 2003 gathers information from multiple content sources, indexes it, and makes it searchable through the portal. This includes information contained in any Windows SharePoint Services sites in the organization and other content sources such as Web sites, file shares, Microsoft Exchange public folders, and SharePoint Portal Server 2003 workspaces. You can customize the searching and indexing capability to fit the needs and infrastructure of your organization, and you can extend the searching and indexing capability to include new file types and content sources. SharePoint Portal Server 2003 can index millions of items.

Search Features and Capabilities

SharePoint Portal Server 2003 provides full indexing of disparate content sources.

The SharePoint Portal Server 2003 search capabilities allow you to:

- Search your content sources securely from within a browser or from client programs that are compatible with SharePoint Products and Technologies, such as Microsoft Office Word 2003 or Microsoft Office Excel 2003.
- Limit the scope of searches so that they search only relevant information sources, providing you with faster, easier-to-read results.
- Include areas and Best Bets in your search results, which can help you find relevant content faster. Search results can also include relevant people, allowing you to locate subject matter experts.

- More efficiently index content by using the thesaurus and word breaker to identify different words that may have similar meanings, such as compound words and acronyms.

The end result is an extremely powerful, high-performance search index that is easy and efficient to use.

Management and Configuration

Searching in SharePoint Portal Server 2003 is easy to configure and manage. The portal administrator has extensive control over search settings and content sources. The portal administrator can add, organize, and remove content sources and optimize searches for improved search performance.

Content indexing in SharePoint Portal Server 2003 is flexible and easily configurable for best performance and ease of use. SharePoint Portal Server 2003 periodically crawls content sources for new and changed content and updates its indexes as necessary. You can configure multiple update modes, depending on content source types, resource availability, and desired search performance. You can schedule updates to the search indexes for periods of low usage to minimize the affect on users. Additionally, if performance remains a concern, you can configure SharePoint Portal Server 2003 to use incremental, adaptive, or notification-based updates that identify and index only changed content.

The site administrator can also create rules that govern which content to index. These rules can include or exclude content based on file path, property map, or file type. Configuring search scopes is another way to optimize search performance. A search scope organizes similar content into a group, so users who know where to find the information they want do not have to search the entire index to find it. Optimum search configurations vary from organization to organization and sometimes from content source to content source.

One important technology that makes SharePoint Portal Server 2003 an effective search portal is the ability to organize content into topics. A topic is a collection of similar content that makes that content easier to find. A single document or piece of information may belong to multiple topics. Topics can be assigned to pieces of content either at the time of creation (when the content is saved to a SharePoint site) or when a new content source is added to a SharePoint index.

In many cases, manually assigning topics to content is the most effective way to organize information, but SharePoint Portal Server 2003 also provides a tool that can automatically assign topics to content: the Topic Assistant. You can use the Topic Assistant to assign topics to new content as it is crawled. You can use the Topic Assistant as the primary way to assign topics to content, or you can use it as a supplement to manually assigned topics. The Topic Assistant searches content and identifies important words and phrases that it uses to assign relevant topics to the content. Administrators can train the Topic Assistant to recognize and assign topics to content according to your particular business environment and processes.

Extensibility

No solution can meet the needs of every organization without some customization, which is why the search architecture in SharePoint Portal Server 2003 is extensible using easy tools and application programming interfaces (APIs). With these tools and APIs, you can create corporate search portals that can index and search custom or third-party business applications, data associated with your organization's unique business processes, and the types of documents that your organization uses in its business.

With the extensible document library model in SharePoint Portal Server 2003, administrators can create and map customized document properties. You can use these properties to categorize, organize, and find data through the corporate search portal. Administrators can also add icons for new document types and customize the Search Web Part and Search Results Web Part to make them easier for their users to use.

The indexing engine in SharePoint Portal Server 2003 can use IFilters to run full-text searches of common file formats such as Word, Excel, and Microsoft Office PowerPoint®, MIME, XML, and HTML. You can create custom IFilters for additional file formats, such as proprietary file formats or new file formats. You can also customize the search interface.

