

IT Statler – Operative Tool Built on SharePoint/MOSS 2007

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Abstract

This thesis was made for ABB's unit Distribution Automation in Vaasa. The purpose of this thesis was to examine Microsoft Office SharePoint Server 2007 as a collaboration tool and to create a website in SharePoint that could be used by the IT department for sharing files and information. The project was executed using the Scrum methodology and was divided into four Sprints. The website was created using the features and configuration possibilities that SharePoint offers with usage through the web browser. The website, which was named IT Statler, exists on Distribution Automation's SharePoint site collection and contains a couple of subsites, several lists and libraries.

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Tiivistelmä

Tämä opinnäytetyö suoritettiin ABB:n yksikölle Sähkönjakeluautomaatio Vaasassa. Työn tarkoitus oli tutkia Microsoft Office SharePoint Server 2007:ää yhteistyötyökaluna ja luoda sivu SharePointissa, jota IT-osasto pystyisi käyttämään tiedostojen ja tiedon jakamiseen. Projekti toteutettiin Scrum-menetelmällä ja jaettiin neljään sprinttiin. Sivua luotiin käyttämällä niitä toimintoja ja konfiguraatiomahdollisuuksia, jotka SharePoint tarjoaa, kun sitä käytetään WWW-selaimen kautta. Sivua, joka sai nimen IT Statler, sijaitsee Sähkönjakeluautomaation site collectionilla ja sisältää pari alisivustoa sekä useampia luetteloita ja kirjastoja.

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Abstrakt

Detta examensarbete utfördes åt enheten Distribution Automation vid ABB i Vasa. Arbetets syfte var att undersöka Microsoft Office SharePoint Server 2007 som verktyg för samarbete samt att skapa en webbsida i SharePoint som IT-avdelningen kan använda sig av för att organisera och dela filer och information. Projektet genomfördes med hjälp av Scrum-metoden och delades in i fyra Sprintar. För skapandet av webbsidan användes de funktioner och konfigurationsmöjligheter som SharePoint erbjuder vid användning via webbläsaren. Sidan som fick namnet IT-Statler finns på enhetens SharePoint site collection och innehåller ett par undersidor och flera listor och dokumentbibliotek.

Språk: Engelska

Nyckelord: Microsoft Office SharePoint Server
2007, Scrum, ASP.NET

Förvaras: Theseus.fi

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1 INTRODUCTION

1.1 ABB

ABB is a global corporation focused on power and automation technologies for utility and industry customers. The ABB Group operates in around 100 countries, with its head office in Switzerland, and employs about 124 000 people. In Finland ABB employs around 7000 people and operates in about 40 locations, with factories in Vaasa, Helsinki and Porvoo. The company has five production divisions, Power Products, Power Systems, Discrete Automation and Motion, Low Voltage Products and Process Automation which all focus on developing and manufacturing different kinds of power and automation products. /11/

ABB was founded in 1988 by the merger of Swedish and Swiss engineering companies Asea and Brown Boveri. In Finland, ABB's history originates from Strömberg, a company founded by Gottfrid Strömberg in 1889. Since very early on, both Asea and Brown Boveri owned shares in Strömberg until it was bought completely by Asea in 1987. /1/

1.1.1 Distribution Automation

Distribution Automation (DA) belongs to the production division Power Products and the business unit Medium Voltage Products. DA focuses on manufacturing and developing protection relays for power distribution utilities, industries and marine operators such as ships and oil platforms.

A protection relay (see figure 1) is a device that is used to protect people and equipment and to improve operational safety in power systems. If the relay detects a fault, it delivers a command to the circuit breaker, which disconnects the faulted object from the system, thus minimizing the effects of the fault. Modern protection relays also have secondary functions to help efficient operation of the power system such as control, measuring of power system data, condition monitoring, fault location etc. /6/

DA also develops the software running in the relay, and offers customers not only the physical product but also a network control system and a distribution management system and support.



Figure 1. Relay series manufactured by Distribution Automation. /6/

1.2 The Assignment

SharePoint (see chapter 2) has been in non-consistent use at DA since the beginning of the last decade, when Microsoft SharePoint 2003 was taken into use. Recently a decision was made to make SharePoint the common collaboration and information sharing platform at all ABB units. This project is a part of that process. Currently DA is using Microsoft Office SharePoint Server 2007, but there is an ongoing project that will upgrade the SharePoint portal to the newest version, SharePoint Server 2010, in the near future.

The assignment was to create a SharePoint site for internal use at the IT department at Distribution Automation in Vaasa. The department wished to have a site that could be used for internal collaboration and for storing and organizing documents on. Before this project important files and documents were stored mainly in different folders on a file share server

and IBM's Lotus Notes was mainly used for collaboration. Another objective with this project was to investigate the possibilities and limitations of SharePoint when used as a platform for collaboration by the average white-collar employee.

1.3 Scrum

This project was executed using the Scrum methodology for project management. This is a framework that the IT department at DA has recently started using for carrying out projects. Characteristic of the Scrum methodology is the three predefined roles that people engaged in the project adopt. The first role is the Product Owner who represents the customer and is responsible for the business value of the project. The second role is the Team that consists of several people who are responsible for the actual work. Finally there is the Scrum Master who is responsible for keeping the Team focused and for removing obstacles that may appear along the way.

The idea with Scrum is that the Product Owner creates a Product Backlog, a wish list of things that should be included in the final product. The items in the Product Backlog should be sorted by priority so that the items with the highest priority are at the top. The Product Backlog is then divided into smaller pieces called sprints. /20/

Typical of the Scrum methodology apart from the three roles is the four different events that will occur during the process. First there is the Sprint Planning Meeting where the Team meets with the Product Owner and pulls a part of the Product Backlog to create a Sprint Backlog and plans the time and work it will take to complete the sprint. Then there are the Daily Scrum Meetings which the Team will attend every day during the sprint. These short meetings are for sharing progress and problems with other members of the Team. Each sprint ends with a Sprint Review where the Team presents the result of the sprint to the Product Owner. After a sprint has been completed the Team will also take part in a Sprint Retrospective where the members will reflect on the previous sprint, discuss what went well and suggest improvements. /20/

The result of each sprint should be a potentially shippable product, which means that it could in theory be released to the customer. This Scrum cycle (see figure 2) will repeat itself until the Product Backlog is completed, the deadline arrives or the budget is consumed. /20/

