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DEPARTEMENT OF INFORMATION TECHNOLOGIES

DIPLOMA THESIS

MS Office Use in Small and Middle Enterprises

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Declaration

I declare I have elaborated the thesis theme "Microsoft Office Use in Small and Medium Enterprises" myself and I have quoted all the literature and sources, which have been used.

In Prague on April 2, 2011

Acknowledgement

I would like to express my deepest respect and most sincere gratitude to my supervisor, Ing. Hana Rysová, for her guidance and encouragement at all stages of my work. Her constructive criticism and comments from the initial conception to the end of this work are highly appreciated. I am greatly indebted to her assistance and understanding in matters of this diploma thesis, which will be also valuable in the future.

In Prague April 2, 2011

MS Office Use in Small and Medium Enterprise

Využití produktů MS Office v malé a střední firmě

Summary:

This diploma thesis is focused on sharing MS Office and other documents on network by using MS SharePoint. It is a product, which can be used inside a single enterprise as well as among multiple companies or subsidiaries and it provides to users a great environment for sharing and storing data and documents, while eliminating redundancy of files, keeping tracks of changes in documents and users, who did these changes. The analysis of administration of this product is a second part of this thesis, which depicts the biggest problems administrators are facing. It considers difficulties with old files and folders and how the system should be managed to persisting its transparency and easiness of usage as well as how the performance of sites can be monitored. The result of this analysis is a solution suggestion or recommendation of how the challenges can be coped and what the fundamental steps are, which need to be taken to benefit at most from the services, which Microsoft SharePoint offers.

Key words: SharePoint, Office, sharing, administration

Souhrn:

Tato diplomová práce se zaměřuje na sdílení nejen dokumentů sady MS Office pomocí síťového připojení za použití MS SharePoint. Je to produkt, který může být použit v rámci jedné společnosti, stejně tak jako prostředník mezi vice firmami nebo pobočkami a poskytuje uživatelům velmi dobré prostředí pro sdílení a ukládání dat a dokumentů a zároveň eliminuje nadbytečné souborů, sleduje změny v nich a ukládá údaje o tom, kdo dané změny provedl. Analýza administrace tohoto produktu je druhou částí práce a poukazuje na největší problémy, se kterými se administrátoři potýkají. To zahrnuje potíže se starými soubory and složkami a jak má být systém spravován ve smyslu zachování přehlednosti a jednoduchosti užívání, stejně tak jako způsoby monitorování výkonu používaných stránek. Výsledkem této analýzy je navrhnutí řešení nebo doporuční pro zvládnutí administrace a také které kroky musí být udělány pro to, aby byl užitek ze služeb MS SharePoint co největší.

Klíčová slova: SharePoint, Office, sdílení, administrace

Contents

1   Introduction

Microsoft Office products are well known and broadly used on the majority of computers, but in the age of internet and networks of any type, there has raised a problem of sharing documents among people and finding the best way how to handle it. One of the solutions is MS SharePoint, which is a top class solution for all size of enterprises and offers an overall solution for working not only with Office documents.

It is designed mainly for large enterprises, but it is used also by third-party vendors or subsidiaries, which are usually small or middle sized.

There will be depict what are the reasons of difficulties with administration and if the mistakes are on the side of administrators or on the side of the system. The cooperation with Infrastructure Team of Microsoft Marketing Service Centre in Prague will be used (since author of this diploma thesis is an employee of this centre). Working with SharePoint is on the daily basis here and they have a big experience in this field. There is the internal Microsoft SharePoint sites for Western and Eastern Europe for disposal.

The results of this thesis will serve the purpose of improving management and administration of SharePoint sites, especially regarding folder´s structure. There are policies and rules, which should be applied and it can be found in this thesis what the obstacles are and how to cope the problems and create policies, which serve both, the system and the users.

2   Objectives and Methodology

2.1   Objectives

The goal of this diploma thesis is to describe product Microsoft SharePoint and system of sharing documents in it. With an emphasis on technical background will also be defined its architecture, versions and history. The comprehensive characteristic of this product is the first step to analysis of administration of files and documents. Since there always has to be some administrator of Microsoft SharePoint and there are no given scenarios for him or her how to manage documents and how to cope with problems, there has to be done an analysis, which will point out the best current procedures and the problems which administrators are facing.

As a result of the above three steps, the final objective is to suggest own solution. It will be a solution which could help administrators to improve and simplify their daily work.

2.2   Methodology

2.2.1   Study of literature

The broadest literature materials will be used accordingly with internet materials. The given product is widely used and so, numerous sources help to depict the characteristic and administrating problems too.

2.2.2   Research

Methodology for achieving the objectives is at first the detailed characteristics of MS SharePoint, its main functions, features, advantages, disadvantages, but also its history, architecture, security and versions comparison. The next step will be the practical analysis of SharePoint´s administration. For this goal, the Microsoft´s Marketing Service Center SharePoint sites will be used and also analysis of other common problems, which occur, while working with this system, will conduces to suggestions of how the administration should be done.

3 Literature research

3.1 MS Office

"MS Office is an office suite of interrelated desktop applications, servers and services for the Microsoft Windows and Mac OS X operating systems. MS Office was introduced by Microsoft in 1989 for Mac OS, with a version for Windows in 1990. Initially a marketing term for a bundled set of applications, the first version of Office contained Microsoft Word, Microsoft Excel, and Microsoft PowerPoint. Over the years, Office applications have grown substantially closer with shared features such as a common spell checker, OLE data integration and Microsoft Visual Basic for Applications scripting language. Microsoft also positions Office as a development platform for line-of-business software under the Office Business Applications (OBA) brand" (Microsoft Office, Available from WWW: <http://www.evskp.cz/SD/4c.pdf>).

The current versions are Office 2007 (resp. 2010) for Windows which was released in USA on January 30, 2007, (Europe 6 months later) and Office 2008 for Mac OS X, released January 15, 2008. Office 2007/Office 2008 introduced a new user interface and new Office Open XML document formats (docx, xlsx, pptx). Consequently, Microsoft has made available, free of charge, an add-on known as the *MS Office Compatibility Pack* to allow Office 2000-2003 for Windows and Office 2004 for Mac editions to open, edit, and save documents created under the new formats for Office 2007.

The difference between Office 2003 and 2007 is enormous. It is definitely more user friendly and really easier to access, but lots of users need to adapt on a whole new interface. But obviously, there are many features, which allow user to use their applications faster, better and more often. This is definitely true in connection to Microsoft SharePoint products.

3.2   History of SharePoint

The first version, called SharePoint Team Services (STS), was released at the same time as Office XP and was available as part of Microsoft FrontPage. STS could run on Windows 2000 Server or Windows XP.

Windows SharePoint Services 2.0 was marketed as an upgrade to SharePoint Team Services, but was in fact a completely redesigned application. SharePoint Team Services stored documents in ordinary file storage, keeping document metadata in a database. Windows SharePoint Services 2.0 on the other hand, stores both the document and the metadata in a database, and supports basic document versioning for items in Document Libraries. Service Pack 2 for WSS added support for SQL Server 2005 and the use of the .NET Framework 2.0.

Image 1, History of SharePoint versions

Source: http://blog.pentalogic.net/2010/06/sharepoint-versions-history
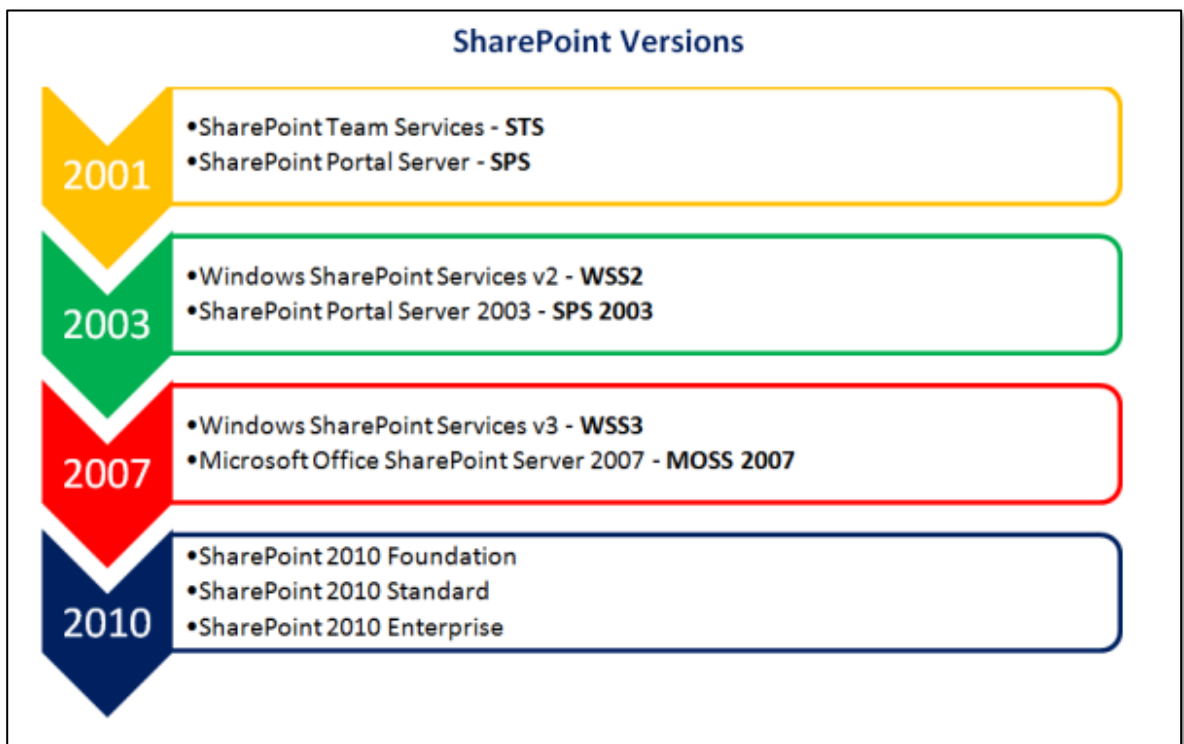
Windows SharePoint Services 3.0 was released on November 16, 2006 as part of the MS Office 2007 suite and Windows Server 2008. WSS 3.0 is built using .NET Framework 2.0

and .NET Framework 3.0 Windows Workflow Foundation to add workflow capabilities to the basic suite. By the beginning of 2007 WSS 3.0 was made available to the public.

3.3   Microsoft SharePoint

Nowadays, it is very often in many companies that thousands of documents are sent in one day. Most often via email. Problem is, when two, three people, or even the whole department work on one document, or project, one document is sent many times, throughout the company with some little changes from each employee, so the document loses its original author, date of creating and many other metadata which are important. But what is the most important for ordinary user that he or she has sometimes dozens version of document in one folder, which couldn´t be recognized who changed what, when and what is actually the latest version. This is an example of enormous redundancy of data.

As the name says, SharePoint is a point, which is created as a one place, where our information will be met, saved and will be easily accessible. Obviously, these are just the basic features, which this product offers. The truth is that this product helps both sides – users and administrators. This service is absolutely able to communicate with all the other services, which the company uses, for example invoice system, accounting, email, etc.

3.4   Microsoft SharePoint Services

There are two products, which are named SharePoint: Microsoft SharePoint Portal Server and Windows SharePoint Services. The second one is an optional part of Windows Server 2003 and it allows creating portals of working groups, simplifies creating documents, their versioning and sharing, publishing news, making discussions.

SharePoint Portal Server 2003 integrates team and work portals, based on services described above into one unified intelligent portal. SharePoint Portal Server 2003 extends function of Windows SharePoint Services by tools for administration and ordering web site throughout company.

3.5   MS Office SharePoint Server

MS Office SharePoint Server (MOSS), is a product in the Microsoft SharePoint family of products, and runs on top of Windows SharePoint Services (WSS). MOSS builds on WSS

by adding both core features as well as end user web parts to it. Its main strength is enabling an organization's information to be organized and aggregated in one central, web-based application and provides taxonomy for corporate data. MOSS integrates closely with applications in the MS Office suite and adds various features such as hierarchical organization of content areas, enhanced navigation, Single Sign On, personalization features, indexed search, the Business Data Catalogue, and in-browser rendering and, in certain cases, editing of MS Office documents. It can also be used to create specialized document-specific libraries, such as Microsoft PowerPoint slide libraries, which can be used to share not only specific slides from a presentation but their design as well.[1] The latest version, MOSS 2007, improves over its predecessor, SPS 2003, in integrating with MS Office applications, enterprise content management (with the integration of Microsoft Content Management Server into MOSS), Enterprise Search, web content management, more specialized document management, records management, Web 2.0 collaboration functionality like blogs and wikis, delivery of information stored in SharePoint via RSS, and the ability to take content and lists offline with Outlook 2007 and Microsoft Access. A MOSS application can abstract multiple WSS sites under the covers.

3.5.1   Architecture

The architecture is composed of Web Server front ends running the WSS application with MOSS plugging-in functionality where required, generally a search service which crawls the data store creating an index, a number of other services, and the database back-end, a standard enterprise architecture.

As such it can be built out by load balancing more web servers on the front end and building larger clusters of SQL Server on the back-end. Though recommended to be installed on physical machines, virtualization has been used with MOSS and the previous marks to create this architecture, though not officially supported at the time of writing.

