

A Web-Based Collaborative Portal for Sharing Safeguards Knowledge

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Abstract

The CSSP has been assisting the IAEA in the application of collaborative tools to facilitate groups working together. These tools include web-based technology such as wikis and blogs. Comparisons of open-source and proprietary collaborative tools and the options for potential use of these tools at the IAEA have been discussed in papers the authors presented at previous INMM annual general meetings – *Collaborative Software Tools for Safeguards Applications* (2007) and *Using Wikis as a Low-Cost Knowledge Sharing Tool* (2005).

Some potential users are concerned that collaborative software would introduce a security risk and are reluctant to deploy such tools, particularly where they are accessed by corporate “road warriors” in remote locations. This paper examines these concerns and provides practical suggestions for securing the tools to provide a portal for sharing information and knowledge in a secure environment.

SharePoint is a proprietary tool that provides an attractive option for security-conscious organizations such as the IAEA because its security features integrate well into an information technology infrastructure based on Windows clients. This paper explores SharePoint blogs and the possibilities for using third-party tools in a SharePoint environment. Rather than suggesting a choice of proprietary versus open-source tools, the authors describe how to “mix and match” proprietary and open-source tools to provide cost-effective solutions for knowledge workers.

The suggestions and conclusions in this paper would be of value to organizations with similar mandates and security concerns.

1 Introduction

The Canadian Safeguards Support Program (CSSP) provides support, documentation, and training assistance to the IAEA for Canadian manufactured safeguards equipment and related software tools. To facilitate these activities, the CSSP has used various collaborative software tools. Since early 2004, the CSSP and the IAEA have used an open-source wiki (PmWiki) to share information and transfer large volumes of data during the development of training material for IAEA inspectors. The wiki has also been used for several other joint IAEA and CSSP projects. The success of this wiki prompted us to investigate other collaborative tools that could be used for building a common workspace, or portal, for information and knowledge sharing. Several portal concepts and projects have been proposed and some have had proof-of-concept implementations, such as the Geographical Information System (GIS) portal described in reference 4.

2 What are Portals, Blogs, and Wikis?

Indiana University (<http://kb.iu.edu/data/ajbd.html>) describes portals as follows:

Web portals provide a single point of access to a variety of content and core services, and ideally offer a single sign-on point. ... Portals often include calendars and to-do lists, discussion groups, announcements and reports, searches, email and address books, and access to news, weather, maps, and ... bookmarks. Web portals often organize information into channels – customizable page containers where specific information or an application appears. Channels make it easy to locate information of interest by categorizing content.

Portals can be thought of as a jumping-off point to the web-accessible assets of an organization that can be tailored to the needs of each user. For example, general analysts may want to have search engine links prominent on their version of the portal while subject matter experts may wish to have direct links to or feeds from professional societies in their field of knowledge. Core services such as a corporate directory would appear on all users' versions of the portal.

Portals can have different focuses. For example, the portals provided by many ISPs are designed to steer users to shopping or other revenue generating sites. Corporate portals typically provide direct access to job-related areas and services. Some portals aggregate various types of information under a common theme – so the GIS portal (mentioned earlier) would be primarily concerned with the spatial display of information and the map-based representation of data.

Unlike a home page, which is a more-or-less static collection of information and links, portals can provide a dynamic and personally customizable entry point to corporate assets.

Blogs and wikis are web-based collaborative workspaces where co-workers or group members can develop, store, and share information and knowledge. Blogs and wikis let users share files, notes, messages, etc. with others. They allow group members to comment on existing contributions, to create new content, and to edit existing content, all from within a web browser. Blogs and wikis do not require any kind of proprietary “client” software to access or edit them.

Blogs (originally called web logs) tend to be organized chronologically and are best suited for journal-like postings. For example, analysts could use a blog to post articles summarizing news

items that would be of interest to the readership. The readers typically cannot alter the original posting, but they can use the “commenting” feature common on blogs to post their observations or further analysis of the posted items. Over time, the blog becomes a library of articles that can be searched and viewed in context with each other. Blogs also provide an indication of the popularity of (or controversy generated by) a particular topic, by virtue of the number and nature of the comments appended to each post.

Wikis tend to be organized by topic and are best suited for the collaborative development of content by several authors. For example, someone may start a wiki page that describes a new assay technique in general terms. Subject matter experts can review the page and edit it to add more detail or to correct misunderstandings. Other authors may add links to outside sources or expand on subtopics on separate pages. Over time, the pages become more detailed and accurate and provide a mutually agreed upon view of the subject.