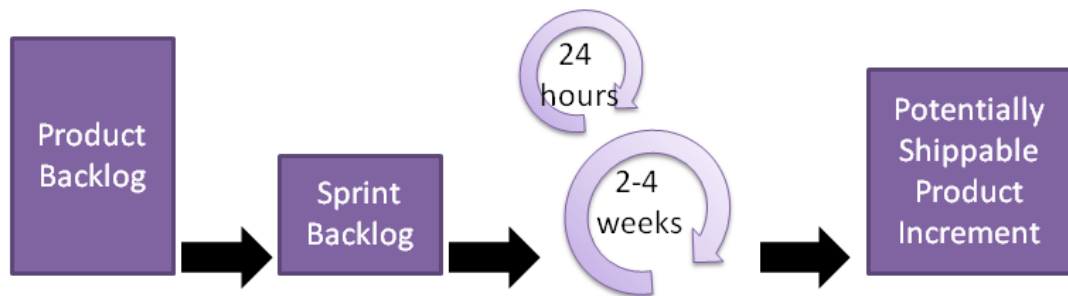


Figure 2. Visual description of the scrum process /20/

2 SHAREPOINT

2.1 General

Microsoft SharePoint is an information sharing and collaboration platform for the Microsoft Office system. SharePoint can be used for storing and managing files, for collaboration and for building intranet and Internet sites. SharePoint 2007 is made up of two main products: Windows SharePoint Services 3.0 and Microsoft Office SharePoint Server 2007. /2/

According to Microsoft the main idea with SharePoint is to provide a tool that helps teams work together more effectively. Sites built in SharePoint are accessed through a web browser and all end user actions are taken through the browser. Thus no extra software needs to be installed on the client machines, though SharePoint 2007 only fully supports Microsoft's Internet Explorer.

Another main idea with SharePoint is that anyone can get involved in SharePoint development, administration and configuration since many configurations can be made using no code at all. Only by using the web browser user interface users are able to

perform main configurations of their sites. More detailed things can be made using SharePoint Designer (see chapter 2.4), which is a tool made specifically for designing and developing SharePoint sites without code. More complex .NET development can be done using Visual Studio.

2.2 Windows SharePoint Services 3.0

Windows SharePoint Services 3.0 (WSS) is a set of add-on services for the Microsoft Windows Server platform (Windows Server 2003 and later). Before setting up WSS Internet Information Server (IIS), .NET Framework 3.0 and ASP.NET 2.0 (see chapter 3) must be installed on the server (See figure 3). WSS offers site templates for building team sites, document workspaces, discussions, blogs, wikis, meeting workspaces, basic workflows and custom lists. Sites built in WSS can be integrated with other Microsoft Office 2007 software like Access, Excel, Word, Outlook and PowerPoint. /2/ /5/

2.3 Microsoft Office SharePoint Server 2007

Microsoft Office SharePoint Server 2007 (MOSS) is a separate product from WSS and thereby requires its own license. WSS and MOSS both use SQL Server as database server. MOSS comes as either a Standard or Enterprise edition. Though MOSS is a separate product from WSS it is basically just WSS with more functionality (see figure 3). For example MOSS offers business intelligence features, content management, additional workflows, additional search, integration with Excel and InfoPath. Additionally, MOSS includes social networking features with the introduction of My Site, a user-specific profile that helps colleagues interact with each other and share skills and ideas. /2/ /5/

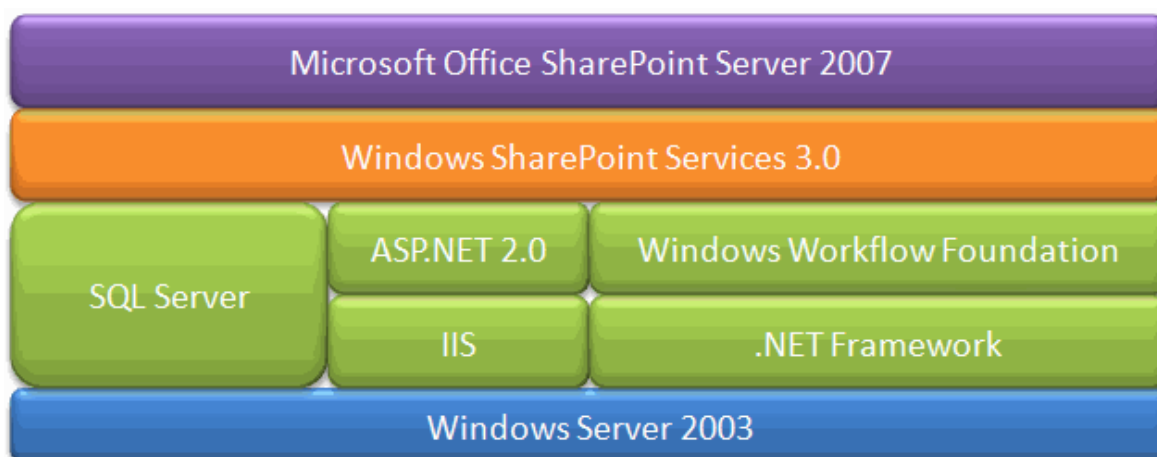


Figure 3. Infrastructure behind MOSS 2007. /24/

2.4 SharePoint Designer

Microsoft Office SharePoint Designer 2007 is an HTML (Hyper Text Markup Language) editor customised for creating SharePoint sites using as little code as possible. Microsoft promotes SharePoint Designer as a professional tool for both creating and designing websites that support ASP.NET features and work with the what-you-see-is-what-you-get (WYSIWYG) capability. SharePoint Designer was not used in this project since the company policy is that SharePoint development should be done using Visual Studio and a SharePoint development server. When editing a SharePoint site in SharePoint Designer the site is opened directly in SharePoint Designer's user interface. In other words, the user is working directly towards the existing site and can edit any page from that site, including the default master page that determines the whole look and feel of a site. ABB has created a layout with the company colours and logos that should be used on all SharePoint sites and may not be edited. For this reason SharePoint Designer is considered risky and is not in use. /12/

2.5 Site Hierarchy in SharePoint

At first look the site hierarchy in SharePoint may seem very complex and the bigger the site is the more difficult it is to grasp how it is all built. At the top of the hierarchy there are server farms. This means the servers, services, databases and hardware infrastructure that

comprise the SharePoint installation. A SharePoint installation may consist of several servers such as Web Front End servers that host the traffic between the users and the portal, Application Servers and an SQL Server that is used as the back end database for storing everything in SharePoint. See figure 3. /23/

Web applications are set up on the server farm to create a corresponding website in IIS to host the site. SharePoint sites are divided into site collections, which are a set of sites that has the same owner and shares administration settings. A site collection has a top level site and can contain several subsites. Subsites can also contain subsites along with lists and libraries. Figure 4 shows the SharePoint site hierarchy visually. /23/

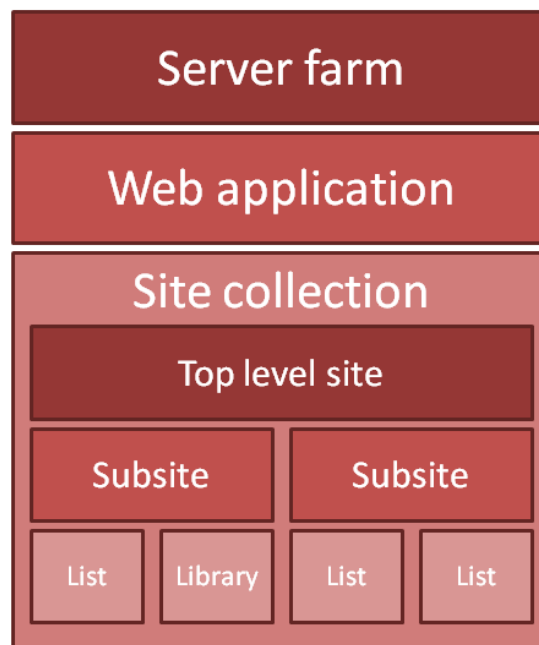


Figure 4. Site hierarchy in SharePoint.