Image 2, SharePoint architecture - general

Source: http://sharepoint.microsoft.com/blogs/ilija/Lists/Posts/Post.aspx?ID=3
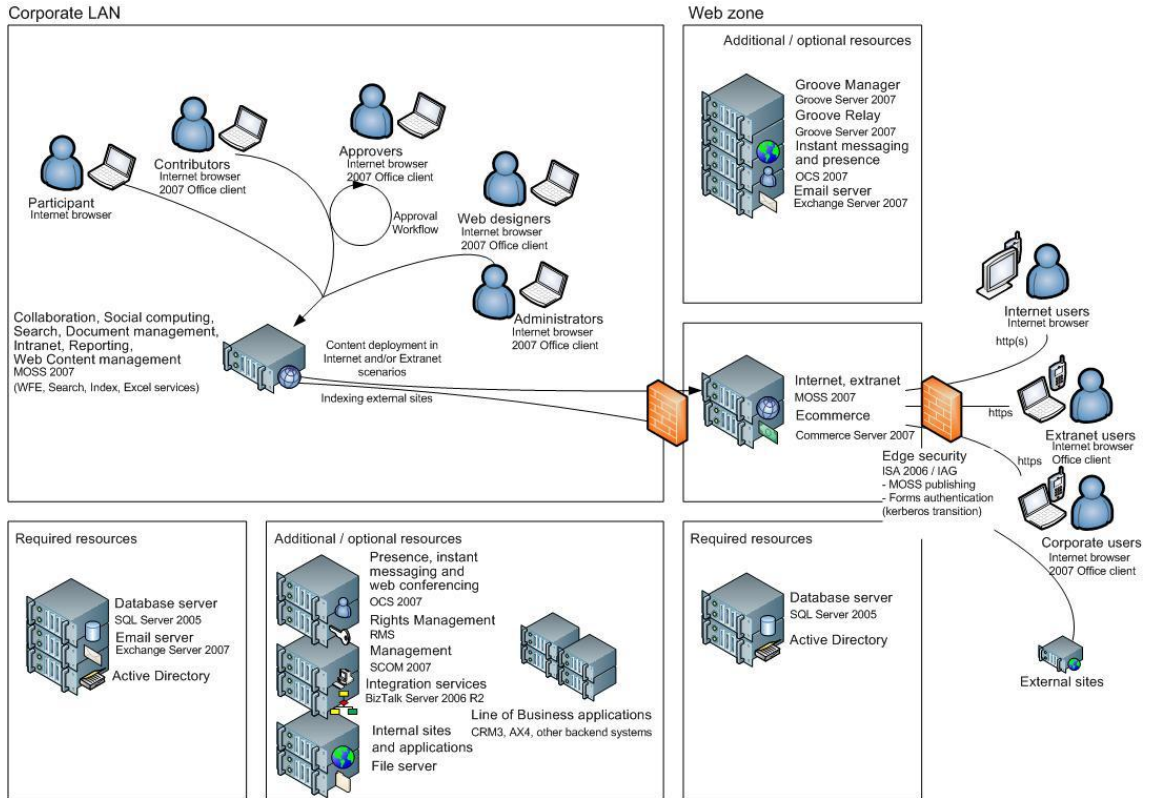
Image 3, Architecture Implementation - basic
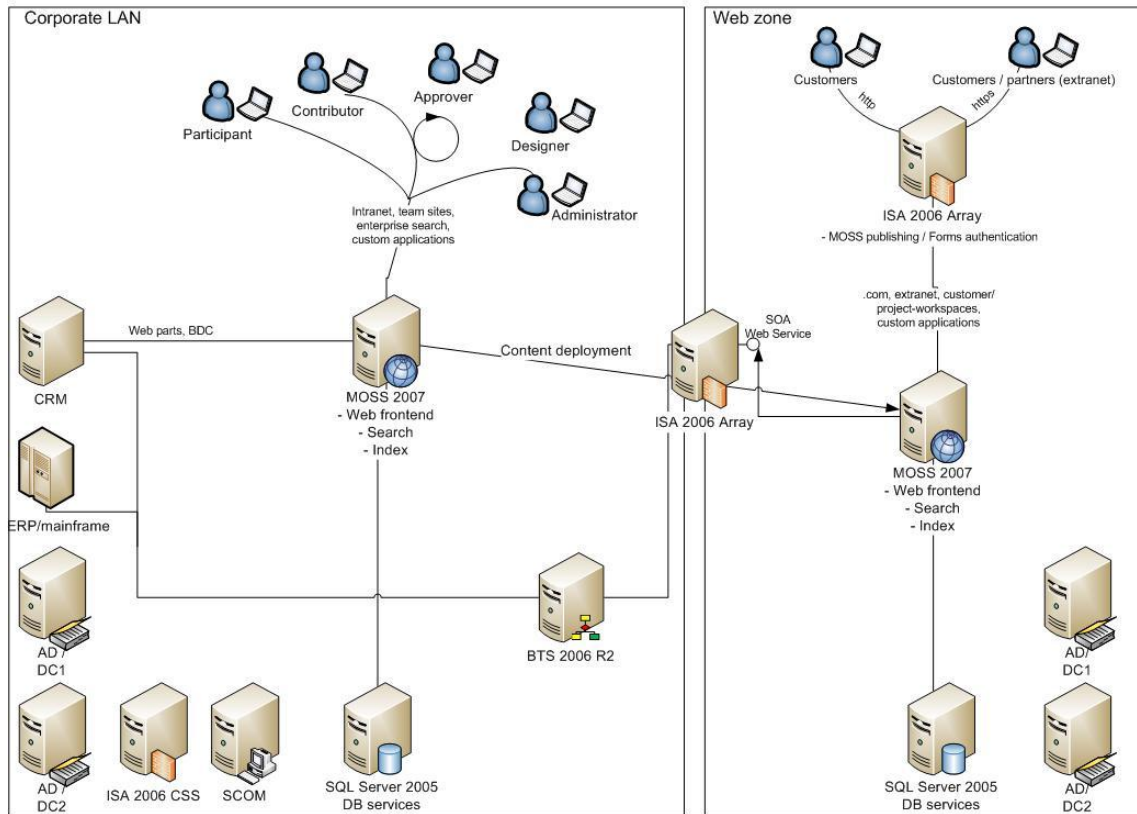
Source:http://www.directionsonmicrosoft.com/sample/DOMIS/update/2007/03mar/0307s2 ies_illo.htm

SharePoint allows administrators to create Web Applications each on its own port. A separate web application on a separate port can contain site collections, each having its own database in SQL Server. Site collections can have sites which can contain sub sites. A web server can contain hundreds of site collections.

One of the weaknesses of the tool is its own ease of use. Administrators may be tempted to start one port 80 and build a single site collection with sub-sites underneath, exposed to the company as a home page and sub-pages. Though this makes sense for a large organization or one with bespoke portals using custom Web Parts or Forms Server, it can cause problems. All the sites in a site collection will be stored in the same database, which can become too large to effectively back-up. Moreover, bespoke development using the same Web Application and Application pool can bring a company-wide intranet down.

MOSS 2007 also allows content types and document libraries to have information management policies, which allows the triggering of workflow or deletion of information after a certain fixed event or time period, helping to reduce many of the size-growth problems of earlier versions.

3.5.2   Office 2007 integration

MOSS integrates closely with MS Office applications. It can render MS Office documents in web pages. In addition, with the proper server side infrastructure, it can allow the documents to be edited from within the browser as well. For other document types in a document library, MS Office applications can directly edit the document in the document library. This feature is available for Microsoft Excel and Microsoft InfoPath. Using Excel Services, MOSS can allow Excel 2007 workbooks to be loaded, edited, and displayed in a SharePoint page. All calculations happen on the MOSS server. MOSS can also host and render Microsoft InfoPath forms using the InfoPath Forms Services to have it viewed and filled out using a browser.

MS Office Outlook can also be used for accessing and synchronizing SharePoint document libraries. On connecting a document library with Outlook, the library will be listed in the navigation pane, and the files in it will be listed along with certain metadata such as author. Compatible MS Office documents will be previewed in the preview pane and MS Office Outlook search bars can be used to search the libraries as well. The search entered using the Outlook bar will be federated to the SharePoint server, and the results will be displayed in Outlook itself. By synchronizing a document library, Outlook can make the files available offline, which can be opened and edited using other MS Office 2007 applications; the changes will be synchronized back to the SharePoint library by Outlook.

While it is not necessary to use MS Office 2007 to take advantage of the integration with the MS Office suite, it offers the most integration with MOSS 2007. A few examples of the improved integration with Office 2007 include:

- 2-way synchronization of Outlook Calendar and SharePoint Calendar.

- Overlaying a SharePoint Calendar on top of user's Outlook 2007 Calendar.

- SharePoint Task-Assignment Synchronization into user's Outlook Task List.

- Offline Synchronization of SharePoint Documents.

- Viewing SharePoint RSS feeds through MS Office Outlook

- Display of Meta-data values for a given document type in the Office Ribbon as a user is editing a document from a document library.

3.5.3 Enterprise search

MOSS 2007 can be used for enterprise search, to search across the document libraries and user groups. MOSS 2007 fully indexes all the documents stored in its library, in addition, it also indexes data stored in external databases which are exposed via ADO.NET or Web Services with a well-defined WSDL schema. Any search from the portal interface or client applications can use the MOSS search capabilities to search over this index. SharePoint servers, Web sites, file shares, Exchange Public Folders, and databases can be set as data sources which it will then index. The indexing system is a tuned version of the one used in Windows Desktop Search. The indexing engine uses specified crawling rules to decide what is to be indexed. The index engine uses continuous propagation, which allows even a partial index to be queried against. It also exposes a UI for visual administration of the search capabilities. MOSS 2007 also includes suggestion capability, which suggests search terms in case of typographical errors.

MS Office SharePoint Server 2007 Standard, and MS Office SharePoint Server 2007 Enterprise also includes a people search functionality, which can search for people, based on their affiliation and expertise, provided the enterprise infrastructure makes the information available. It can search from SharePoint user groups, as well as Active Directory and other LDAP directories provided the information has been imported into MOSS.

3.5.4 Business Data Catalogue

The Business Data Catalogue (BDC), introduced in MOSS 2007, enables presenting business data from back-end server applications such as SAP or Siebel 2007 or databases

to be viewed by the web-based interface of SharePoint without writing any code. It comprises a metadata repository and an object model. It provides a unified and simple way to invoke operations. It presents a consistent, object-oriented interface to the business logic that is embedded in typical business applications. The Business Data Catalogue provides homogeneous access to the underlying data sources by using a declarative metadata model that simplifies the client object model. The Business Data Catalogue Definition Editor is now included in the MOSS SDK. The BDC Editor can connect to a database or a web service provided by a LOB system and then generates the Application Definition File for it. The task of maintaining the catalogue is divided among four roles: business analyst who identifies the data to be presented, metadata author who creates the tags to identify the data to SharePoint, administrator, and developer.

3.5.5 MySite

„Personal web site that define user´s identity on the intranet. They are used to store and share information that doesn´t fit neatly into a project or department site" (Webb, 2007, s. 405). MySite is an important feature in MOSS 2007 that enables users to obtain access to a personalized view of the information that's relevant to them. MySite has a Public view and a Private view. Users are able to determine the permissions on various pieces of information that are in a MySite and select whether their colleagues, manager, or everyone in the organization can see each piece of information. The Private view of a user's MySite enables them to see the following types of information:

- Workspaces - Users can see and access the workspaces to which they have access, saving wasted navigation time.

- MyLinks - A list of personal links that are important to the user. As users are browsing the SharePoint site, they can quickly add a link for a given page to the MyLinks list by selecting Add Link from a menu in the upper right corner of the page.

- Personalization Sites - Special SharePoint sites that personalize content based on a user's role in the organization can be pinned to the appropriate user's MySite based on their organization role (HR, Facilities, Finance, etc.). Microsoft has released

several role-based personalization templates to help people get started with this feature.

- Colleague Tracker - Enables users to track the changes that they have permission to see in their colleague's MySites.

- Outlook e-mail - Web Parts are available for users' MySites that display their e-mail and calendar information from Exchange.

- Distribution Groups - In the public version of MySite, you can see the distribution groups that you're a member of and, when looking at other users' MySites, can see the distribution groups that you have in common with them.

- Standard WSS Site Features - Since a MySite is a WSS site at its core, users' MySites have all of the typical functionality that comes with Windows SharePoint Services (Document Libraries and Lists, Recycle Bin, Version Control, Workflow, etc)

If the system has the appropriate multi-language packs and templates installed, users can be given the option of creating their MySite in one of the languages available on the system instead of being forced to use the language that governs the more public areas of the SharePoint system. This might be useful in a scenario where a global enterprise is enabling their users in China and Spain to create their MySite in Chinese or Spanish.

3.5.6 Accessibility

Although MOSS 2007 accessibility has improved since SharePoint Portal Server 2003, it is still difficult to get a SharePoint web site to adhere to the WCAG (Web Content Accessibility Guidelines) 1.0 specification. SharePoint relies extensively on table-based layouts, especially in the Web Parts Framework, and XHTML is also problematic as SharePoint's built-in controls produce mark-up that does not validate under XHTML doctypes. Substantial custom development is therefore essential in order to comply with these standards. This has proven to be a key stumbling block to the adoption of SharePoint solutions in situations where strict adherence to accessibility standards is of particular importance, such as the public sector.