Both blogs and wikis support attachments, so files, photos, and other assets can be stored on the wiki or blog and accessed by hyperlinks – again all via a web browser interface. Collaborative software such as blogs and wikis can provide significant advantages to organizations without imposing a strain on either the budget or the delivery infrastructure. Blogs and wikis are available as free, open-source software and as proprietary, closed systems. In order to focus our efforts, the remainder of this paper only considers blogs.

3 Why Use a Blog?

Blogs provide a web-accessible workspace for recording journal-like observations and actions. Because blogs have a chronological organization, they are an excellent medium for recording inspection activities and they are well suited to daily or weekly team newsletters. Blogs also provide a commenting capability so that team members or blog readers can make observations about or add updates to the various postings. Blogs can provide significant advantages over other sharing mechanisms such as email or corporate websites:

- Blogs provide web-based access that can be easily integrated into a web portal.
- Blogs provide immediate feedback to contributors. Authors can see their contributions without having to wait for a web master or system administrator to approve or post them.
- Blogs provide long-term, central storage of content. This allows new group members to access the content without being sent it individually. It also allows for central control of access (based on security profiles) as well as secure storage and backup.
- Blogs keep a record of the discussion surrounding the content. In many instances, the analytical process, the discussion, and the revisions that occur during content development provide as much or more information as the final content itself.

Blogs use so-called “pull” technology – the user must visit the site to pull off new information. However, email notifications and RSS feeds can convert blogs to “push” sites. For example, a user can request email notification when a new blog posting is made or they can see all the new blog postings aggregated in their RSS reader.

4 Security

All organizations have information that is private to various degrees, and for any collaborative software tool to be adopted, it must be able to secure the assets appropriately.

Regardless of the physical and technological mechanisms in place, security depends ultimately on the end users. Organizations need to establish protocols and procedures that help people to determine how to classify and store assets. For example, if a blog is being used for collaboration with individuals outside the organization, then the contributors must realize that all items appearing on the blog will be public.

The next layer of security can be supplied by the blog software itself. It can restrict the access of certain users to certain areas and limit the functions available to them. For example, a small number of users may be designated as editors (able to change the content) while the remainder are designated as readers (able to read posts and leave comments).

For a public blog that is accessible from the internet at large, user authentication (verifying that a user is really who they claim to be) is generally performed by the web server validating a user name and password. If the blog is accessible only from within a firewalled intranet, user authentication can be performed by the network logon procedure.

If a private blog is protected from external access behind a corporate firewall, it is impossible for “corporate road warriors” to make contributions or even read the blog when they are outside the corporate LAN. A common technique used to allow access is a Virtual Private Network or VPN. With a VPN, road warriors can connect to the corporate LAN while in remote locations. The VPN provides a secure tunnel between the user’s laptop and the corporate LAN. The best security is provided by making use of two-factor authentication: something the user knows (a password) along with something the user possesses, such as a “secure token” (figure 1). To gain access to the VPN the user must key in their password and the random string of digits displayed by their token.



Figure 1: An example of a secure token

If the blog content is less sensitive, using a secure HTTP connection (without a VPN connection) ensures that the content transmitted between the user’s browser and the blog software is encrypted.

Note that internet cafes and public wifi hotspots can pose serious security threats. Publicly accessible computers (such as those in internet cafes) can be infected with “key loggers” which capture all of the keystrokes users make – including user names and passwords. Using two-factor authentication can mitigate the risk of password capture because the secure token never re-uses any of the codes it generates. Even using your own laptop on a public wifi network can be risky. Packet sniffers can capture data from the wireless connection, and there have been cases where imposter networks have been set up to lure in unsuspecting users. Such imposter networks can be defeated by using a VPN connection.

5 Blog Software

Over the past few years, the CSSP and the IAEA have examined several options for blogs as a means to publish analytical summaries of open-source news events. For initial discussions and demonstrations we used WordPress, which is one of the best known open-source blogs. We also tried some pilot experiments with a commercial package –Microsoft Office SharePoint Server (also known as MOSS 2007 or just SharePoint). Not only does SharePoint have blogs, it provides a large number of infrastructure tools that can be used to build a complete web portal, including wikis, discussion boards, file stores, picture libraries, lists, web sites, sub sites, RSS feeds, email notification, and integration with the Microsoft Office suite.