2.6 Content

2.6.1 Lists

The basic means of information storage in SharePoint is achieved by using lists. SharePoint lists can be compared to Excel or database tables: they contain columns with different data types. A List can be viewed and created in different formats, for example the standard SharePoint list view (see figure 5), the Datasheet view that resembles the interface of Access and Excel (see figure 6) and the Gantt view that can be used on task lists to visually view the progress of for example tasks (see figure 7). These views are not to be mixed up with the views that a user can create to filter data (mentioned later). There are several templates that lists can be created from, or users can choose to create a custom list and define the columns themselves or import directly from a spreadsheet. The predefined templates are for example announcements, contacts, links, tasks, project tasks, KPI (key performance indicators) list and issue tracking. Calendars, discussion boards and surveys are also lists with different custom views. /3/

	Title	Amount	Importance	Start date	End date
	Bread <small>NEW</small>	1	High	17.6.2011	19.6.2011
	Milk <small>NEW</small>	1	High	17.6.2011	19.6.2011
	Juice <small>NEW</small>	1	Low	17.6.2011	22.6.2011
	Carrots <small>NEW</small>	3	Low	17.6.2011	22.6.2011

Figure 5. The standard list format.

	Title	Amount	Importance	Start date	End date
	Bread	1	High	17.6.2011	19.6.2011
	Milk	1	High	17.6.2011	19.6.2011
	Juice	1	Low	17.6.2011	22.6.2011
	Carrots	3	Low	17.6.2011	22.6.2011
*					

Figure 6. The datasheet list view.

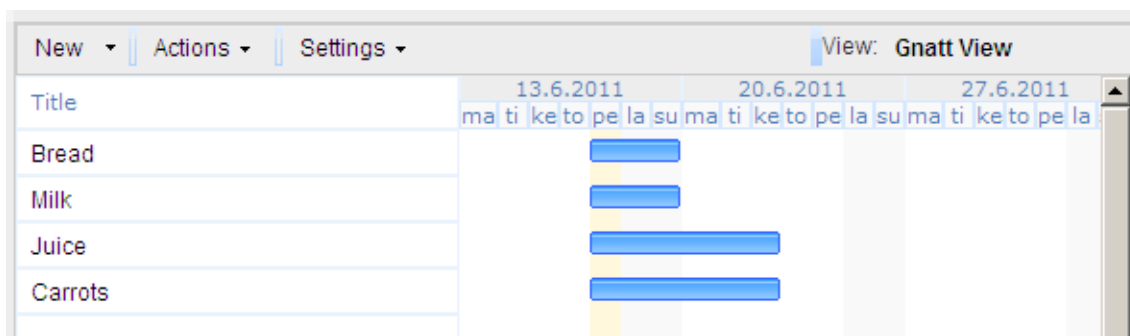


Figure 7. The Gantt list view.

Calendars provide different visual views alongside the normal list view. For example the default month view looks just like a regular wall calendar. Items in calendars can also be viewed per week or per day.

There are many ways to work with lists and items in lists. By adding version tracking, approval and customizing permissions users control who sees and does what with the list items. Different views can be created to filter the data in the lists, also in the predefined templates. By adding an RSS (Really Simple Syndication) feed or alerts users can be informed of changes. Formulas and calculated values can also be used in lists with numeric data types, very much like in Excel. /16/

2.6.2 Libraries

In SharePoint libraries are used to store, organize and manage files. Using libraries is very similar to using lists though some management features are different and files in libraries can be organized into folders. There are different types of libraries depending on what kind of files that needs to be stored, the most commonly used one probably being the document library that is ideal for storing documents and spreadsheets. Other kinds of files can also be stored in a document library though some file types are blocked for security reasons. Some files (Word documents or Excel files) in a document library can be opened directly from the web browser, edited and when saved the file is saved right back to the library. Files can also be checked out for offline editing. /4/

Picture libraries are customized for storing and sharing pictures and graphics. Files in a picture library can be viewed in a slide show and downloaded to the local computer.

Other types of libraries available are slide libraries for storing and sharing PowerPoint slides, and form libraries for managing XML (Extensive Markup Language) forms. Setting up a form library requires an XML editor or design program that is compatible with MOSS, such as Microsoft Office InfoPath. /15/

Additionally, there are wiki page libraries, reports libraries, translation management libraries and data connection libraries.

2.6.3 Workflows

A workflow is a description of a sequence of operations that produce an outcome. Workflows may also be described as abstraction of real work. The definition of workflow in the context of SharePoint is more limited, as described by Microsoft on their SharePoint support website; “*automated movement of documents or items through a sequence of actions or tasks that are related to a business process*” /19/. In other words, a workflow describes the actions that the system or user must perform on each item.

For example, a team of users has a document library with a workflow that routes a document to the whole team for approval. When the document creator starts this workflow on a document in the library, the workflow creates document approval tasks and assigns them to the participants, sends e-mails with task instructions and a link to the document to the participants. While the workflow is in progress the team members can check the workflow status to see which participants have completed their tasks. When all tasks are complete the workflow ends and the author is notified that the workflow is completed. The actions in the approval workflow are illustrated below. (See figure 8.)