3.5.7 Scalability

Image 4, Scalability of SharePoint

Source: http://www.alachisoft.com/storageedge/sharepoint-performance-scalability.html
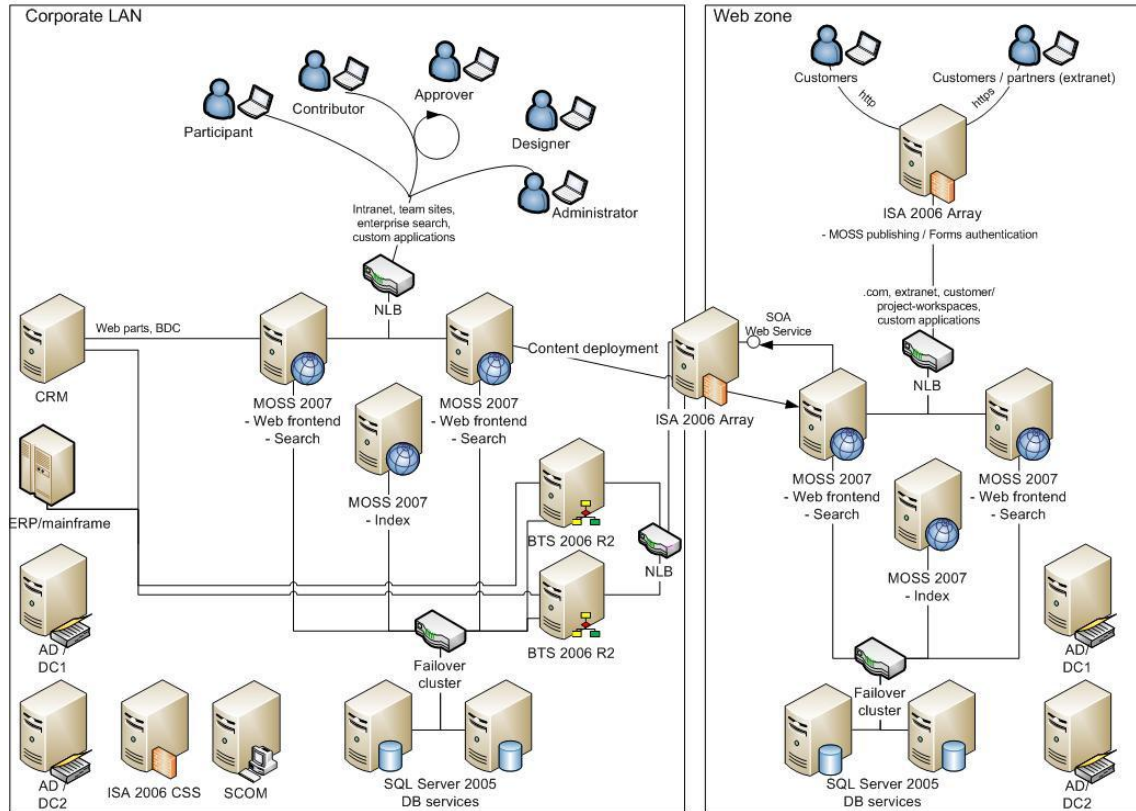
3.6 SharePoint Portal Server

It is a portal solution, allowing sharing of information of users of one computer network, work groups or the whole company network. It is designed and built to let users easily access, change, publish and view the documents of colleagues or their own. The environment is intuitive, so there is no problem of using it for each employee, who has basic knowledge of MS Office products.

There are nine main points:

- Easy navigation
- Simplified information publishing
- Collaboration

- Publishing and administration of documents

- Searching for information

- Personalization

- Logs and attentions

- Integration and unified login

- Integration with MS Office

3.7 Installation:

3.7.1 Configuration of Web server

Before installing and configuring Office SharePoint Server 2007, it is important to install and configure the required software. This includes installing and configuring Internet Information Services (IIS) so the computer acts as a Web server, installing the Microsoft .NET Framework version 3.0, and enabling ASP.NET 2.0. Internet Information Services (IIS) is not installed or enabled by default in the Microsoft Windows Server 2003 operating system. To make your server a Web server, IIS must be installed and enabled and one must ensure that IIS is running in IIS 6.0 worker process isolation mode.

.NET Framework version 3.0 must be installed. There are separate downloads for x86-based computers and x64-based computers. The .NET Framework version 3.0 download contains the Windows Workflow Foundation technology, which is required by workflow features.

ASP.NET 2.0 is required for proper functioning of Web content, the Central Administration Web Site, and many other features and functions of Office SharePoint Server 2007.

If Office SharePoint Server 2007 is installed on a single server, it is needed to install SQL Server 2005 Express Edition.

3.8   SharePoint technology architecture

Windows SharePoint Services and SharePoint Portal Server 2003 are based on three components and general prerequisites on infrastructure, where this technology will be worked:

3.8.1   Network infrastructure

SharePoint is primary a network service, so it is appropriate to have the server, where SharePoint will be launched, connected to the network. The higher data throughput of Ethernet card, the better.

3.8.2   DNS

Each server, where SharePoint will be operated and which is connected to the company network must have access to company DNS server, where the unique domain name are made.

3.8.3   Active Directory

Active Directory is a technology created by Microsoft that provides a variety of network services, including:

- LDAP-like directory services

- Kerberos-based authentication

- DNS-based naming and other network information

Using the same database, for use primarily in Windows environments, Active Directory also allows administrators to assign policies, deploy software, and apply critical updates to an organization. Active Directory stores information and settings in a central database. Active Directory networks can vary from a small installation with a few computers, users and printers to tens of thousands of users, many different domains and large server farms spanning many geographical locations (Brian Desmond, Joe Richards, Robbie Allen, Alistair G. Lowe-Norris, 2008, p.3).

Active Directory was previewed in 1999, released first with Windows 2000 Server edition, and revised to extend functionality and improve administration in Windows Server 2003. Additional improvements were made in Windows Server 2003 R2. Active Directory was refined further in Windows Server 2008 and Windows Server 2008 R2 and was renamed Active Directory Domain Services.

Active Directory was called NTDS (NT Directory Service) in older Microsoft documents. This name can still be seen in some Active Directory binaries.

There is a common misconception that Active Directory provides software distribution. Software distribution is run by a separate service that uses additional proprietary schema attributes that work in conjunction with the LDAP protocol. Active Directory does not automate software distribution, but provides a mechanism by which other services can provide software distribution.

3.9   Components

3.9.1   Database server (SQL Server)

It is essential, when SharePoint is developed by Microsoft that the database server, it will be using should be based on Microsoft platform too. The MS SQL Server is relational database and analytical system for e-shops, business and solution for data storages.

It has an integrated support of XML language, it is scalable and secure. The first version of SharePoint was using SQL server 2000, and there were no significant requirements for the database system till 2010 edition, where the 2008 series is needed.

3.9.2   Application server Windows Server

Web server (Virtual server)

Application pool

Process recycling

Web garden

3.9.3   ASP.NET

ASP.NET is a Microsoft´s web application framework made for programmers to allow them to build dynamic web sites, web applications and web services. It was first released in January 2002 with version 1.0 of the .NET Framework, and is the successor to Microsoft's Active Server Pages (ASP) technology. ASP.NET is built on the Common Language Runtime (CLR). This important feature allows programmers to write ASP.NET codes with any possible and supported .NET language (Jesse Liberty, Dan Hurwitz, 2006, p. 930).

3.10   Collaborative Application Mark-up Language

CAML is a XML type of language, which is internally used for definition of web site, lists, views and forms. It is also used for description of databases and tables SharePoint web sites during their creation.

Experienced programmer does not have to actually learn this language, because it is possible to avoid this language, using other language, sacrificing memory and computing memory (Shahram Khosravi, 2008, p. 816).

3.11   Object model of Windows SharePoint Services

Almost the whole code is so-called Managed code. Object model is established from 18 namespaces, which are concentrated into 9 assemblies. Using an object model can administrators for example:

1. Add, edit and get data from list
2. Create new lists including definition their metadata
3. Set web sites option
4. Work with documents from documents and form libraries
5. Execute administrative work, as for example creating web sites, adding users, roles, etc.

3.11.1 Objects

All classes from namespaces Microsoft. SharePoint and Microsoft.SharePoint.Administration start by preposition SP. Objects or instances of classes have their options (myWeb.Title) and methods, which allow us to make different actions with objects (myFile.CheckIn). Windows SharePoint Services usually do not execute changes immediately; changes are executed after calling a method Update of the concrete object:

Change the name of list of tasks

SPList myList = myWeb.Lists["Tasks"];

myList.Title = "New name";

myList.Description = "New description of list of tasks";

mylist.Update();

3.11.2 Collections

Collections are in the object model equivalent of lists on the web sites of SharePoint. Using collections it is possible to access entries of lists, add new entries, delete them and change. For object collection of SharePoint is typical:

Name ends on Collection

Implement interface System.Collections.ICollection

Have a feature Count(type Int32)

Have index(indexer) type Int32 for direct access to n-tuple entries

It is possible to index those using identifier of entries (webs, lists, columns…)

They have methods Add and Delete

3.11.3 Usage SharePoint Service with a package MS Office 2007

MS Office 2007 has some features and improvements, which make SharePoint technology more user-friendly. MO 2007 has better integration points for web collaboration, so it is possible to edit document, which is saved to SharePoint server with no difference on common procedures of user.

The main feature in SharePoint and MS Office is editing files and ability to give them back with changes and reservation. This function allows user1 to control a state of document in a way that any other user is not allowed to make changes during editing document by user1. This is a solution, which determinates redundancy in folders. MS Office allows us to give back files with changes from the environment of library and also directly from Word, PowerPoint, Excel, Visio (all 2007). It is possible in WSS 3.0 to user to work with files on their own local disks, regardless whether they are connected on the network. While executing an operation, copy is saved to the SharePoint-concepts folder, which is in the computer in Documents folder. It is very useful, if you need to edit this document, while are you travelling, and you are not connected to the local company network. During this time it is possible to reserve this document so other user cannot edit it, but only view it.

3.12 Security of SharePoint Technologies

Security in this technology is based on two basic principles. First one is an authentication, which means verifying a user and his permission to access a portal solution. Second one is authorization, which means granting permission to user for work in system.

Authentication as itself is actually not part of SharePoint. This step is made by IIS (Internet Information Services).

Authorization is solved on the level of SharePoint technology by predefined roles, with respect for operation, which are executed within portal. These roles are granted to user-groups in which users are members. Roles are generally three:

1. Access to portal solution
    - If the user has right to enter the portal and which operations are permitted
2. Access to information within portal solution
    - Which information are appointed to user and permitted operations
3. Rights for administration of system environment and webs.

3.12.1 Authentication model

There are two encouraged models of authentication:

1. Authentication of users against existing domain/local accounts(pre-existing account mode or Domain mode)
2. Authentication against user- created accounts (Account Creation Mode), where the user creates an account within Organisation unit in Active Directory. This mode does not require domain or local accounts.

Choose of mode is available only by the first installation. Change of this mode requires a whole new installation of SharePoint.

3.12.1.1 Configuration of authentication mode in IIS

Basic verification

This approach has one big advantage and it is a fact that it is a part of HTTP specification and it is encouraged by most of the browsers. But there is a disadvantage that it is not too much secure till there is no extra line or direct connection SSL (Secure Sockets Layer).

Integrated verifying of Windows

"Windows Authentication is the most common authentication type used in intranet deployments. It uses Active Directory to validate users. When Windows Authentication is selected, IIS uses the Windows Authentication protocol that is configured in IIS. The

options are NTLM, Kerberos, certificates, Basic, and Digest protocols"(Joerg Krause, Christian Langhirt, Martin Döring, Alexander Sterff, Bernd Pehlke, 2010, p. 134).

Integrated verifying is a secure way for verifying, because username and password are coded by hash algorithm before they are sent to network.

Anonymous access

There is a possibility to browse in public parts of web without a username or password. At the time of attempt to access a public web site or FTP server, assigns web server connection to user account Windows with a name IUSR_Name_of_Computer, where the name of computer is a name of computer, where IIS is launched (Joerg Krause, Christian Langhirt, Martin Döring, Alexander Sterff, Bernd Pehlke, 2010, p. 134).

Access by using user certificates

It is possible to allow verifying web server before sending personal information, like a credit card number, by using server certificate. It is also possible to use user certificates.

Image 5, Authentication scheme

Source: http://technet.microsoft.com/en-us/library/cc750090.aspx
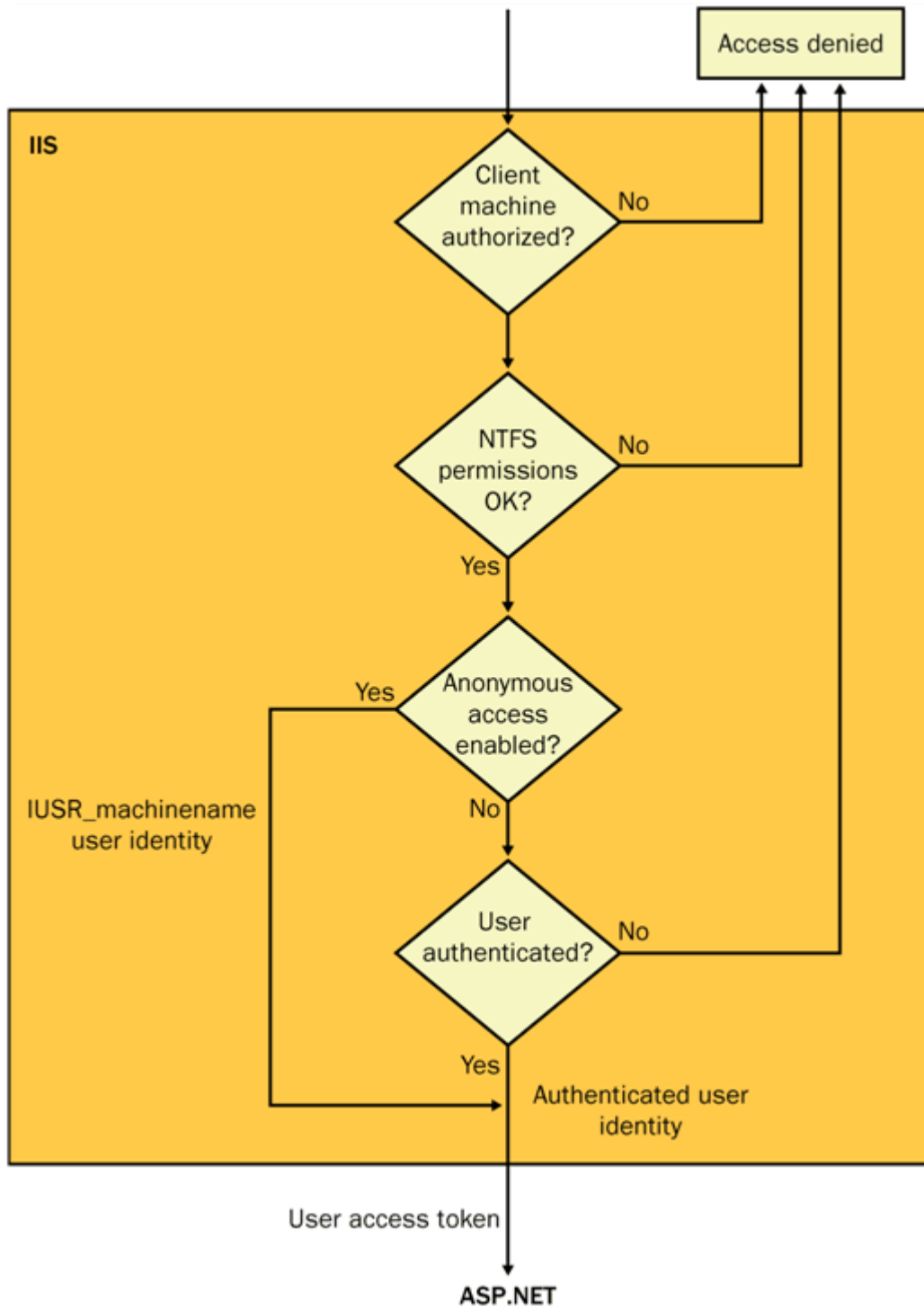
Authorization