Enterprise Application Integration

Most organizations have multiple enterprise applications that they use for human resources, accounting, sales and marketing analysis, inventory, etc. These applications often have different user interfaces and methodologies, proprietary protocols, and different data storage formats. By helping to overcome these barriers to integration, SharePoint Portal Server 2003 helps organizations reap the following benefits of an integrated application

environment:

Employee Enablement – SharePoint Portal Server 2003 gives employees access to tools and data through the portal, so they can retrieve important information and carry out business through the portal. For example, a portal is an excellent way to provide current information about employee benefits, policies, and payroll in a place where employees can find it easily. Employee-driven applications such as expense reports and time cards can also be exposed through the portal. This improves employee efficiency and reduces the number of employee calls to the Human Resources department.

Executive Overview – A portal can provide the logical context for a data-driven view of the organization as a whole. Getting an up-to-date view of business data can be a difficult task. If decision makers must wait for analysts or knowledge workers to prepare reports, they may not identify and react to trends quickly enough. This problem is aggravated when data is stored in different applications and formats. By gathering data from multiple content stores and applications and presenting it using easy-to-use Web Parts, executives and decision makers can quickly gather intelligence about the state of business so they can make intelligent, informed decisions about the organization.

Sales Force Automation – Combining access to live data with the ability to encapsulate enterprise applications in a portal creates a rich opportunity for sales force automation. An integrated portal can provide sales staff with a full view of customers, accounts, and sales activities to help them do their job more productively and intelligently. By placing the applications they use to do that work in the same portal, you can create a seamless work environment. The end result is a sales force that is more effective and responsive to the customer.

Maintain Value of Investments – One of the most important benefits of enterprise application integration is the way it helps organizations take advantage of their existing investment in existing systems, data, and expertise. Your organization can gain the advantages of an integrated environment without the expenses associated with creating or purchasing new applications, migrating data, and retraining staff.

SharePoint Portal Server 2003 in Enterprise Application Integration

Enterprise application integration includes many different scenarios, but they all share a common element: unifying and integrating different applications with the portal. Generally speaking, enterprise application integration means taking your applications and helping them benefit from the context of the portal. This includes providing a single sign-on for enterprise applications, making applications easier for people to find and use, and presenting live data.

In an enterprise application integration scenario, SharePoint Portal Server 2003 provides an integration context for the applications, including display, personalization, and single sign-on capabilities.

Display and Access – SharePoint Portal Server 2003 provides a flexible, customizable environment for user interface elements. You can easily encapsulate application functionality and views of data in Web Parts, which provide a simple, portable context for adding applications to a Web page. Additionally, developers can use Web Parts to integrate application data with other Web Parts and other business applications, in order to create composite applications for accessing and updating information across multiple systems from within the portal.

Personalization – You can use SharePoint Portal Server 2003 to personalize a user's application experience by connecting the user to data and applications relevant to that user's job and tasks. For example, members of the accounting department can have links to accounting applications placed in their personal portals. Additionally, you can target the data and functionality that a user sees in the portal to that user's job and security level.

Single Sign-on – With the powerful single sign-on service in SharePoint Portal Server 2003, users can access multiple systems using only their Windows log-on information, including systems that normally require separate sign-on information. This means that users only have to manage a single set of credentials, making systems easier to use, reducing the number of technical support calls about lost or forgotten credentials, and reducing the total cost of ownership. For more information, see the "single sign-on" section earlier in this white paper.

Extranet

In many organizations, communication and collaboration are not limited to the organization's intranet. More and more organizations are taking advantage of the opportunity to share information with partners and customers. You can use Microsoft SharePoint Portal Server 2003 in an extranet configuration to provide external users with access

to documents, data, information, and applications. This can help your organization take advantage of many business-to-business opportunities. For example, with a SharePoint Portal Server 2003-based extranet, you can permit customers to place orders, view the status of their orders, or check the availability of a specific item. For another example, you can use an extranet portal with a project management application such as Microsoft Office Project Server 2003 to provide project status and timelines to your organization's partners.