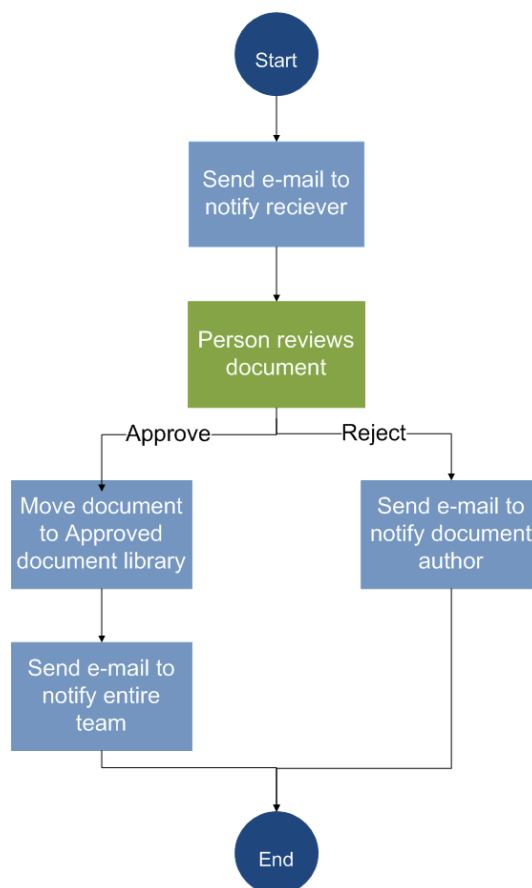


Figure 8. A visual description of an Approval workflow. /19/

SharePoint includes several workflow templates besides the approval workflow mentioned earlier. Collect feedback, collect signatures, disposition approval and translation management are examples of some other workflows. Custom workflows can also be created but this requires using either SharePoint Designer or Visual Studio as a development tool. /19/

2.6.4 My Site

My Site is each user's personal SharePoint web site and provides a place where the user can manage all the content, documents and tasks that he or she has on any site on the portal. My Site is split into two parts, My Home and My Profile. My Home is each user's private page that he or she can use for example to store personal documents instead of storing them in a personal network folder. My Profile is the part of a user's My Site that is visible to other users. It allows users to share information about each other, such as contact information, colleagues, memberships on other SharePoint sites, interests, areas of

expertise etc. Users can manage content on the My Site in the same way as on any other SharePoint site, create new lists and libraries, add Web Parts and control user access. /18/

2.7 Integrating SharePoint with Other Microsoft Office Products

2.7.1 General

MOSS 2007 may preferably be used together with other Microsoft Office products. A company using SharePoint would benefit from functioning in an all-Microsoft environment. Some examples of products that conveniently work together with SharePoint are listed below.

2.7.2 Outlook

Microsoft Outlook is mainly used as an e-mail client but also includes a calendar, task manager, contact manager etc. SharePoint task lists, contact lists and calendars can be linked to Outlook directly from the SharePoint web browser user interface.

For example, an end user is using the Outlook calendar to keep track of appointments and meetings. He is also the member of a team that has their own SharePoint site. On the site the team has created a common calendar to keep track of events that concern the whole team. The problem now is that the user has two calendars to keep in mind. Linking the SharePoint calendar to Outlook can solve this issue. Then the user will be able to view the team calendar in the Outlook interface, use the Overlay view to find double-bookings, add items to the team calendar and by dragging and dropping move appointments from one calendar to another. /21/

A benefit of integrating Outlook to SharePoint is that it lets the user manage for example the calendar appointments in the familiar Outlook environment.

2.7.3 Excel

MOSS 2007 (only the Enterprise edition) comes with a service application called Excel Services that allows editing of Excel workbooks through the web browser. Basically, Excel Services consists of three components that interact with each other: Excel Calculation Services, which is the “engine” that loads the workbook and performs calculations, Excel Web Access, that is a Web Part that displays and enables interaction with the workbook through a browser and Excel Web Services, which provides methods that developers can use for building applications based on the Excel workbook. /13/

Excel Services allows the user to work with an Excel workbook on the SharePoint site through the web browser, by using the Excel Web Access Web Part. This provides the familiar Excel interface and many of the same functions as the desktop application.

To use Excel Services a workbook must first be created using the standard application. The workbook must then be saved to a document library in Excel Services. Users can then interact with the data in the workbook in different ways, though they can't edit the cells.

For Excel Services to work the server needs at least one Shared Server Provider (SSP) and for that SSP, a trusted file location to the top-level site has to be set up. /13/

Integration between Excel and SharePoint is also possible without using Excel Services. For example, a user can import a table from Excel to a list in SharePoint with a few clicks.

2.7.4 Access

There are several ways to share, manage and update data between Access and SharePoint. A database made in Access could for example be moved to a SharePoint site, in which case lists are created on SharePoint and linked to the tables in the database. SharePoint will then work as a front-end application for managing the database and forms, reports and queries will remain in Access. The user can choose if he works with the lists in SharePoint or with the linked tables in Access. /14/

If several people are using the database, it might be more convenient to publish it on SharePoint instead. In this case a copy of the database is stored on a SharePoint site and if desired the tables can be linked into lists. Access will still work as the front-end

application for forms, queries and reports. When users work with the database they save a copy locally and will have to republish to make changes appear to everyone else. /14/

2.8 SharePoint 2010

2.8.1 General

A new version of SharePoint was released in May 2010. The new version consists of two main products, just like the older version. SharePoint Foundation 2010 (previously Windows SharePoint Services 3.0) is the free add-on to Windows Server 2008. SharePoint Server 2010 (previously Microsoft Office SharePoint Server 2007) is a purchasable product that requires a licence. SharePoint Server comes in two editions, Standard or Enterprise.

2.8.2 Improvements

SharePoint 2010 includes several updates and improvements. The main change a user notices is the new user interface. SharePoint sites now include “the ribbon”, a command interface that displays many of the most common tools, commands and controls. Users used to the interface of Word or Excel will immediately feel at home. /22/

The team collaboration functionalities are also improved. Calendars, blogs and wikis all have new features. More mobile features are also added, so that users can view and work with SharePoint information on mobile devices. The new social networking features make it easier to connect to other people and areas of interest. By sharing information about knowledge, responsibilities and special skills on the My Site’s profile, colleagues help each other to find, for example, someone who is able to help with a certain issue. The new My Site’s profile also contains an activity feed, so that users can keep their colleagues updated on what they are doing. /22/

2.8.3 Metadata

One of the, by DA, most welcome improvements in SharePoint 2010 is probably the introduction of managed metadata. In MOSS 2007 metadata is called Content Types, and it has never been set up consistently throughout the DA SharePoint portal. Metadata is often described as “data about data”, for example a digital photo contains metadata about when the picture was taken, what camera that was used, exposure, shutter speed etc.

