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Report: Website Working Group
(Prepared by Brian Doyle, Chair)

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BACKGROUND

For several years, there has been a keen and growing interest among SAA's members in the deployment of a robust content management system (CMS) featuring state-of-the-art Web 2.0 applications—wikis, blogs, RSS feeds, etc. While these types of programs are often associated with social networking, a comprehensive CMS would also redress a number of important organizational challenges that SAA faces:

- How can SAA's component groups (e.g., boards, committees, task forces, etc.) collaborate more effectively in an online environment?
- How can official documents (e.g., minutes, reports, newsletters, etc.) be more easily published to the Web by SAA's component groups, described and accessed via appropriate metadata, and scheduled for retention?
- How can SAA enhance its online publishing capabilities and ensure that the necessary tools are available for authorized subject experts to edit and update such official electronic publications as Richard Pearce-Moses' *Glossary of Archival and Records Management Terminology*, DACS Online, and the EAD Help Pages, as well as such important resources as an SAA standards portal or the Technology Best Practices Task Force working document?

SAA's existing Web technology does not adequately fulfill these needs. Therefore, members are increasingly taking the initiative to deploy so-called "unofficial" online resources hosted on third-party sites. The SAA 2008 Annual Meeting Wiki is an excellent example. The growing number of committee, section, and roundtable leaders using this wiki to assemble and distribute their meeting agendas online suggests that this resource is becoming a vital source of information about SAA's official activities.

In Fall 2007, the SAA Council charged the Website Working Group (WWG) to "investigate, evaluate, and recommend strategies for the effective management of online content created and/or maintained by the Society." This report presents our findings to date.

SPECIFICATIONS FOR A NEW CONTENT MANAGEMENT SYSTEM (CMS)

The working group's May 2008 Council report presented a set of draft specifications (see Appendix A), which working group members agree is essential to determining *what* SAA seeks to accomplish prior to investigating *how* we intend to get there. Further discussions did not yield substantive changes to the document. However, it was agreed that:

1. The various specifications are not equally important. Assessment of CMS solutions should consider appropriate weighting of the specified functions.

2. SAA should not expect to implement all of the specified functions immediately. Comprehensive CMS solutions are large, complex applications that have been developed to support detailed configuration to an organization's needs.

3. SAA should identify a "minimum set" of the most important functions needed to launch a new CMS, with the understanding that other functions can be released as needed through ongoing development.

4. Integrated authentication between SAA's AMS and a new CMS should be considered a high priority and must be maintained as an option for development.

5. The draft specifications are adequate to begin review of prospective CMS solutions.

DATA GATHERING ON PROSPECTIVE CMS SOLUTIONS

Having satisfied the question of how we should evaluate prospective CMS solutions, working group members nominated 11 applications for consideration. There was broad and enthusiastic consensus for inclusion of such popular open-source systems as Plone, WebGUI, Drupal, Joomla!, and MODx. Doyle added another six systems to the list based on previous research. Aprille McKay also forwarded information on the University of Michigan's recently announced selection of a new CMS, including details on selection criteria.[1] That report listed nine reviewed systems, five of which were among those identified by WWG.

Doyle then created a gap analysis chart comparing all 15 identified CMS solutions using data published by the website CMSMatrix.org.[2] In addition, the CMSMatrix specifications were

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[1] http://mblog.lib.umich.edu/blt/archives/2008/07/drupal_mlibrary.html
[2] CMSMatrix.org is owned and operated by Plain Black, the developers of WebGUI.

weighted and cross-referenced to SAA's own specifications document. A select portion of that chart, displaying results for three preferred systems, is contained in Appendix B. The list of reviewed CMS solutions, sorted in order of *quantifiable* compliance to the prioritized specifications, is as follows:

1. TYPO3 (http://typo3.com/)
2. OpenEdit DAM (http://www.openedit.org/)
3. Plone (http://plone.org/)
4. WebGUI (http://www.webgui.org/)
5. DotNetNuke (http://www.dotnetnuke.com/)
6. dotCMS (http://www.dotcms.org/)
7. <sitekit> CMS (http://www.sitekit.net/)
8. Drupal (http://drupal.org/)
9. SilverStripe CMS 2.x Open Source (http://www.silverstripe.com/)
10. Mambo (http://www.mamboserver.com)
11. Joomla! (http://www.joomla.org)
12. MODx (http://modxcms.com/)
13. Alfresco (http://www.alfresco.com)
14. Daisy (http://cocoondev.org/daisy/)
15. BrowserCMS (http://www.browsercms.com/).

These 15 systems represent only a fraction of the 946 applications listed on CMSMatrix.org.

QUALITATIVE ANALYSIS OF PROSPECTIVE CMS SOLUTIONS

Quantifying functional gaps on a simple yes/no basis does not necessarily address how *well* a particular system fulfills a given specification. It also does not address such important mitigating considerations as cost of implementation or programming knowledge required to deploy the prospective system. Therefore, working group members also considered a number of *qualitative* assessments in refining our analysis.

For instance, one online article[3] characterizes Plone as "the most robust and proven application" but cautions that it "is rarely used by hobbyist web developers because its barriers to entry for small projects are higher than those for Joomla or Drupal." This description coincides with that of the University of Michigan team, which found that Plone exceeded Drupal and Joomla! in terms of functionality but felt that "taking on a new programming environment (Python) for something as critical as (the university's) web presence was not sensible." In the end, UM chose Drupal due to its "modular construction, very lively development community, and the number of large academic libraries using it."

With these considerations in mind, Doyle suggested applying a process of elimination to the sorted gap analysis list. This yielded the following recommendations:

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[3] http://www.idealware.org/articles/joomla_drupal_plone.php, published on the website Idealware.org. According to its own site, "Idealware provides candid Consumer-Reports-style reviews and articles about software of interest to nonprofits."