Table 1, Windows SharePoint Services Site Groups and their Rights

Site group name	User rights included by default
Guest	None
Reader	Use Self-Service Site Creation View Pages View Items
Contributor	All rights included in the Reader site group, plus: • Add Items • Add/Remove Private Web Parts • Browse Directories • Create Cross-Site Groups • Delete Items • Edit Items • Manage Personal Views • Update Personal Web Parts
Web Designer	All rights included in the Contributor site group, plus: • Add and Customize Pages • Apply Themes and Borders

Site group name	User rights included by default
	• Apply Style Sheets
	• Cancel Check-out
	• Manage Lists
Administrator	All rights included in the Web Designer site group, plus:
	• Create Sub sites
	• Manage List Permissions
	• Manage Site Groups
	• View Usage Data

Source: Elaborated by author

Table 2, Windows SharePoint Services Rights Dependencies

Right	Permissions	Groups included by default	Dependent rights
Add and Customize Pages	Create ASP.NET, ASP, and HTML pages for a website	Web Designer, Administrator	Browse Directories, View Pages
Add Items	Add items to lists or add documents to document libraries	Contributor, Web Designer, Administrator	View Items, View Pages
Add/Remove Private Web Parts	Add and remove Web Parts to personalize Web Part Pages	Contributor, Web Designer, Administrator	Update Personal Web Parts, View Items, View Pages

Right	Permissions	Groups included by default	Dependent rights
Apply Style Sheets	Apply a style sheet to the entire website	Web Designer, Administrator	View Pages
Apply Themes and Borders	Apply a theme or border to an entire website	Web Designer, Administrator	View Pages
Browse Directories	Browse the directory structure of a website	Contributor, Web Designer, Administrator	View Pages
Cancel Check-Out	Cancel the check-out action performed by another user	Web Designer, Administrator	View Pages
Create Cross-Site Groups	Create or delete cross-site groups, or change membership of a cross-site group	Contributor, Web Designer, Administrator	View Pages
Create Sub sites	Create a new subside or workspace site, such as a Document Workspace site or Meeting Workspace site	Reader, Contributor, Web Designer, Administrator	View Pages
Delete Items	Delete list items and documents from the website	Contributor, Web Designer, Administrator	View Items, View Pages

Right	Permissions	Groups included by default	Dependent rights
Edit Items	Edit existing list items and documents in the website	Contributor, Web Designer, Administrator	View Items, View Pages
Manage Lists	Create, edit, or delete lists and change their settings	Web Designer, Administrator	View Items, View Pages, Manage Personal Views
Manage List Permissions	Change permissions for a list or document library	Administrator	Manage Lists, View Items, View Pages, Manage Personal Views
Manage Personal Views	Create, edit, or delete personal views on lists	Contributor, Web Designer, Administrator	View Items, View Pages
Manage Site Groups	Create, delete, and edit site groups, both by changing the rights assigned to the site group and by changing which users are members of the site group	Administrator	View Pages
Manage Web Site	Perform administration tasks for a particular site or sub site	Administrator	View Pages
Update Personal Web	Update Web Parts to display personalized	Contributor, Web Designer,	View Items, View

Right	Permissions	Groups included by default	Dependent rights
Parts	information	Administrator	Pages
Use Self-Service Site Creation	Use the Self-Service Site Creation tool to create a top-level website.	Reader, Contributor, Web Designer, Administrator	View Pages
View Items	View items in lists, documents in document libraries, and Web discussion comments	Reader, Contributor, Web Designer, Administrator	View Pages
View Pages	Browse pages in the website	Reader, Contributor, Web Designer, Administrator	None
View Usage Data	View reports on website usage	Administrator	View Pages

Source: http://office.microsoft.com/en-us/sharepointserver/FX101211721033.aspx

Table 3, Role of XML at Documents

Scenario	Example
Document Assembly	Create sales reports from financial and forecast data stored in a CRM system
Content Reuse	Apply content stored in Word documents to Web pages quickly and efficiency
Content Tagging	Tag presentations using a specific taxonomy to improve knowledge management efficiency
Document Interrogation	Search for all documents containing a specific company name or sales contact
Document Sanitization	Remove all tracked changes and comments from a Word document before it is published

Source: Elaborated by author

3.13 Open XML Formats Architecture

From a user view, there is no difference between XML format documents and the previous type.

Documents parts:

1. Most parts are XML
2. Each XML part is discreet, compressed component
3. Can add, extract and modify individual parts without using Office programs
4. Corruption or absence of any part would not prohibit the file from being opened

Image 6, Developer view:
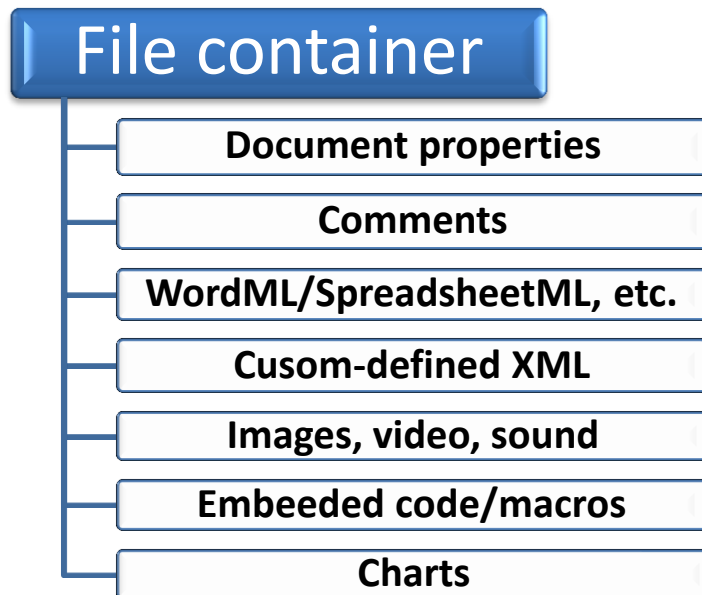
Source: Elaborated by author

Image 7, System Packaging
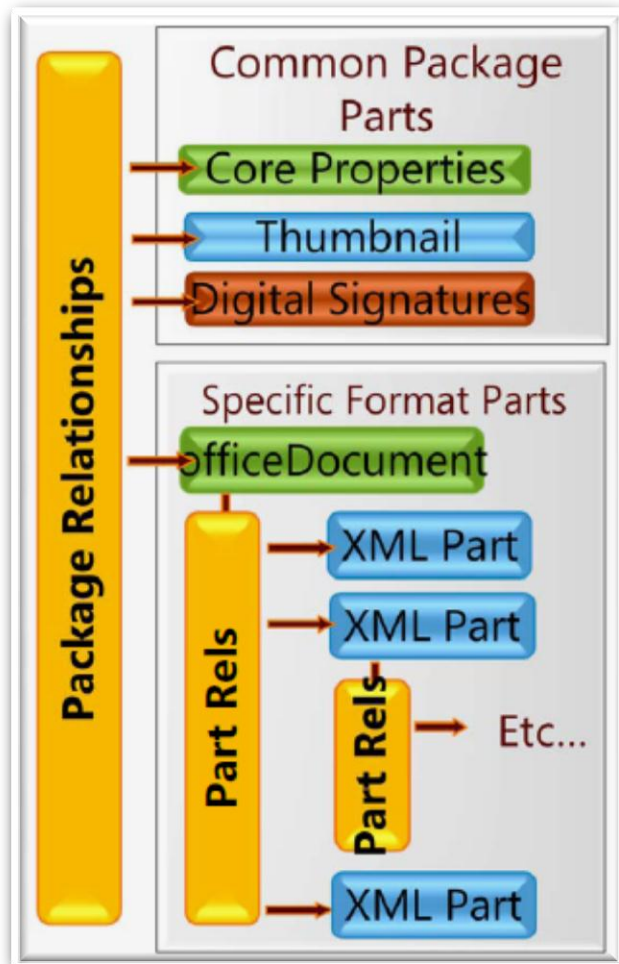
Source: http://msdn.microsoft.com/en-us/library/bb879915(v=office.12).aspx

System.IO.Packaging

It is a part of Windows Presentation Foundation (.NET 3.0) and it is shipped with Windows Vista. It requires .NET 2.0 and it enables package manipulation for Office Open XML File Formats, XML Paper Specification Files and any other Open Packaging Convention Files

System.IO.Packaging.Package provides methods to create enumerate and delete these entities: Package, PackageRelationships, PackageProperties, Parts.

3.14 SharePoint´s main advantages

3.14.1 Manage content and processes

"Simplify compliance efforts and keep business information more secure through a comprehensive set of tools to manage and control electronic content. Streamline the everyday business processes that are a drain on organizational productivity by using electronic forms and out-of-the-box workflow processes that users can initiate, track, and participate in through familiar MS Office applications, e-mail, or Web browsers.

Control documents through detailed, extensible policy management.

Define customized document management policies to control access rights at a per-item level, specify retention period and expiration actions, and track content through document-auditing settings. Policy integration with familiar client applications makes compliance transparent and easy for employees. Integration with Information Rights Management helps ensure that proprietary and confidential information is better protected even if it is not connected to a server.

Centrally store, manage, and access documents across the enterprise. Organizations can store and organize all business documents and content in one central location, and users have a consistent mechanism to navigate and find relevant information. Default repository settings can be modified to add workflow, define retention policies, and add new templates and content types.

Simplify Web content management. Provide easy-to-use functionality to create, approve, and publish Web content. Master Pages and Page Layouts provide reusable templates for a consistent look and feel. New functionality enables enterprises to publish content from one area to another (for example, from a collaborative site to a portal), or to cost-effectively manage multilingual delivery of content on multiple intranet, extranet, and Internet sites.

Extend business processes across the organization. Forms Services–driven solutions make it possible to more securely and accurately collect information both inside and outside the organization without coding any custom applications. This information can then be integrated easily into line-of-business systems, stored in document libraries, used

to start workflow processes, or submitted to Web services, thus avoiding duplicate effort and costly errors resulting from manual data entry.

Streamline everyday business activities. Take advantage of workflows to automate and gain more visibility into common business activities such as document review and approval, issue tracking, and signature collection. Integration with familiar MS Office client applications, e-mail, and Web browsers simplifies the user experience. Organizations can easily modify the out-of-the-box processes or define their own processes using familiar Microsoft tools such as MS Office SharePoint Designer 2007 (the next generation MS Office FrontPage) or Microsoft Visual Studio development system" (Manage Content and Processes, Available from WWW: <http://arbitelnetworks.com/sharepoint-about>).

3.14.2 Improve business insight

"Effectively monitor business drivers, empower better informed decisions throughout the organization, and proactively respond to important business events.

Present business-critical information in one central location. Create live, interactive business intelligence (BI) portals that assemble and display business information from disparate sources by using integrated BI capabilities such as dashboards, Web Parts, key performance indicators (KPIs), and business data connectivity technologies. Centralized Report Centre sites give users a single place to find the latest spread sheets, reports, or KPIs.

Quickly connect people with information. Enterprise Search in Office SharePoint Server 2007 incorporates people and business data along with documents and Web pages to provide more comprehensive results. The Search Centre provides a single integrated location for employees to find content, processes, people, and business data relevant to their specific needs. This enables people and organizations to make decisions based on the latest information and facts more quickly.

Share business data broadly while helping to protect sensitive information. Excel Services running on Office SharePoint Server 2007 provides access to data and analytics in real time, interactive MS Office Excel spread sheets from a Web browser. Use these spread

sheets to maintain and efficiently share one centralized and up-to-date version while helping to protect any sensitive or proprietary information embedded in documents (such as financial models).

Take advantage of your unstructured business networks to drive better decisions. Employees can use new knowledge management tools to get the most from their powerful unstructured business networks, both inside and outside their organizations, thereby connecting with people more quickly and efficiently. By exploring these undocumented business relationships and finding subject-matter experts, individuals are able to make better decisions more quickly.

Unlock business data. The Business Data Catalogue enables structured data from line-of-business applications, such as SAP and Siebel systems, to be integrated into Office SharePoint Server 2007 through Web Parts, lists, people profiles, search, or programmatically. Centrally managed connections to back-end systems can be defined once and then reused by end-users to access back-end data without writing any code — easily making business data part of portal content. The Business Data Catalogue also provides the ability for Enterprise Search to integrate back-end business data into the search experience, without having to write any protocol handlers, iFilters, or custom code" (Improve Business Insight, Available from WWW: <http://arbitelnetworks.com/sharepoint-about>).

3.14.3 Simplify internal and external collaboration

Share knowledge, find information, and collaborate more easily and more securely both within and across organizational boundaries. Leverage your partner and customer network, and use your personal networks to connect to other people effectively.

Enhance customer and partner relationships. With smart, standards-based, electronic forms–driven solutions, you can collect business information from customers and partners through a Web browser. Lightweight Directory Access Protocol (LDAP) integration and support for other pluggable authentication providers makes it easier to work with non–Active Directory service sources, thereby simplifying extranet setups and facilitating tighter connectivity with customers, partners, and suppliers.