In SharePoint 2010 metadata can be added to an item, for example in a list or a document library, by inserting a metadata column. The metadata itself consists of a word or phrase, called a term. A term set is a collection of related terms. Term sets can be either global (available to all users on the SharePoint site) or local (available only to users on a specific site collection). There are two types of terms, managed terms and enterprise keywords. /17/

Managed terms are usually pre-defined and organized into hierarchical taxonomy term sets. Taxonomy is the science and practise of classification, in this case classification of words, labels or terms into hierarchical organized groups based on similarities. If a managed metadata column is inserted into a document library and a user adds an item to the library, he is required to add metadata to the item. Let's say he uploaded a document about a new product that goes under the working name MCR so he adds the term “MCR” to the metadata. On the SharePoint site collection there are many documents about this new product, in different libraries. When the product is ready for selling the name is changed to TB and all documentation on SharePoint associated with MCR now has to be associated with TB instead. This would take ages to update manually but, by only changing the name of the term MCR to TB, the term will still be applied to the same items, but the name will be updated. /17/

Enterprise keywords work a little differently than managed terms. They are organized into a single non-hierarchical term set called the Keyword set and the main difference is that the end user is allowed to add new terms into the term set. When a user starts typing a value into an enterprise keyword field he is presented with type-ahead suggestions, which may include terms from both managed term sets and the Keyword term set. This could also be called tagging. An example of using enterprise keywords can be found on the My Sites. When users add their skills and knowledge to their profile they tag themselves with enterprise keywords such as “SharePoint” or “Project management”. Enterprise keywords

are ideal for the folksonomy approach to metadata classification. Folksonomy classification is commonly used on the web, when users collaboratively apply terms (tags) to content of a site. A tag cloud is a visualisation of folksonomy (see figure 9). /17/



Figure 9. A tag cloud, the visualisation of folksonomy. /17/

There are several advantages to using managed metadata across SharePoint sites. First of all, the use of terms and terminology in general is more consistent. When the content across sites has consistent metadata it is easier to find by using search and new search features enable users to filter search results based on metadata. Users are likely to retrieve more relevant search results when consistent terms, not synonyms, are used as metadata.

2.9 Pros and Cons with SharePoint

Microsoft promotes SharePoint as a collaboration platform suitable for businesses of all sizes. Due to the diversity of SharePoint as a platform and each company's individual needs there are different advantages and disadvantages from time to time.

The main disadvantage, especially for smaller companies, is the license fees. Getting the most out of SharePoint requires buying the licensed version (MOSS). Even though SharePoint is a versatile platform that can be used for building both private intranet and public Internet websites, the licence fees might be the main obstacle for some companies to take SharePoint into use.

SharePoint is made to be integrated with other Microsoft Office products, which is a big advantage for companies that are using many Microsoft programs. In fact, MOSS requires a work station running a Windows operating system and Internet Explorer as a web

browser for full usage. This might be a disadvantage if a company has workstations running different operating systems, and every employee needs to access SharePoint.

SharePoint is a powerful collaboration tool that makes sharing documents and information within a company easier. Customizing the SharePoint platform to meet individual needs is also possible with some development. However, introducing SharePoint at a company requires time and planning - and money. A site structure for the platform has to be made, plans for exactly what the platform should be used for, training of the end-users, support, administration of sites and user rights etc. Without these vital things the company will end up with reluctant end-users and a SharePoint platform that is a clutter of sites and files without structure.

3 .NET FRAMEWORK AND ASP.NET

3.1 .NET Framework

The .NET Framework is a software framework developed by Microsoft. The framework is a large library of code that Microsoft has made available for developers to use. The .NET Framework provides a set of tools for creating user interfaces and accessing data in almost any database for both desktop Windows applications and Web applications. One could think of the .NET Framework as a foundation that developers build their application on. The framework supports several commonly used languages, such as VB, C++ and C#. /10/

3.2 ASP.NET

ASP.NET is a part of the .NET Framework and was first introduced in year 2000 with the final release of the .NET Framework 1.0. ASP.NET evolved from Microsoft's Active Server Pages (ASP), a solution for creating Web applications that became very popular in the late 90s. However, when the Web applications grew bigger and bigger the mix of code languages and scripts used in ASP pages became difficult to manage. So ASP.NET introduced a new more object-oriented way of creating dynamic Web applications. /7/

SharePoint is built on top of the .NET Framework (see figure 3) and uses many ASP.NET features such as Master Pages and Web Parts etc.

3.2.1 Master Pages

A master page is a special type of ASP.NET page that can be used as a template by any other page in the application. Most Web sites today have common elements used throughout the entire application, such as header, footer and navigation. On a site using master pages, these common elements are determined by the master page. One could think of the master page as a frame for the whole web application, the master page defines the functionality, look and feel of all the pages in a Web application. /8/

An ASP.NET Web application using master pages also requires content pages. Content pages are a unique type of ASP.NET pages containing the page specific content for each page on the site. When the user requests a page the master page and content page are merged together and the result is the fused ASP.NET page that appears on the user's screen (see figure 10). /8/

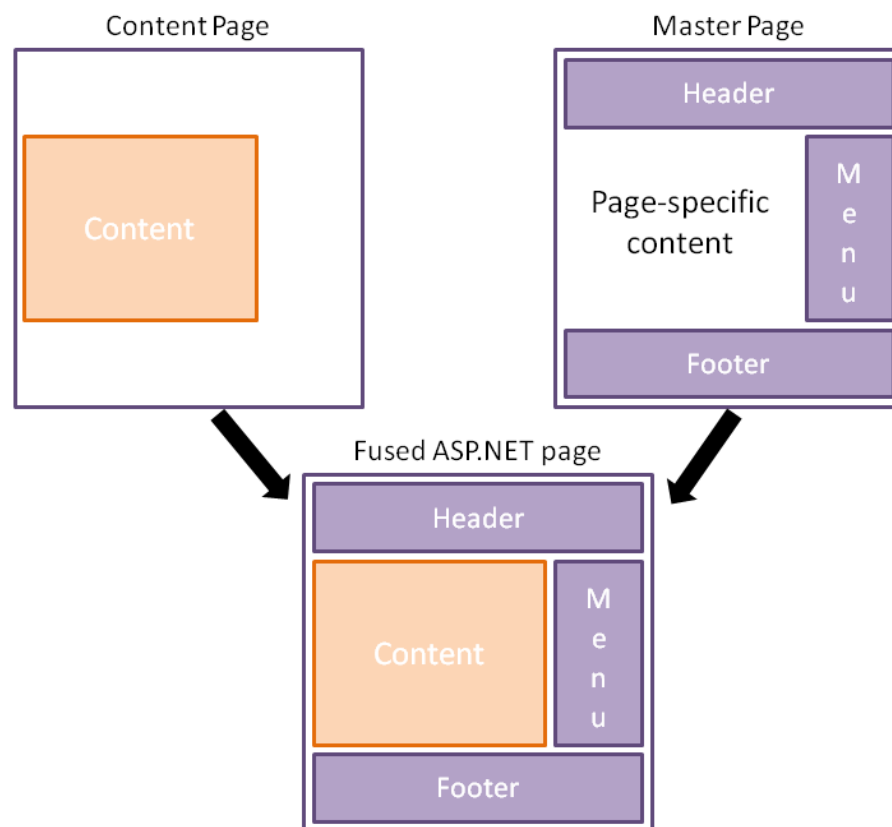


Figure 10. ASP.NET web page. /8/

3.2.2 Web Parts

Web Parts are ASP.NET controls that enable the end users to customize the content on a site. Web Parts are modular controls that the end user can open, close, minimize, maximize and move from one part of the page to another. Each Web Part makes certain data or content available on a page, e.g. one Web Part could contain a calendar and another one a picture library. In SharePoint Web Parts are not limited to displaying only SharePoint information. They can also provide the ability to search and manage data in external databases and file systems. Custom Web Parts can be developed to integrate the SharePoint environment with other existing systems.