All of the interaction with SharePoint occurs within a browser. Users with administrative rights can create new blogs with a few simple clicks. The SharePoint Designer package can be used to customize the look of blog pages, but most customization can be done using predefined “web parts”. SharePoint is not open-source or free, but a basic version (known as Windows SharePoint Services or WSS) is available at no charge from Microsoft.

SharePoint offers one compelling advantage to any organization that has Windows-based client computers – the security model is integrated with the Windows logon model. This allows the organization to provide “single sign-on” and to define user groups and allocate permissions using tools that they have already deployed. Large organizations often use some type of role-based security – that is, each user is assigned a role (or many roles) and the security system uses the permissions associated with each role to decide which of the assets can be accessed by the user.

Because SharePoint uses an SQL database to store all content, it is able to provide fine-grained access control. For example, it is possible to define the security level for each posting in a blog such that only those users with the correct credentials can see it when reading the blog.

6 Practical Blogging Problems and Solutions

The unfortunate dark side to SharePoint blogs is that the user interface for creating and editing posts is very crude, especially when compared to other blogging software such as WordPress.

Users accustomed to the interface in Word, FrontPage, SharePoint Designer, or any other Microsoft tool will be shocked by the feeble feature set in the SharePoint blog editor. For example:

- There is no built-in spell checker
- You cannot drag-and-drop hyperlinks into a post
- You cannot drag and drop pictures or other similar assets into a post
- There is no “paste special” option (to remove unwanted formatting)
- The entry area is a narrow fixed width and does not match the actual blog layout

Figure 2 shows the rather Spartan SharePoint editing window.

Figure 2: The SharePoint blog editing window

Fortunately, Microsoft makes a free blogging tool called Windows Live Writer (WLW) which can interact directly with a SharePoint blog and provides an excellent user interface for creating and editing blog posts. In addition to solving the problem of the poor editing environment on SharePoint blogs, WLW has several other advantages.

Although it is not open source, WLW is free, so it costs nothing to equip all of your users with an excellent blogging tool.

WLW can operate with more than a dozen different blog systems – so users can post to a SharePoint or WordPress blog with the same user interface. Different blogging software has different capabilities, and WLW handles this very neatly by having a dedicated area in the interface for extended features.

WLW can operate even when the user's machine is offline (a laptop in an airport lounge, for example). Once the user is reconnected to the target blog, they can publish the articles they have written with the push of a button.

WLW handles the placement of hyperlinks, pictures, videos, maps, and other attachments with an intuitive drag-and-drop interface. If a user wishes to add a picture to a blog post, they simply drag it from their desktop to the WLW editing window. WLW not only creates an appropriate link, it scales the photo to fit the blog page, and completely automates the photo upload to the blog.

WLW can provide previews of blog postings and can hold draft copies until the user wishes to publish. On many blogs this translates into several states for an article (all of them useful):

1. Draft on the author's machine only (only visible to the author)
2. Draft on the blog (thus editable by others with correct privileges)
3. Published on the blog (viewable by readers)

Figure 3 shows the WLW user interface as it appears when connected to a WordPress blog.