Ubiquitous Enterprise Search. Enterprise Search in Office SharePoint Server 2007 has great relevance and incorporates enterprise content such as people and business data, along with documents and Web pages, to provide more comprehensive results. Enterprise Search is ubiquitous in Office SharePoint Server 2007, with tight integration into SharePoint sites, Web Parts, SharePoint lists, people profiles, and more. This enables people to look for the information they need wherever they navigate within the portal. Enterprise Search has the capability to search through business data, and the search results can be highly customized; for example, surfacing specific metadata elements of back-end records.

Work when and where you want. With offline access to SharePoint lists and document libraries, via MS Office Outlook 2007, you can free yourself from limitations of corporate network connectivity. Tight integration with MS Office Groove Server 2007 further enhances the offline experience for users.

Connect and share knowledge. New knowledge management tools empower employees to create and use people networks, both inside and outside their organizations, so they can connect and share knowledge more quickly and efficiently with other people.

Personalize operations. My Sites provides a totally personalized experience for users, with a dedicated site for each user. Each site can be used to store, present, view, and manage content, information, and applications in a controlled fashion. Each site can also be used to present information about the user, such as skills and roles, colleagues and managers, groups and distribution lists the user belongs to, and documents the user is working on. And each site contains stringent privacy control and enhanced security mechanisms, so that each user can choose how much information to present, and to whom. My Sites can also be fully customized to suit individual requirements.

3.14.4 Empower IT to make a strategic impact

"Increase responsiveness of IT to business needs and reduce the number of platforms to maintain by supporting all intranets, extranets, and Web applications across the enterprise with one integrated platform.

Get enhanced interoperability support. Office SharePoint Server 2007 is built on a scalable architecture, with support for Web services and interoperability standards including XML and Simple Object Access Protocol (SOAP). Office SharePoint Server 2007 also has rich, open application programming interfaces (APIs) and event handlers for lists and documents. This enables integration with existing systems and provides the flexibility to incorporate new non-Microsoft IT investments. LDAP integration support for other pluggable authentication providers makes it easier to work with non–Active Directory sources. Out-of-the-box WSRP Consumer Web Part enables integration with other WSRP-compliant portal solutions.

Enable IT to focus on more strategic tasks. Users can now create sites, initiate workflows, self-provision applications, access back-end data, define security at a per-item level, restore deleted items, and complete other tasks without involving IT. This reduced user dependence on IT improves productivity and also enables the IT department to focus on providing real value-added services to the organization. With the Business Data Catalogue, you can define and deploy business application configurations to access data residing in back-end systems. This feature can be reused by business users to create personalized views of business data without having to develop any custom code.

Simplify deployment, management, and system administration. Managing a Web server farm, deploying new pieces of content and managing synchronization across those sites is now much simpler. Deployment can be done in "top-down" or "bottom-up" fashion. Simplify site staging through out-of-the-box Site-starter Templates for common Web sites, with Area and Page Layout templates and preconfigured navigation. And enhanced capabilities to back up and restore content helps IT professionals schedule backups, back up multisite collections, and then restore each one individually.

Robust system monitoring, usage tracking, and monitoring tools. These tools help isolate and solve problems faster and improve the operational efficiency of the system infrastructure" (Empower IT to Make a Strategic Impact, Available from WWW: <http://arbitelnetworks.com/sharepoint-about>).

3.15 Microsoft SharePoint 2010

There were numerous new products releases presented in 2010 from Microsoft (or their updates) and next to the Office 2010 package; one of the most significant was SharePoint 2010, internally known as SharePoint 14. For an ordinary user the changes between Office 2007 and 2010 might not be even realized, but in case of SharePoint the change is really huge. Considering this product is quite new (about ten years), Microsoft has learnt what companies want and how to improve it and with this release, the position of the first one in the market of enterprises solution is even more strengthen.

In general it can be said that it is focused mainly on user´s ability to find what they need as fast as possible, as intuitive as possible and synchronise all their Office products with SharePoint in the easiest way.

To make this happen there are new hardware requirements on servers, which it will be running on. There will be only 64-bit version shipped so the servers have to be compatible with this, meaning that when it is decided to upgrade from 2007 or 2003 version, it should be considered whether it is not better to buy new hardware as well. Furthermore, it will not be running on later versions of Windows Server than 2008 (respectively 2008 R2) and nevertheless, Windows SQL Server 2005 or 2008 is required too. These hardware requirements implicate in the new functions and features, which are offered to user, such as FAST Search. It supports a number of enhanced capabilities, including a content-processing pipeline, metadata extraction, visual search, and advanced linguistics. In addition there is a new database especially made for reporting and logging. It supports usage reporting and logging and what the main advantage is that it is extensible and it allows third party vendors to create custom reports from the information it contains, thus it is very suitable for small and middle enterprises, which could be one of these vendors.

Compatibility with Visio Services offers users to share their diagrams in a built-in viewer straight at the SharePoint site. Visio Services also renders and retrieves any external data used in these diagrams. The biggest implication of synchronisation of Office product is visible at most on the ribbon style interface, which was firstly presented in Office 2007. It allows users to work in a familiar environment and makes their work faster and easier. Nevertheless, there has been big discussions among administrators and development

community about this user interface, so for SharePoint Designers, there is also tabbed style available.

Image 8, Ribbon-style interface – SharePoint 2010
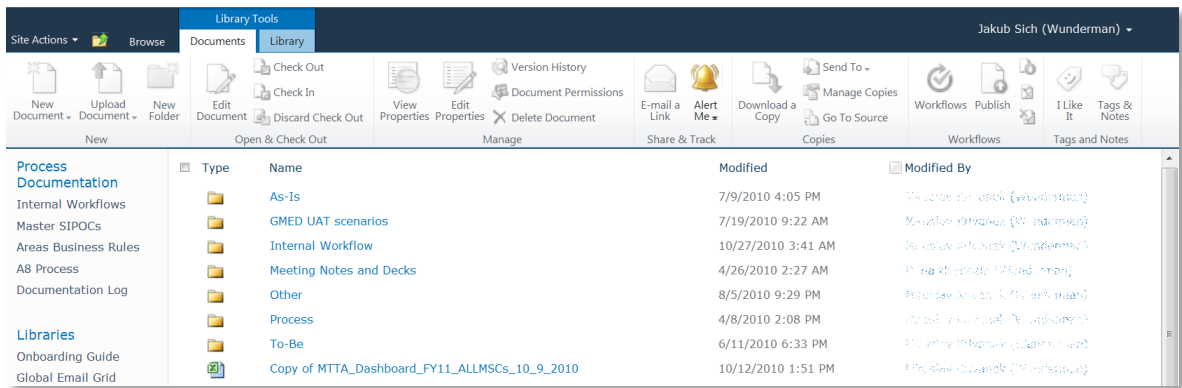
Source: Internal Microsoft SharePoint site

SharePoint 2010 is designed for an extended set of browsers, which are used nowadays, but in the same time only for those, which are XHTML 1.0 compliant. It means that Internet Explorer 6 is not possible to use, or at least not all the features are available for users having this particular browser installed.

4 Administration analysis

Microsoft SharePoint offers a lot of possibilities for users to share and store their documents, but these data should be treated with special care since these files are accessible for multiple users so the super users should apply some rules if this tool should work properly for everyone. Especially, when documents are shared with thousands of people, perhaps with different branches of a company, some privacy rules should be applied in a way that everybody is working with the current and correct data.

This is also the case of Microsoft Marketing Service Centre in Prague. It is a place, where all the marketing activities for the whole Europe are set up and prepared and since this is being done centralized, it is suitable that all the processes are managed by MSC Prague. What documents can usually be found there? There are request forms in xml, Word documents with a classified data, customer's Personal identifiable data (PII) in excel sheets, blacklists in different formats and many other files, which are better to share on SharePoint or is assumed as safer not to send them via email, but save them on this location (like customer´s PII data). Microsoft has always taken care of partners and customers data so if these want to be accessible, one must be logged to Microsoft VPN using special logging card.

However, using old data is as wrong and bad as not have them at all. For example, for commercial e-mails, one must not work with data older than 10 days (can slightly differ in each country). There are several procedures how to clean for instance lists of recipients to get only valid records and so address the right people then.

On the other hand, is there a reason for scrub 8 months old database against some database to get only right customers, who can be sent an email? Microsoft Corporation want always use the freshest data, so since MSC Prague is the privacy compliant centre, which should take care of this problematic, the whole SharePoint has to clean of this old, unsuitable, useless data regularly.

Microsoft SharePoint is a great product, which has a lot of features and solves common problems in every office, but even it is so useful, it has its disadvantages and negative aspects, which one needs to be aware of.

To find out, what the common problems of working with this system are and what administrators need to deal with, I was working on analysis of the environment of three particular SharePoint sites. As an employee of Microsoft Marketing Service Centre in Prague I have access to SharePoint site of eastern European countries, Western European countries and global MSC SharePoint.

4.1   Usage of SharePoint in Microsoft Marketing Service Centre

Microsoft Marketing Service Centre in Prague (MSC) is the service centre for the majority of marketing activities for all European countries. It considers planning and setting up campaigns, their budget and business activities regarding it, such as budget, targeting, etc.; email execution, in the way that all promotional emails and newsletters to the whole Europe are prepared and sent from here; uploading data, which were collected during some marketing activity; lists operations, in the way that lists must be scrubbed from useless contacts, so the marketer works always with the correct and current data, etc.

These countries need to share information with MSC and so Microsoft SharePoint is the most suitable way how to do it, since you can grant access to a limited number of users, you can track documents history and who was or is operating with them, free space for uploading or downloading files, which cannot be sent via email, etc.

Prague MSC is one of six MSCs in the world and the biggest one as well. There are more than 20000 requests executed in the year and data for all these requests are managed via SharePoint.

4.2   Analysis of WE SharePoint

Western European countries region has definitely the biggest share on document volume in this system. About 50 new requests everyday are submitted for MSC to work on in InfoPath (xml) format as a new campaign to the MSCWE Request forms folder. In addition, there must be a folder in campaign folder of the given country created with

subfolders for outputs, quality review, etc. As for the Microsoft privacy policy, no PII data have to be sent through emails and is considered the safest to upload them on SharePoint and provide the link to the authorized person, who can work with them. Thus when there is a communication going on around lists of recipients, database list pulls or marketing uploads, hundreds of files are uploaded there every day.

Graph 1 – Processing of documents

| Request recieved | → | Request form saved on SharePoint | → | Campaign folder is created under given country | → | Documents are uploaded during working proccess |
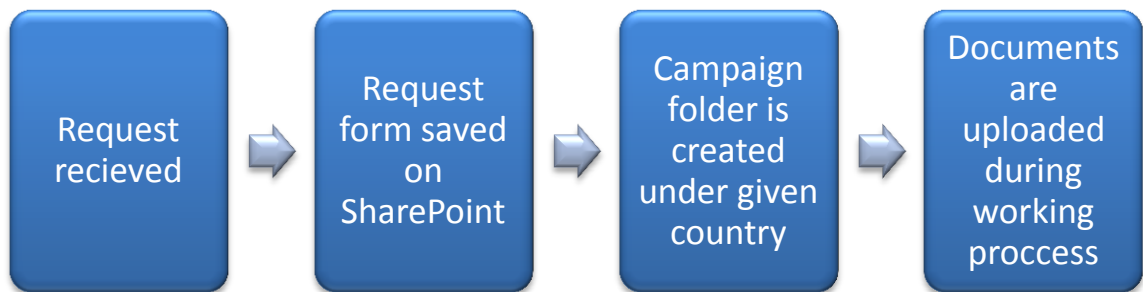
Source: Elaborated by author

4.3 Western and Eastern European SharePoint Structure

Graph 2 – MSC SharePoint structure
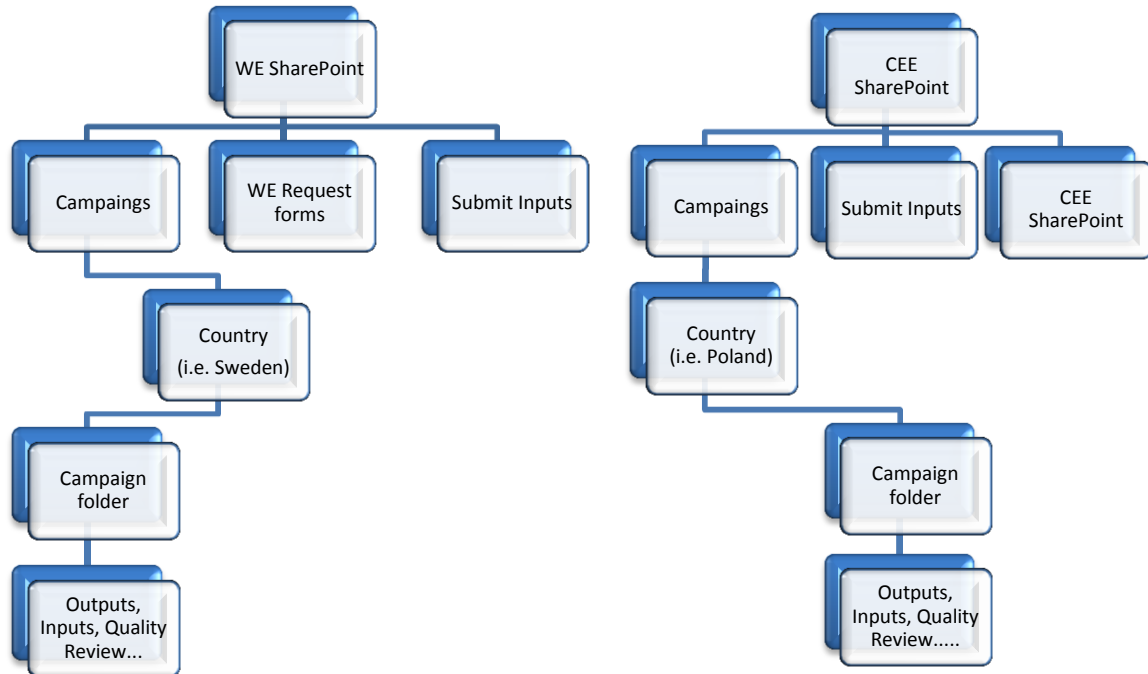
Source: Elaborated by author

4.4 Current Problems for Administrators

While working with the SharePoint and with its administrators, it was found out that there are several problems and further problems can occur. The biggest problem is the big volume of data stored during a time. It is not that much about the size, but more about the number of documents and their usability.