Pages containing Web Parts are Web Part Pages and these pages can contain Web Part zones which make it easier to group and arrange Web Parts. These elements can be thought of as nested containers. The Web Parts contain the data that is to be interacted with, the Web Part zones are optional sub containers within the Web Part Page and each one contains one or more Web Parts. See figure 11. /9/

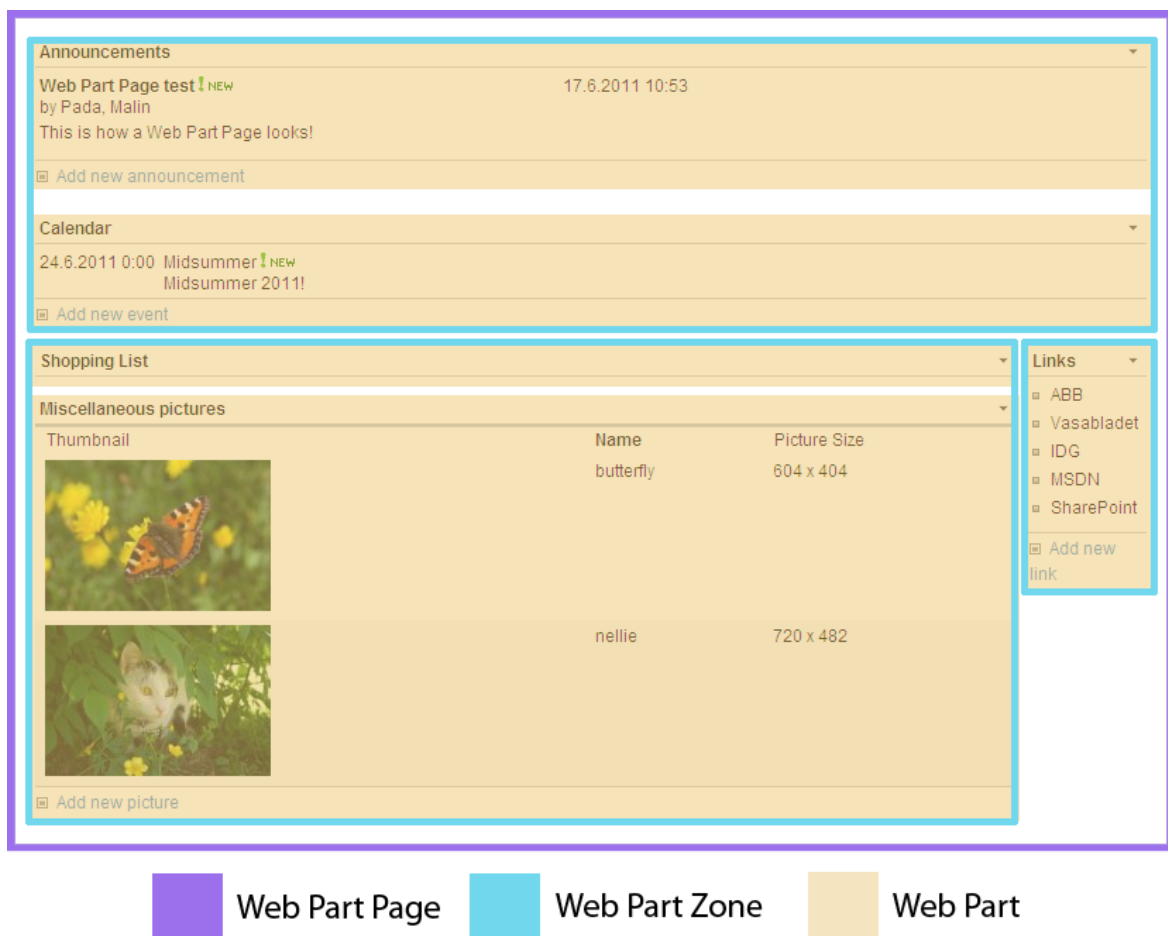


Figure 11. Web Parts.

4 IT STATLER

When this project started a top-level SharePoint site with the name IT Statler was already created. However, it was more or less empty. The site is named after the character Statler from The Muppets Show as a little internal joke. The site was located at ABB's production server farm in Helsinki. Usually, bigger software projects are developed on a development server, then moved to a test server for testing before finally being moved to the production server and taken into use. IT Statler, however, was created directly on the production server.

This project was executed with the Scrum methodology so before the actual work started a Product Backlog and a Project Plan were made. The Product Backlog was the company's wish list of approximately what they wanted as an end result, and the Project Plan was a

written document with brief descriptions of the current situation, the scope and objectives with this project, execution approach, timeline and people involved. Before each sprint a Sprint Planning Meeting was held, a Sprint Backlog was created and the time it would take to carry out the sprint was estimated. After each sprint was completed, a Sprint Review and the Sprint Planning Meeting for the next sprint were held.

The following documentation of the work performed is chronological according to the Scrum process.

4.1 Sprint 1 – IT Weekly

4.1.1 Sprint Backlog

IT Weekly is what the IT department calls their weekly meetings where they discuss current tasks, projects, news and other relevant things. To keep track of the tasks, due dates, progress, and who is responsible for what, this information was inserted into an Excel spreadsheet. This spreadsheet contained one sheet for tasks that are on-going and one sheet for tasks that are done. When a task is considered done it is moved from the on-going actions sheet to the done sheet, which only works as an archive of completed tasks.

The Excel file also contained sheets for some audits and reviews that are done every now and then, for example user access audits. These were presented in a table-like view with necessary information, dates and who has performed the review.

The backlog for this sprint was to transfer this functionality to SharePoint using the tools provided by the web browser user interface.

4.1.2 Realisation

A new subsite to IT Statler was created, called IT Weekly. Within this site a list called On-going actions and a document library called Documents were created.

The list resembles a task list and is used to keep track of current tasks and projects, just like the Excel spreadsheet before. Table 1 shows the columns and their data types. Visually

the list is a standard list (see figure 5). The column names marked with an asterisk (*) require information.

Table 1. Column names and data types in the On-going actions list.

Column name	Data type
Description (*)	Single line of text
Status (*)	Choice (New, Work in progress or Done)
Category (*)	Choice (Task, Info or Project)
Priority (*)	Choice (1-High, 2-Medium or 3-Low)
Responsibility	Single line of text
Due date	Date and time
Action needed, remarks	Multiple lines of text

The list was created using the SharePoint feature to import data into a list straight from a spreadsheet. By using this feature the list got the same columns and contents as the Excel file and a lot of time was saved by not having to first create all the columns separately and then fill in all the data by hand.