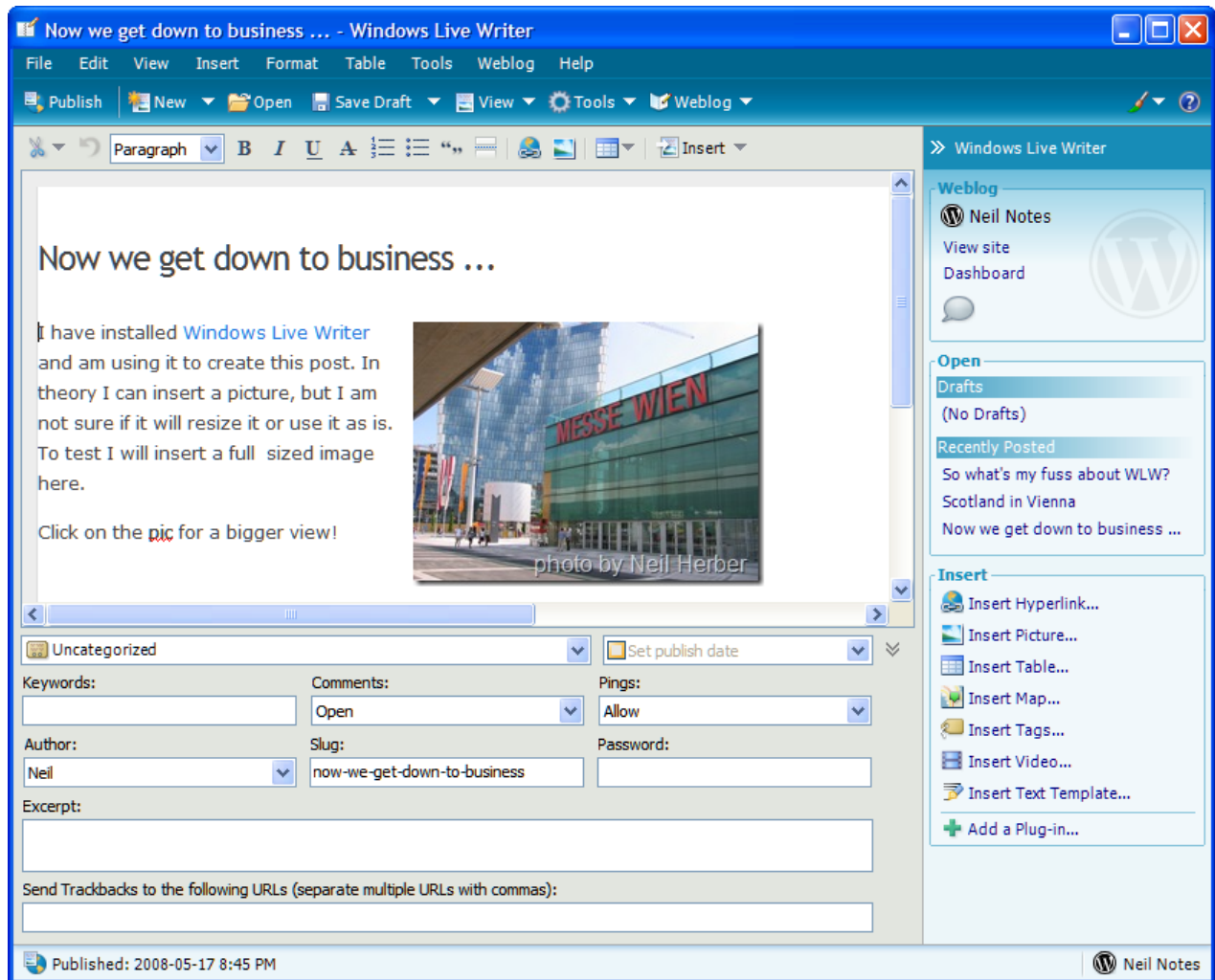


Figure 3: The WLW user interface

In the upper left corner you can see the posting as it will appear on the blog, complete with a scaled and uploaded picture. Beneath the posting you can see all of the WordPress specific extended features, such as a field for keywords.

Down the right hand side you can see a list of recent posting the user has made (a feature missing from the SharePoint editor) and beneath that you can see the “insert” menu with the various items you can place in a posting.

WLW lets you extend its feature set by installing one or more plug-ins. In figure 3, you can see that the “Insert Text Template...” plug-in has been installed. This free plug-in adds a “boilerplate” or template function to WLW.

7 Concluding Remarks

Clearly, the benefits provided by a web-based collaborative portal can help to improve the efficiency and effectiveness within many organizations. SharePoint provides a development infrastructure that can accommodate large and small projects. In fact, the adoption of SharePoint solutions (such as blogs) may be accelerated by encouraging small projects that let users gain experience with the tools in an environment that is more personally connected to them than some large corporate initiative.

Our experience has shown that even small implementations using open-source software (such as the CSSP wiki or WordPress blogs) can provide usable results as soon as it is installed. Open source software is an excellent choice for small collaborative software pilot projects, but it can also be used to run very large and complex sites, such as Wikipedia.

SharePoint is commercial software available as both a free version and various licensed versions. The licensing does not limit the applications developed, the web sites deployed, or the blogs created using SharePoint. SharePoint would allow an organization such as the IAEA to bring collaborative sites on stream very quickly for ad-hoc use by small groups while simultaneously developing full collaborative applications to be used by a much larger audience. The large community of SharePoint developers and consultants can be drawn upon for help, training, and support. SharePoint’s fine-grained security control would allow the Agency to organize and deploy their knowledge assets as required while keeping those assets secure.

We invite anyone interested in further information about these topics to visit our wiki at <http://saturn.eton.ca/>. It features live web links, contact information, and expanded discussion of this paper.

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