It is actually a very common problem that there are useless data stored on a file system and sooner or later the disc is full or it is impossible to find what one is looking for. It can be compared with a situation as there is one computer used by hundreds of users who store their files in there. Without a good structure and administrative work, it is impossible to keep it working for the sake of everyone.

4.4.1 Unused old files and folders

For Microsoft Corporation is crucial to enforce privacy policy and keep data of its customers and partners safe and so when a marketer needs to work with client's data, there is a policy followed.

The policy about data is developed from CAN-SPAM Act, which is law, which works in USA and most of the countries worldwide has something similar to that. It's valid especially for emailing communication and it sets rights and obligations for companies, if they want to send any commercial emails. It applies for all promotional emails, newsletters and also for partner emailing. Basically, whenever you send any (which one has an approval of it can be sent to a particular user) commercial email, there should always be a possibility for the recipient to sign off or unsubscribe from any further sending. However, it is possible for marketers to send this user emails within 10 days from the time the recipient unsubscribed himself. Generally it can be said that no one should work with data, which are more than 10 days old (number of days can differ in other countries).

MSC is a privacy compliant centre, so this is the part of the chain which should guarantee that the marketers work with the right data and keep SharePoint structure in such a form that only these data can be found and used. There is an internal rule derived from CAN-SPAM Act, which says that all files, older than 1 month should not accessible for marketers.

It is clearly visible on the graph that there are only 13% of folders current, meaning not older than one month. Even though, these folders are almost all empty, it makes the environment very messy and difficult to orientate and to find desired file.

Graph 3 – Files in Campaign folder
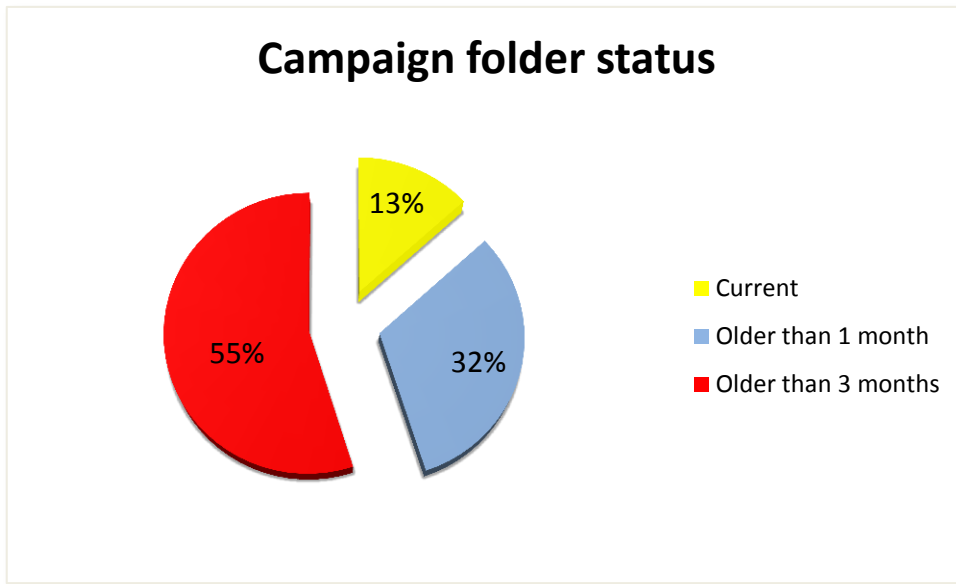
Source: Elaborated by author

To sum up the analysis of folders on SharePoint, it can be stated that there is really a problem with old folders, which make it difficult to find easily what user is looking for. There are more than 85% of folders which are not used for any reason and they just complicate the work of everyone involved.

Having old folders is definitely a problem, which slows down searching, but it is not such a problem in the respect of privacy policy, since these folders are empty. Bigger problem occurs when there are some files, which are old and someone uses them. As shown in the graph below, there are 36% of all files older than 1 month.

Graph 4 – Stored files size
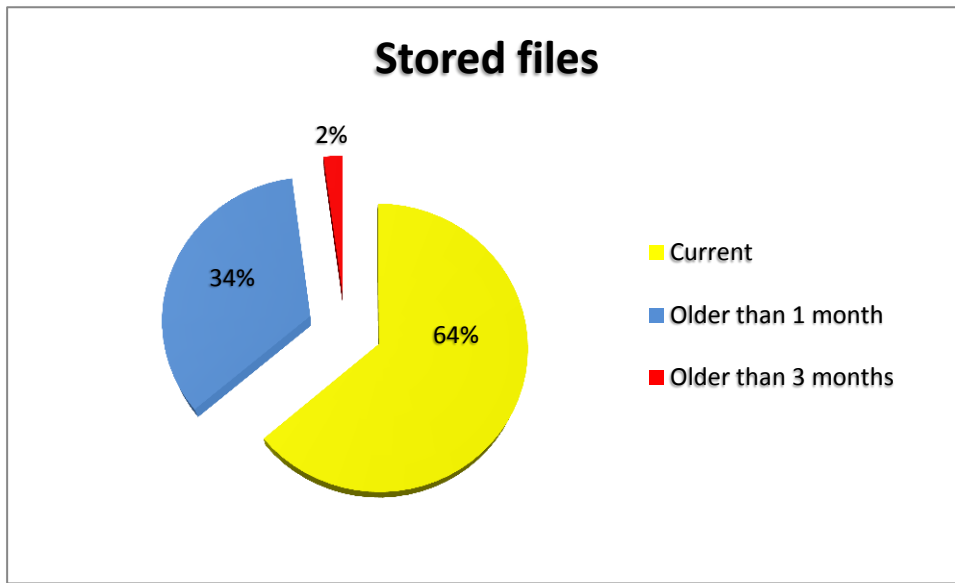
Source: Elaborated by author

This is a really big problem that there are so many old documents available for someone to use and it should be managed better.

4.4.2 Redundancy in Size of Stored Files

It can be assumed that when there are so many files and folders existing, which have no sense to be kept that the capacity of SharePoint will be almost full. However, the analysis has shown that this is not the correct assumption. Over three fourth of the overall used capacity is from the currently used files. This is actually quite good, but in the same time it might be the reason why there are old files and folders on SharePoint.

4.4.3 Versioning and checked out files

4.4.3.1 Checked-out files troubles

This problem is derived from the principle of SharePoint and it is its advantage and disadvantage in the same time. As it was described at the literature research, one of the main features of this system of sharing documents is that there is only one version of document. When a user wants to open a document for reading, it is normally open and he or she can browse through it and this particular action can do as many users as needed in the same time. Once the user wants to do some operation with the file, it has to be checked

out for him. This status mean that other users have reading right, but writing rights are exclusively granted just to the particular user, who checked out the document.

It is a very common case, which is multiplied by number of users, using one SharePoint that one opens the document and forget to check it back in so the other users can see the changes and eventually modify it as well.

If the SharePoint site is created in the way that everyone can see, who has that particular document checked out (or if the SharePoint infrastructure for the company/companies provides this feature), others can easily write contact the person using, email, messengers or other methods and ask him to check the document out. But, there is also a possibility and it happens that someone is out of office for a longer time and has the document still checked out. For this case, there is an administration right called "Cancel Check-out right". This enables the administrator to cancel the checked out document, which makes it checked back in and ignoring all changes being made by the user who had it checked out.

Image 9 – Versioning and checking out documents
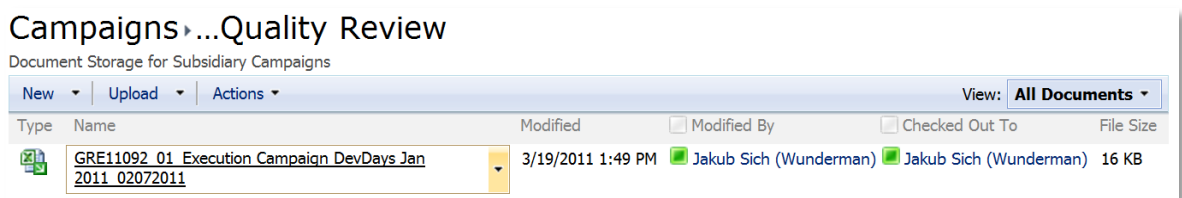
Source: MSC Eastern Europe SharePoint site

However, to perform this action one has to be a member of Administration or Web Designer group to have the right for it – in the case of MSC´s SharePoint to be in either "SharePoint Owner" or "SharePoint Designers" group. This right is one of the crucial one for the smooth working, because of there is a very thin margin between who can receive this right and who not. On one hand, if there are too few users with this right, the more difficult is to handle with cancelling check-out, on the other hand, the more users have it the bigger is the risk of fundamental dysfunction is possible.

4.4.3.2   Versioning

It has been said that what Microsoft SharePoint users will appreciate at most is that there is no mess in files and folders and there is no redundancy in versions of documents modified and stored by different users. Although this is doubtless, there exists the problem of versioning.

Every time, when the document is modified, there is an old version of this document stored. In fact, it is saved always when someone checks the file out and back in, when the file is saved for the first time, the old version is restored or when there is a new file uploaded.

Image 10 – Versioning integration in Office 2010
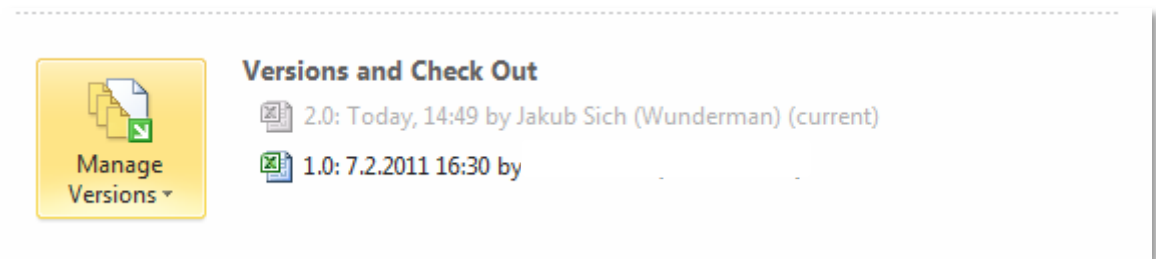
Source: Elaborated by author

These copies are accessible in two ways: on the SharePoint site or straight in for instance Word document, as it is seen above on the image. To a certain degree, this can be assumed as redundancy, but it is needed to understand that once the current file is deleted, the other versions are deleted too, so there is no parallel between different versions as it is known from the classical business communication and SharePoint document versioning.

However, if there is presumed there will not be enough free space for documents versions, this feature can be restricted in the administration interface.

Other challenges include ensuring that backups are being reliably performed and that each different type of restore will be easy and fool proof to fulfil. Moving content based on user requests or due to reorganizations within the business is also a challenge using out-of-the-box tools, and when the SharePoint structure gets large enough (for example hundreds of sites and sub sites), simply finding content within the structure can be difficult.

4.5   Maintenance Monitoring

Most of the internet operating systems in the world have their peak hours. Such as e-shops are experiencing more than 5 times more customers few weeks before Christmas than is the average traffic, SharePoint can experience this as well and so there is a possibility and need to monitor the traffic. By monitoring the system, it can be prevented the system failure and so, there are run these operations checks:

- Processor sticking at 100 per cent utilization
- RAM maxing out
- Hard drives filling up
- Reporting

On the basis of these facts, administrator can decide what and when is needed to do and detailed monitoring of SharePoint makes it even more valuable.

For the analysis of MSC´s SharePoint, Microsoft Center Operations Manager 2007 was used. It is the end-to-end product for monitoring IT infrastructure of Microsoft servers and applications and so it is suitable for this. It has been found out there are big differences in usage of sites providing services for users. This tool was used for finding old or orphaned sites, lists, objects in a way that they can be removed afterwards, with an emphasis on dependencies between web parts, in a way that it is ensured that no dependent site or object will be badly influenced by the removal.

Image 11 – SharePoint sites exploitation

SharePoint sites exploitation
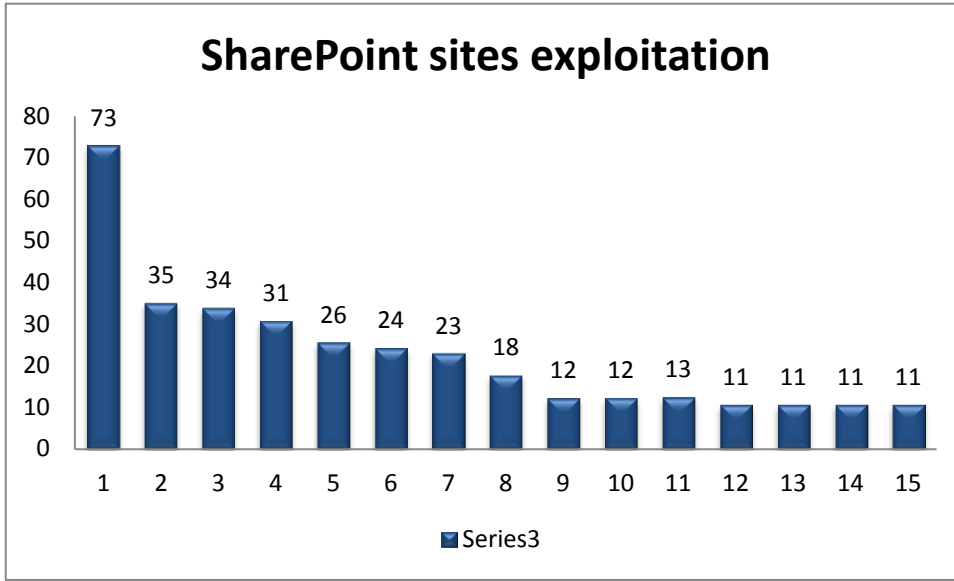
Source: Elaborated by author

4.5.1.1 Overall Health

4.5.1.2 Health Analyser

The Health Analyser includes a wide range of predefined rules that can alert the farm administrator about potentially serious situations, such as drives running out of free space, content databases growing too large, or one or more SharePoint servers failing to respond. It also includes rules that analyse basic farm configuration and a number of fairly esoteric rules pertaining to InfoPath Forms Services and Visio Graphics Service. Creating additional rules requires Visual Studio 2010.