To filter the items in the list two different views were created apart from the standard view that shows all items, one called On-Going and one called Done. On-Going is the default view and shows all items with the status New and Work in progress. Done shows all items with the status Done and is basically only an archive for past tasks.

The list also has version history so that each time an item is edited a new version of that item is created. This makes it easier to check which changes have been made from time to time.

The list is used in such a way that when a new task appears it is inserted into the list and all the right properties are filled in. As the work on the task progresses, information on what has been done, and on issues and things that will be done are documented in the Action needed, remarks column. When a task is considered ready the status is changed to Done and thereby the task disappears from the default view.

The document library, Documents, contains two subfolders, SAP Post Implementation Review and SOX Fileshare Quartal Audit. These folders withhold documents used for

reviews and audits.

4.1.3 Summary

Over all, the IT Weekly subsite and the On-going actions list seem to serve their purpose. One suggestion for improvements is the column Responsibility. Its data type could be changed to Person or Group, which means that all SharePoint users with access to the IT Weekly site will appear as choices. This will be beneficial if the My Site feature is taken into use some time in the future, since all items assigned to a user will then be visible on the personal My Site.

In the beginning the idea was to have separate lists for On-Going tasks and Done tasks and then move an item from the first list to the second when the task is ready. However, moving items between two different SharePoint lists is not possible so instead the decision to have all items in one list and create different views was made.

The document library with the review and audit documents might not have been necessary since this was solved differently in sprint 2.

4.2 Sprint 2 – SOX Material for Q_IT Process

4.2.1 Sprint Backlog

The backlog for the second sprint was to create some kind of tool for managing audits. In this case an audit means the evaluation of for example user accounts or software reviews. Audits are usually performed regularly within a certain period of time, for example every second quarter of a year.

Documents on user access audits, recovery plans and other reviews lie in a folder on a file share server just waiting for someone to remember checking and updating them. Some audits need to be performed more often than others and therefore it would be convenient with some kind of reminder when the due date draws near. The plan for the second sprint was to move the documents to SharePoint and investigate if SharePoint is able to provide

the functionality desired for reminding users to update and check the documents.

4.2.2 Realisation

A new subsite to IT Statler, called Audits, had already been created. Two new custom lists were added to that site, one called SOX Material and one called Other Reviews. They both have the same column names and data types (see table 2) and are of the standard list type (see figure 5). The columns marked with an asterisk (*) require information.

Table 2. Column names and data types for the SOX Material and Other Reviews lists.

Column name	Data Type
Title (*)	Single line of text
Due Date (*)	Date and Time
Comments	Single line of text
Document(s)	Lookup (link to a folder in a document library)

Additionally, five subfolders (ADSL Connections, Recovery Plans, SAP – Post Implementation Reviews, Segregation of Duties and User Access Audits) were created under the already existing Shared Documents document library. The list field Document(s) contains a link to the, for each item, equivalent folder in the document library (see figure 12).

The screenshot displays two SharePoint views. The top view, titled 'IT Staller > Audits > SOX Material', contains a table with the following data:

Title	Due Date	Comments	Document(s)
Segregation of Duties	30.6.2011	Update Me!	Segregation of Duties
Recovery Plans	30.6.2011	Update Me!	Recovery Plans
User Access	30.6.2011	Update Me!	User Access Audits
SAP - Post Implementation Reviews	30.6.2011	Done 06/2011	SAP - Post Implementation Reviews

The bottom view, titled 'IT Staller > Audits > Shared Documents', shows a document library with a list of folders:

Type	Name
Folder	ADSL Connections
Folder	Recovery Plans
Folder	SAP - Post Implementation Reviews
Folder	Segregation of Duties
Folder	User Access Audits

Red boxes highlight the 'Shared Documents' folder in the left navigation pane, the 'Segregation of Duties' folder in the document library, and the 'Segregation of Duties' item in the SOX Material list. A red arrow points from the 'Segregation of Duties' folder in the document library to the 'Segregation of Duties' item in the SOX Material list. A red text box on the right contains the text: 'Links to the right folders in the document library'.

Figure 12. Description of the connection between the SOX Material list and the document library.

The idea of this is to gather the documents that need auditing every once in a while in one place (the document library) and have some tool to keep track of when the audits need to be performed and when the audit was performed last time (the lists). The user will view the list to find out when an audit needs to be performed and by choosing the right item from the list the user will find the right documents in the library, update them, change the due date on the list item and wait for the time to arrive for the next audit or review.

4.2.3 Summary

The original plan was to make a document library or a list with the documents and then, by using the Alerts feature in SharePoint, add an alert to each document or item which would trigger when the expiration date drew near. For example, if an audit's due date is the last day of June the alert would send out an e-mail one or two weeks in advance. If the due date expires the item in the list or document library will somehow be marked, for instance by turning the text colour red. However, alerts in SharePoint are very limited and do not work in this way. Users can choose to add alerts to lists or libraries (or to a single item in a list or library), which means that they will receive an e-mail notification when something changes in the list, library or item. So the current solution is not optimal but it is the best that could

be provided with the available features. There are third party solutions that enhance the functionality of alerts and an in-house solution could of course be developed as well but neither of these were an option in this case.

4.3 Sprint 3 – DA Licences

4.3.1 Sprint Backlog

Before this project DA had a Software License Tracking Application, a Web application that lists software licences in use within the unit. The application allows a user to add new licences and search among licences by filling in a search criterion and choosing which column to search from. It then lists the licences in a table view with information about each licence and a link to a PDF document with more detailed information. When a new licence is added the user can choose if it should be hidden, which limits the users that can view information about the licence. This visibility restriction is desired because some departments might use some licensed software that they do not want people from other departments to know about. However, this user access restriction is not working properly and therefore the application is not in use.

The backlog for this sprint was to investigate if SharePoint has the capability to provide a tool for managing licences that meets all the requirements.

4.3.2 Realisation

A new list, Licences, was created on the main site. The columns and data types used are listed in table 3 and the list is a standard list (see figure 5). The column names marked with an asterisk (*) require data.

Table 3. Column names and data types used in the Licences list.

Column name	Data type
Manufacturer (*)	Single line of text
Software name (*)	Single line of text
User	Single line of text
Department (*)	Choice (choice between departments at DA)
Unit (*)	Choice (choice between business units, allows fill-in, FISUB default)
Owner (*)	Single line of text
Computer name	Single line of text
Info	Multiple lines of text
Hidden (*)	Choice (radio buttons yes or no)

SharePoint has a built-in feature to attach documents to an item in a list and this will be used for attachments.

Two new views were created for the list besides the all items view, Hidden, which shows all the items that have been set as hidden and Licences, which is the default view and shows all items that are not set as hidden.