4.5.1.3 Timer Jobs

Timer jobs start recurring tasks on a scheduled basis and are critical to the smooth operation of a SharePoint farm. A farm administrator should understand which timer jobs are configured, how often they run, and how to modify them if needed. Jobs can be modified to run as often as every minute or as seldom as monthly; the farm administrator should thoroughly review the timer jobs to ensure that the appropriate jobs are configured to run at appropriate intervals. This is an art as well as a science, and there is no ―one size fits all‖ set of guidelines for configuration of timer jobs. Reporting Tools

SharePoint provides a number of Reporting tools. The administrative reports are actually crawl- and query-related, and the health reports link lead to only two reports, Slowest Pages and Top Active Users. The Web Analytics Reports report only on the total number of page views, total number of daily unique visitors, and total number of search queries by web application. Overall, this provides a very limited level of reports to the farm administrator.

Most of the reports, like the sample Top Pages report shown in Figure 5 and the Traffic, Search and Inventory reports help IT understand —who is doing what only within the site collection. Most SharePoint 2010 environments, however, consist of many site collections; therefore, the diligent SharePoint farm administrator must visit each site collection to collect its reports, export them to a spread sheet, and compile the information about the farm manually.

Microsoft does provide integration between SharePoint 2010 and SQL Server Reporting Services (SSRS), so customized reports can be created, assuming the organization has staff familiar with SSRS

Image 12 – SharePoint administration interface

Source: http://sharepointerol.blogspot.com/2009/07/sharepoint-administration-sharepoint.html

The performance and growth of the SharePoint 2010 environment should be monitored on a recurring basis. While this may not seem important when the farm is initially implemented, it is important to set baselines of performance to compare to in the future so you can determine whether performance is better, worse or the same. Any difference could indicate that something has changed to the level where it should be investigated.

Understanding patterns of growth of the content databases gives IT an understanding of which sites and site collections are growing the fastest.

Likewise, having insight into the number of unique users using different SharePoint resources helps IT understand which users and user groups are the most active in the SharePoint environment. Additional investigation can show which tools available in SharePoint (such as different types of lists, pages or libraries) are the most heavily used. IT might find, for example, that a wiki page that took many hours to create is receiving very little traffic, and then investigate what might be the issue, such as the content is stale or uninteresting or that users aren't aware of the site.

4.6   Suggested solutions

4.6.1   Analysis outcome

There are lot of folders which are redundant, empty and which make the orientation harder. Even more, there are several files, which are in direct conflict with the privacy policy (older than 1 month). Data retention is done quite regularly every month, but it obviously does not mean, there are no files older than one month here. When, there is a new file uploaded just one day after the retention, it is actually almost two month existing on the SharePoint. Even more, these deletion is done manually, so there is a big possibility of the human failure and it takes a lot of time for one person.

It happens sometime that data are needed after two or three month for several reasons. For instance, if there has some mistake happen while working with the document, it should be able to find it and investigate it, but this is impossible, because it is deleted.

4.6.2   Retention process
The analysis has shown that there is a need for some retention process, which will help to deal better with files and folders and establish rules for the work with them. The process needs to respect privacy policy and has to be easy to execute.

The suggested process consists of four phases, which should be obeyed that the suggested solution works properly.

4.6.2.1   Files selection

The first step of the retention process is to choose correct files to operate with. The analysis showed that there is no problem with the free space, so there has to be no special rule applied for bigger files and so only one general selection can be made. Respecting the privacy rules, all the files, no matter the size, content or type, which are older than one month must not appear on the site, so all these files have to be selected.

4.6.2.2   Files back-up and deletion

It is crucial for any type of enterprise to track records about what or when something has been done. This is also a request which can be satisfied by this process. It is suggested that all the files are at first copied to a local hard drive and kept there for another month,

because it happens sometimes that a problem occurs after more than one month and if data, which were used when the problem happened, are lost, then there is no way to investigate the reason or make conclusions from it. These data should be safely stored and operations with them have to be very limited. What is very important here that the structure of folders and files should be kept in the same way as it was, because otherwise it would take a long time to find them and also the same structure helps to realize, how the documents were stored and it keeps the logic of it.

Once these files are safely back-up they can be deleted from SharePoint site. Nevertheless, the files should be also deleted from the hard drive after three months.

4.6.2.3   Reporting

Reporting of what has been done is very important in this case. Since the sensitive data are operated with, it has to be well tracked of what has happened with each file. There are four phases, which the file goes through and which should be included in the report:

- File copying
- Deletion from SharePoint
- Deletion from Hard drive

File, which was not modified for more than one month is copied from the SharePoint to the hard drive. In this way it has to be tracked which file was copied from which directory to which directory.

Once the file is copied, it is deleted and this action needs to be written to log file too. Furthermore, when the campaign (or any superior folder) is empty and it is not assumed as the new one, it should be deleted too, so there are no redundant empty folders in the structure.

All these steps ensure the correct working of SharePoint site´s directory and well-arranged environment for all the users involved. Compare to analysed process in MSC Prague, when the files were only deleted after one month from the last modified date, here it exists the place where the files can be reviewed and also it exists some way of track the old files.

Furthermore, it is not only reporting, but it can also be used as statistical data for marketing decisions and results.

4.6.2.4 Data retention software

For the suggested process it would be the most suitable to execute it by using specialized software, because there are a lot of documents to handle and automatization would definitely help to govern SharePoint structure better compare to manual treatment. There are several tools and software available cleaning up directories, but there are only few, which are specialized for SharePoint administration. These softwares are able to find problems in the structure and administration and offer the solution to administrator as well as possibility to build new sites or sub sites.

Image 13, Administration software example

Source: http://www.axceler.com/SharePointAdministration/ControlPoint.aspx
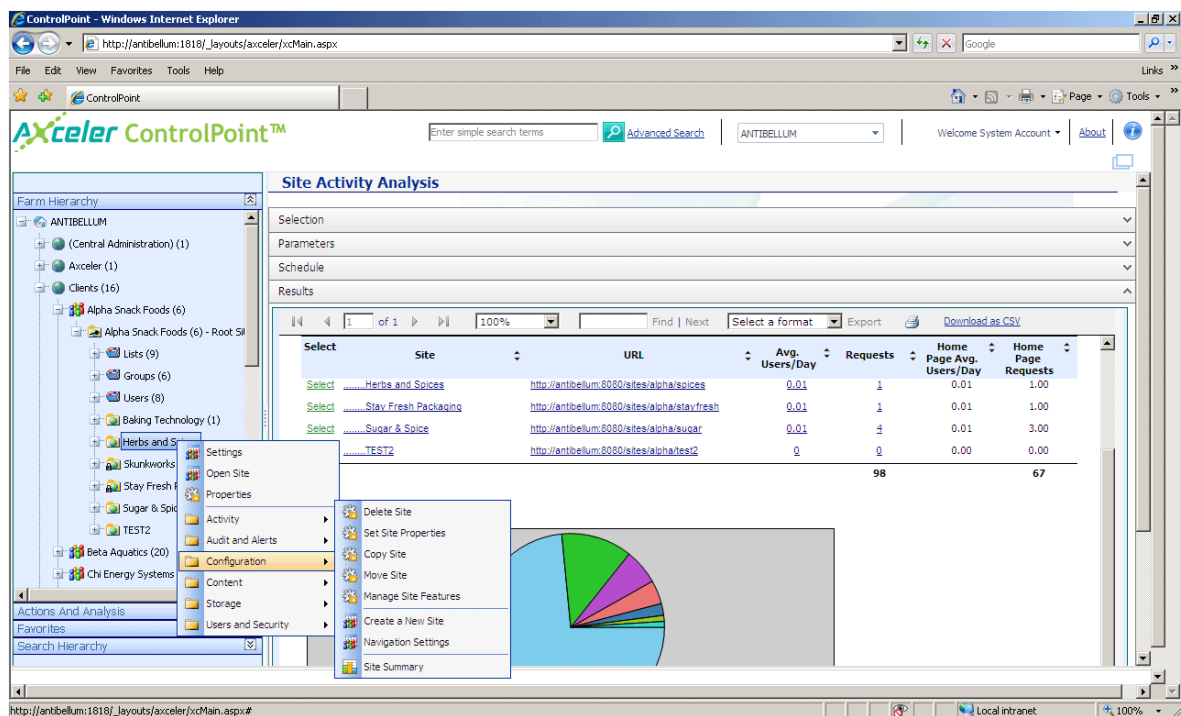
However, SharePoint administration software are generally developed for large enterprises, which means that they offer a wide range of tools and features for every aspect or problem, administrators can experience. Based on this, the price and the huge span of provided services by these software products are unsuitable for the usage of the analysed sites.

Therefore, the custom program has been developed, which does only what has been described.

This program has been developed in Visual Studio 2010 Ultimate in .NET language. It does the data retention process automatically and creates logs of what has been copied and deleted. In addition, this program has been setup in a way that it is launched itself and there is no user interface, so the difference between time-demanding, mistake making and incomprehensive manual process, which requires few days for an administrator to execute the tasks has been shorten to almost no time. There is only the need to check the report if everything works as it is needed.

This program is completely freeware and can be edited for the case of other SharePoint sites.

4.6.3   Upgrading to SharePoint 2010

It was described in the analysis that MSC Prague still uses SharePoint 2007 version, but since there is 2010 release already on market, it should be essential for such a company to move, migrate or upgrade to higher edition. In 2010 series there are brand new powerful capabilities, which has a positive impact for using this system, such as full synchronisation with Office products, fast searching or client side editing using ribbon style interface, so well-known from Office 2007 and 2010.

There are several approaches how to update this product and it can be distinguished based on the hardware, which it will be installed on. As it was stated before, there are new hardware requirements for SharePoint 2010, such as exclusive 64-bit server´s support, Windows Server 2008 and SQL Server 2005 or better. Depends which of these prerequisites are met, the type of update or migration is advised.

In the analysed system, there are no special or new hardware requirements need to be installed so, the process will be the easiest. The content and the settings will be upgraded in the server farm as part of a single process.

- User´s settings are preserved from all farms and can be used after the upgrade is done
- Customizations are available afterwards; however some manual steps should be done

4.6.3.2 *Disadvantages*
- Servers are offline, while the upgrade is in progress
- The process of upgrading is continuous, consequential, so there has to be time allowed for all content to be updated in turn

Image 14, Upgrading to SharePoint 2010
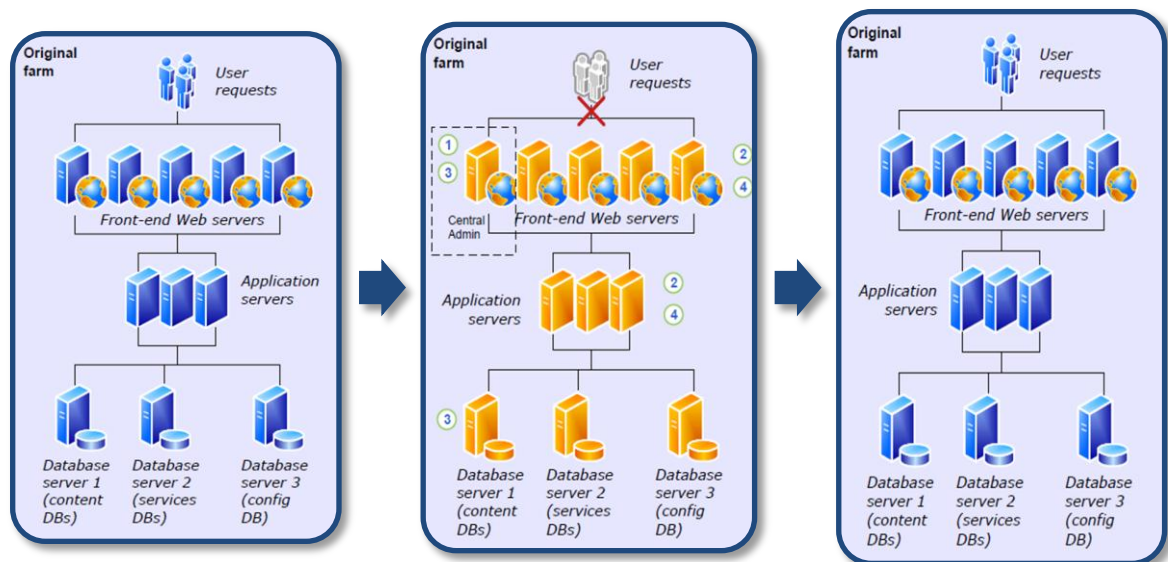
Source: Elaborated by author

Many additional decisions need to be made during the design process to control the ways in which end users interact with the SharePoint environment, from setting languages that are supported, to determining maximum file sizes that can be uploaded to SharePoint, file types that can be uploaded, along with types of site templates, web parts, lists and libraries that will be standard for different types of sites.

A general best practice is to implement several SharePoint farms, such as a development farm, a staging farm and a production farm. This helps ensure that the appropriate tasks

take place in the appropriate farm. More risky tasks such as complex workflow creation, web part development and third-party application development can then take place in the development farm, while less risky but still ―not ready for prime time testing and content development can take place in the staging farm. Once approved as ―ready for prime time, this content can then be moved to the production farm without fear of crashing pages or sites or fear of unapproved content suddenly being made available to the end user community.

This leads to an even more complex environment that IT is tasked to support, making training the support staff charged with maintaining the environment all the more important. Most organizations see the value in finding add-on tools that can lessen the learning curve and facilitate the management process by providing wizards or other tools that make it easier to perform repetitive tasks than the out-of-the-box.

5   Contribution of the work

The contribution of this diploma thesis inheres in comprehensive characteristic of Microsoft SharePoint product, its usage, advantages, but also what disadvantages it has and how these problems can be coped.

Together with administrators, there have been the biggest unresolved troubles, such as privacy incompliance, data redundancy and non-transparent environment, described and it served for the suggestion of the solution for better administration. This analysis can be applied at many enterprises and it can be assumed as a manual for how the analysis should be performed.

Above all, there has been a solution prepared, which rapidly helps administrators to keep policy on SharePoint and reduce the negative aspects of sharing documents with multiple users. The solution of an automatic retention and temporary back-up of data makes the process of regular administration less time demanding and effective.

Furthermore, there has been a data retention tool developed, which can be used for easy administration of old files and folders throughout SharePoint sites in any small or middle enterprise.

6 Conclusion

Microsoft SharePoint is able to solve common issues, which employees need to deal with every day. It is a network storage and in the same time a place where users can share documents while not creating multiple redundant copies of one document, but keeping tracked changes and user´s actions.

Although, it is created especially for large companies, there are definitely ways, how to implement it in middle and small enterprises. Using various authentication methods, it is possible to use SharePoint as a communication vehicle between two or more collaborating enterprises or subsidiaries and so make the business communication more secured, faster and easier.

There has been a detailed analysis of one SharePoint solution done in Microsoft Marketing Service Centre in Prague, where SharePoint serves for daily communication between Microsoft´s vendor, Wunderman and all Microsoft´s subsidiaries in Europe.

It has been proofed that there is administration needed on certain levels, depending on the architecture and usage of SharePoint, but at least files and folder management is crucial for making it work for all user´s sake.

Without administration, it can happen, what happens on almost every personal computer that an user saves a file to some location and when this file is not used on some regular basis, it stays where it is for months or years and when there are thousands of these files, the overall performance and service, which should be provided is much lower than it can be, when a superior administration is applied.

However, when applying rules, policies or standards there is also appropriate to have a high level look at the importance of governance in a SharePoint environment. It is helpful to clarify that it is arguably more important to have well-defined procedures and suitable tools in place for implementations than with other software applications. The wrong application of policies causes inappropriate behaviour of the system and it complicates user´s work. Finding the right balance between what users cannot do, use, see or change and what is considered as an obstacle for their daily work is crucial for continuous usage of MS SharePoint.

This product has to be understood as an environment and not as a final solution, which fits all enterprises or a software, which is once installed and it is not needed to control it regularly, but it has to be carefully designed to meet the anticipated and real requirements while being able to be managed and groomed over time.

Enterprises with more technical savvy users or those, which are using SharePoint as one of the companies, which has access to it (the third-party vendor model) often use advanced tools of SharePoint or let people to use social tools such as My Sites, which implicates in more administrative work and process establishing.

On the other hand, there is a possibility to choose a simpler implementation, where the more sophisticated features and focuses are turned off and so the managing is apparently easier, but it has to be applied in any case.

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8 Appendices

Retention program code:

```vb
Imports System
Imports System.IO
Imports System.Text.RegularExpressions


Public Class Form1

    Private Property dra As String
    Public Shared Function GetFiles( _
     ByVal path As String, _
     ByVal searchPattern As String, _
     ByVal searchOption As SearchOption _
     ) As String()

    End Function
    Private Sub command1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles command1.Click
        ' find all folders in Campaigns folder
        Dim ai As New IO.DirectoryInfo("C:\Users\v-jakubs\Desktop\pracovni\juraj\sharepoint\Campaigns")
        Dim aiar1 As IO.DirectoryInfo() = ai.GetDirectories()
        Dim ara As IO.DirectoryInfo
        Dim zeme As String
        Dim zemeSP As String
        Dim slozkazeme As String
        Dim slozkashare As String
        Dim dt As DateTime = Today.AddMonths(-1)
        Dim dneska As DateTime = Today
        Dim dnesek = dneska.Year & "-" & dneska.Month & "-" & dneska.Day
        Dim vysledek As String

        For Each ara In aiar1
            'check, if the given folder exists on local drive
            zeme = ara.Name
            zemeSP = "C:\Users\v-jakubs\Desktop\pracovni\juraj\slozky\Campaigns\" & zeme
            'if the folder exists on local drive
            If My.Computer.FileSystem.DirectoryExists(zemeSP) Then
                Dim bi As New DirectoryInfo("C:\Users\v-jakubs\Desktop\pracovni\juraj\sharepoint\Campaigns\" & zeme)
                Dim biar1 As IO.DirectoryInfo() = bi.GetDirectories()
```

```vbnet
        Dim bra As IO.DirectoryInfo
        For Each bra In biar1
            slozkazeme = bra.Name
            slozkashare = "C:\Users\v-jakubs\Desktop\pracovni\juraj\slozky\Campaigns\"
& zeme & "\" & slozkazeme
            If My.Computer.FileSystem.DirectoryExists(slozkashare) Then
                'if the folder exists on local drive, all the files inside should be checked
                Dim path As String
                path = "C:\Users\v-jakubs\Desktop\pracovni\juraj\sharepoint\Campaigns\"
& zeme & "\" & slozkazeme
                Dim searchPattern As String = "*"
                Dim dia As IO.DirectoryInfo = New IO.DirectoryInfo(path)
                Dim files() As IO.FileInfo = _
                    dia.GetFiles(searchPattern, SearchOption.AllDirectories)
                Dim file As IO.FileInfo
                For Each file In files
                    'Is the file saved on local drive?
                    Dim soubor As String
                    soubor = file.FullName
                    Dim soubornamko As String
                    soubornamko = file.FullName

                    Dim r As New Regex("Campaigns.*")

                    Dim m As Match = r.Match(file.DirectoryName)

                    Dim f As New Regex("Campaigns.*")
                    Dim n As Match = f.Match(file.DirectoryName)
                    vysledek = n.Value



                    Dim ulozen As IO.FileInfo = New IO.FileInfo("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\" & m.Value)

                    If My.Computer.FileSystem.FileExists(ulozen.FullName) Then
                        'If the file is saved on local drive, midfied date is checked (from SP)
                        If file.LastWriteTime < dt Then
                            'If it is older than one month, it is copied to local drive and then
deleted from SP
                            My.Computer.FileSystem.CopyFile(file.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\" & vysledek, True)
```

```vb
                        'My.Computer.FileSystem.DeleteFile(file.FullName,
FileIO.UIOption.OnlyErrorDialogs, FileIO.RecycleOption.DeletePermanently)
                        'My.Computer.FileSystem.WriteAllText("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\logy\" & dt & ".txt", file.FullName & " was
deleted.", True)
                    Else
                        'nothing
                    End If
                Else
                    'if the file is not older than one month, copy it with subfolders
                    My.Computer.FileSystem.CopyFile(file.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\" & m.Value, True)


                End If



            Next



        Else


            'If this folder does not exist on local drive yet, lets copy it with all its
subfolders and files
            My.Computer.FileSystem.CreateDirectory("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Campaigns\" & zeme & "\" & slozkazeme)
            My.Computer.FileSystem.CopyDirectory(bra.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Campaigns\" & zeme & "\" & slozkazeme, True)


        End If


        Dim counter As System.Collections.ObjectModel.ReadOnlyCollection(Of
String)
        counter = My.Computer.FileSystem.GetFiles(bra.FullName,
FileIO.SearchOption.SearchAllSubDirectories)
        If CStr(counter.Count) = 0 Then
            'If there is no file, check if it is already on local drive
            If My.Computer.FileSystem.DirectoryExists(bra.FullName) Then
                'If it is already on local drive, check its created date

                If bra.LastWriteTime < dt Then
                    'If it is older than one month, the whole folder is deleted
```

66

```vb
                            'My.Computer.FileSystem.DeleteDirectory(bra.FullName,
FileIO.UIOption.OnlyErrorDialogs, FileIO.RecycleOption.DeletePermanently)
                            'My.Computer.FileSystem.WriteAllText("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\logy\" & dnesek & ".txt", bra.FullName & " was
deleted." & vbCrLf, True)
                        Else
                            'if not, nothing
                        End If
                    Else
                        'If it is not there, copy it
                        My.Computer.FileSystem.CopyDirectory(bra.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Campaigns\" & zeme, True)
                    End If

                End If


            Next

        Else
            'Copy the whole folder with all its subfolders anf files
            My.Computer.FileSystem.CreateDirectory("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Campaigns\" & zeme)
            My.Computer.FileSystem.CopyDirectory(ara.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Campaigns\" & zeme, True)
            My.Computer.FileSystem.WriteAllText("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\logy\" & dnesek & ".txt", ara.FullName & " was
copied to: C:\Users\v-jakubs\Desktop\pracovni\juraj\slozky\Campaigns\" & zeme &
vbCrLf, True)
        End If

    Next



    'requests

    Dim ci As New IO.DirectoryInfo("C:\Users\v-
jakubs\Desktop\pracovni\juraj\sharepoint\MSC CEE Service Requests")
    Dim ciar1 As IO.DirectoryInfo() = ci.GetDirectories()
    Dim cra As IO.DirectoryInfo
```

```vbnet
    Dim patern As String
    patern = "*"
    For Each cra In ciar1
        Dim slozkaRF As String = cra.Name
        Dim slozkaRFmko As String = "C:\Users\v-
jakubs\Desktop\pracovni\juraj\sharepoint\MSC CEE Service Requests\" & cra.Name
        Dim slozkanamku As String = "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\MSC CEE Service Requests\" & cra.Name


        If My.Computer.FileSystem.DirectoryExists(slozkanamku) Then
            'pokud slozka uz existuje tak se podíváme na ty fily
            Dim cia As IO.DirectoryInfo = New IO.DirectoryInfo(slozkaRFmko)
            Dim soubory() As IO.FileInfo = _
            cia.GetFiles(patern, SearchOption.AllDirectories)
            Dim soubor As IO.FileInfo
            For Each soubor In soubory
                If soubor.LastWriteTime < dt Then
                    'pokud je starsi nez mesic, tak se skopiruje a vymaze
                    Dim s As New Regex("MSC CEE Service Requests.*")
                    Dim n As Match = s.Match(soubor.FullName)


                    My.Computer.FileSystem.CopyFile(soubor.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\" & n.Value, True)
                    'My.Computer.FileSystem.DeleteFile(soubor.FullName,
FileIO.UIOption.OnlyErrorDialogs, FileIO.RecycleOption.DeletePermanently)
                    'My.Computer.FileSystem.WriteAllText("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\logy\" & dt & ".txt", soubor.FullName & " was
deleted." & vbCrLf, True)
                Else
                    'pokud je mladsi nez mesic, tak nic
                End If
            Next
        Else
            'pokud slozka neexistuje na mku, skopirujeme ji celou
            My.Computer.FileSystem.CreateDirectory("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\MSC CEE Service Requests\" & slozkaRF)
            My.Computer.FileSystem.CopyDirectory(cra.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\MSC CEE Service Requests", True)
            My.Computer.FileSystem.WriteAllText("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\logy\" & dt & ".txt", cra.FullName & " was copied."
& vbCrLf, True)
        End If
```

```vbnet
            Next


            'submit inputs

            Dim ei As New IO.DirectoryInfo("C:\Users\v-
jakubs\Desktop\pracovni\juraj\sharepoint\Submit Inputs")
            Dim eiar1 As IO.DirectoryInfo() = ei.GetDirectories()
            Dim era As IO.DirectoryInfo
            Dim paternat As String
            paternat = "*"
            For Each era In eiar1
                Dim slozkaSI As String = era.Name
                Dim slozkaSImko As String = "C:\Users\v-
jakubs\Desktop\pracovni\juraj\sharepoint\Submit Inputs\" & era.Name
                Dim slozkaSInamku As String = "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Submit Inputs\" & era.Name


            If My.Computer.FileSystem.DirectoryExists(slozkaSInamku) Then
                Dim sia As New Regex("^Important-DoNotDelete.*")
                Dim six As Match = sia.Match(era.FullName)
                If six.Value = "Important-DoNotDelete" Then
                    'if the folder is called Important-DoNotDelete, just copy it to local drive, do
not delete
                    My.Computer.FileSystem.CopyFile(era.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Submit Inputs\" & six.Value, True)
                Else
                    'go on

                    'pokud slozka exstuje, podivame se na soubory
                    Dim souborySI() As IO.FileInfo = _
                    era.GetFiles(paternat, SearchOption.AllDirectories)
                    Dim souborSI As IO.FileInfo
                    For Each souborSI In souborySI
                        If souborSI.LastWriteTime < dt Then
                            'pokud je starsi nez mesic, tak se skopiruje a vymaze
                            Dim si As New Regex("Submit Inputs.*")
                            Dim x As Match = si.Match(souborSI.FullName)
```

```vbnet
                My.Computer.FileSystem.CopyFile(souborSI.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Submit Inputs\" & x.Value, True)
                'My.Computer.FileSystem.DeleteFile(souborSI.FullName,
FileIO.UIOption.OnlyErrorDialogs, FileIO.RecycleOption.DeletePermanently)
                'My.Computer.FileSystem.WriteAllText("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\logy\" & dt & ".txt", souborSI.FullName & " was
deleted." & vbCrLf, True)
                Else
                    'nothing
                End If

            Next
        End If
    Else
        'pokud slozka neexistuje, skopirujeme ji celou
        My.Computer.FileSystem.CreateDirectory("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Submit Inputs\" & slozkaSI)
        My.Computer.FileSystem.CopyDirectory(era.FullName, "C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\Submit Inputs\" & slozkaSI, True)
        My.Computer.FileSystem.WriteAllText("C:\Users\v-
jakubs\Desktop\pracovni\juraj\slozky\logy\" & dt & ".txt", era.FullName & " was copied."
& vbCrLf, True)
        End If
        Next

End Sub


End Class
```