When a user adds a new licence to the list he fills in the information about the licence, chooses if it should be hidden or not and attaches the corresponding PDF document to the licence.

4.3.3 Summary

The issue with the Licences list is the hidden items; they are not really hidden in the sense of the word, they can easily be accessed by anyone who knows how to change the view of a list. Since user access cannot be restricted to views of lists, only to the list itself or a specific item, one suggestion to control who can see the hidden licences would be to set the user access for every licence manually and then have one user who is the administrator of the list and can view and manage all items.

Another thing worth mentioning is the search functionality. In the web application a user can search for a licence by filling in a value in a textbox and choosing a column that that value is expected to be in. In SharePoint, a search can be performed in a list and on a whole site so in theory the search functionality within SharePoint should work. The problem with the search is again the hidden licences which will appear in the search result.

The licence list is not in use yet because of the issues with the hidden items and the user access.

4.4 Sprint 4 – Infrastructure Follow-up

4.4.1 Sprint Backlog

The backlog for this sprint was to create a tool for managing and keeping track of servers and the software running on the servers in use at DA. The main idea was to have a list of servers and the user would click on a server name and view all software running on that server, similar to a tree view.

4.4.2 Realisation

A list in datasheet view (see figure 6) called Servers had already been created on the Audits subsite. The list also contained a lot of items. The column names and data types are listed below (See table 4). The column names marked with an asterisk (*) require information.

Table 4. Column names and data types used in the Servers list.

Column name	Data type
ServerName (*)	Single line of text
OS	Choice
Location	Choice
State (*)	Choice
Active	Yes/No
Responsibility (*)	Choice
Environment (*)	Choice
IP (*)	Single line of text
Netmask/gateway	Single line of text

A column called Software with the data type look-up was added to demonstrate the connection between data in two lists that MOSS 2007 provides. Also a new list, called Software, with a column also called Software and a column called Server was created. This list is so far only a base with a connection to the Servers list. More columns corresponding to the desired information about the software will be added later. A few dummy items were added to the list for demonstration purposes.

The Software field in the Servers list is a look-up to the column with the same name in the Software list. This means that when the user adds software to a server, all items from the Software column in the Software list will appear as choices and the user can make multiple selections. There is a similar connection between the ServerName column in the Servers list and the Server column in the Software list (see figure 13).

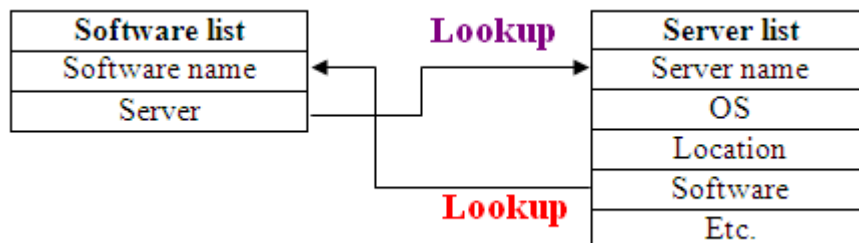


Figure 13. The data connections between the Server and Software lists.

4.4.3 Summary

This solution is simple but it serves its purpose. The user interface of the list did not turn out as described in the sprint backlog because the customization of lists is limited in the web browser configuration. By using SharePoint Designer it would have been possible to join the lists with data sources and create a view that shows all software connected to a server name. The improved list features in SharePoint 2010 will allow a user to create links and views between lists as described in the sprint backlog through the web browser user interface.

At the moment the Software list is very minimal. Before it can be used it will have to be developed further with more columns to provide all the information needed about the software. Some software items will also need to be inserted. This will be done later.

At some point during the sprint the question came up if the lists are linked in such a way that when an item is added to one of the lists, a corresponding item is also added to the other list. The answer to this question is no, SharePoint lists do not have the update cascade functionality of database tables.

5 RESULT AND DISCUSSION

The result of this project is a SharePoint website with subsites, different lists and libraries. The site is found on the Distribution Automation site collection under the name IT Statler. It contains two subsites, IT Weekly and Audits and several lists and libraries. IT Statler provides tools for managing tasks, information, documents, audits and data on licences, hardware and software. Another, more abstract result is the increased knowledge of SharePoint that mainly I, but also other people involved in the process, acquired.

IT Statler is already in use; the IT Weekly list is used regularly every Monday morning during the IT department's weekly meeting. The tools provided for managing reviews is also ready for use, when the time to perform audits and reviews arrives. The licence tool will have to be developed further, alternatively rejected totally and some other solution for licence tracking thought of. The tool for servers and software will also be developed further. Firstly an accurate software list will be created and once SharePoint 2010 is taken into use this tool can be improved further according to the Sprint Backlog. More libraries and lists will probably be added to IT Statler constantly as the use of SharePoint increases.

ABB and Distribution Automation were already familiar to me as a previous employer. But while working on this project I got an insight in the white-collar part of the company and I learned about carrying out a project in a big global company using the Scrum method. The Scrum methodology was unknown to me before I started on this project so I had to learn how to work with it, too. As I was the only one working with this project in practise, parts of the process of Scrum methodology with a Scrum Team and Scrum Meetings were left out.

This project has been very educational. When I started I had barely ever heard of SharePoint so in the beginning I felt very lost. At first I spent a lot of time researching material on SharePoint on the Internet. I tried creating small lists and libraries to find out how SharePoint is meant to be used by the end user. Once I started to understand the whole concept and idea about SharePoint I realised that this is a platform with endless possibilities once you understand how it works and how Microsoft has planned for the users to use it.

The main problems I ran into were of two types, company policy and restrictions of SharePoint as a tool. The first issue was when ABB's company policy did not allow the

usage of SharePoint Designer as a development and customization tool, which gave me fewer possibilities to customize the site as wished. The second main issue was the things that SharePoint was not able to provide a solution for. There were things that I wasn't able to work out by using only the features provided with the web browser user interface. For example SharePoint was not able to provide a solution that matched the Sprint Backlog in Sprint 2.

One thing worth mentioning is the fact that I was working directly towards the production server, in other words, the server that hosts the sites that the end users are using. To have worked towards a development or test server would probably have given me more freedom to try different things without having to worry about destroying something important. I might have been able to solve some of the issues that I had by using custom code. But of course this would have taken a lot more time.

One also has to remember that IT Statler is only a tiny bit of the whole Distribution Automation site collection, a site deep down in the hierarchy. ABB is a big global company with very complex information systems, of which SharePoint is a relatively new one for DA. If this project had been carried out at a small company, the process and result might have turned out very different.

Overall I am pleased with the result, considering the restricted amount of time I had. There are some issues that will need further development, and looking back now when my knowledge of SharePoint is still increasing all the time, there are some things that I might have done differently.

Finally, I would like to thank my contact person at ABB, Mari Lintula, for letting me take on this project, and everyone who was somehow involved for the help and support.

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