1. Based on WWG's compiled CMS Matrix and further corroboration found in the University of Michigan report, eliminate from consideration the following systems:

   - Alfresco
   - BrowserCMS
   - Daisy
   - Joomla!
   - Mambo
   - MODx
   - SilverStripe CMS 2.x Open Source

2. Eliminate Plone, based on the reported technical barriers to implementation and SAA staff's lack of experience with its programming language, Python.
3. Likewise, eliminate OpenEdit DAM and dotCMS, based on SAA staff's lack of experience with Java.
4. Eliminate WebGUI based on UM's report that gave it only a .94 average rating.
5. Eliminate <sitekit> CMS due to its corporate licensing model and relatively moderate compliance with SAA's specifications as compared to open-source systems.

THE "SHORT LIST"

Considering that there are nearly 1,000 CMS solutions in the marketplace, there is a remarkable degree of concurrence in the specific systems that are being discussed and implemented. Practically from day one, WWG members have been talking about a few of these popular systems (e.g., Drupal, Joomla!, and Plone) which we subsequently discovered to be on the University of Michigan's short list.

This is not to suggest that selecting a CMS should boil down to a popularity contest. On the other hand, widespread adoption speaks to one of the most intriguing qualitative criteria identified by the University of Michigan team: Will it be around for a while? This is an important issue given the time and effort that must be invested to deploy a new CMS.

Based on the process of elimination described above, there are three prospective CMS solutions still pending consideration. The pros and cons of each are described below:

1. **TYPO3 (http://typo3.com/)**

   Pros: On WWG's quantitative gap analysis matrix, TYPO3 was found to be 100% compliant with SAA's required specifications. (Likewise, in UM's analysis, TYPO3 did not receive a single "unacceptable" rating for any of UM's 9 criteria.) It is a free open-source product developed in PHP, an easily learned scripting language.

   Cons: TYPO3 did not score any "better than expectation" ratings in UM's analysis. (Compare with Drupal, which "wowed" the UM team 6 times out of 9.) In other words: It may do everything, but it doesn't do anything great.

2. **DotNetNuke (http://www.dotnetnuke.com/)**

   Pros: On WWG's quantitative gap analysis matrix, DotNetNuke did not have a single critical gap. It is an open-source product developed in ASP.NET. SAA's current website is developed in Classic ASP, a precursor to ASP.NET, which would likely mean an easier transition for SAA.

   Cons: Limited content approval, versioning, audit trail, undo, and clipboard functionality. ASP.NET, developed by Microsoft, is not as popular a platform for open-source development, which could be limiting for SAA in the future.

3. **Drupal (http://drupal.org/)**

   Pros: Highly regarded for balancing programming power with ease of use, Drupal is an open-source CMS programmed in PHP. Recently selected by University of Michigan. Drupal 5.0 incorporates the features of CiviCRM, an "open source *constituent* (customer) relationship management solution, designed to meet the needs of advocacy, non-profit and non-governmental groups."

   Cons: No static content export, database export, problem notification, sandbox, adjustable user interface (UI) level, or clipboard functionality. Limited prototyping, template language, content reuse, and undo functionality.

CONCLUSION AND NEXT STEPS

The preceding information, culminating in the short list of three "preferred" CMS solutions, represents the extent of WWG's findings to date. A number of previously discussed activities have not yet been pursued, including:

- Conducting a survey to assess member needs relating to the SAA website; and
- Conducting demonstrations and/or mounting test versions of preferred CMS solutions to gain a more hands-on perspective.

The Website Working Group will hold "office hours" in the Annual Meeting Exhibit Hall on Friday, August 29, 3:00-4:30 pm, to share its findings with conference attendees and solicit feedback. In addition, Brian Doyle will be conducting discussions with members in the Cyber Café (on Friday, August 29, 1:00-2:00 pm) on the usability of SAA's new website navigation. Results of these meetings will be collected and share with the Council as soon as they are available.

Appendix A: Content Management System (CMS) Specifications

I. **Scope of project**

The CMS will be one part of SAA's entire information systems network, which also includes:

a. SAA's *association management system* (AMS), or member database, which features a built-in Web server and dynamically publishes certain information to the "SAA Intranet" (http://saa.archivists.org). Note: Many of these pages *are* accessible to nonmembers, provided they are "registered" with SAA.
b. SAA's official *list server* (http://forums.archivists.org).

Due to the existence of multiple information systems, the following *guiding principle* is affirmed: When content can be administered in the AMS, it should be. In those cases in which duplication of records is unavoidable, the AMS record shall be considered the official copy of record.

II. **Administrative considerations**

SAA seeks a comprehensive CMS that will serve as a broad platform for known and as yet undetermined development priorities. A good solution will offer:

a. A relatively broad set of features in comparison to other systems;
b. A well-established user community;
c. Good documentation; and
d. Options for commercial support (hosting, programming, etc.)

III. **General technical requirements**

SAA should implement effective policies and system structures to govern Web site content authority in order to administer restricted-access pages and to ensure the proper retention and disposal of Web records. Technical requirements to meet these and other needs include:

a. Built-in wiki functionality
b. Blogs
c. RSS feeds
d. Pluggable authentication; dynamic administration of CMS user privileges via AMS (optional)
e. Ability to assign granular permissions including:
   i. *Read*, *create*, *edit*, and *delete* permissions for users
   ii. Ability to specify directory (or "sub-portal") access permissions

      iii.   Ability to revoke and/or transfer content authority in relation to leadership turnover and documents "belonging" to an organizational unit

  f. Content approval

  g. Audit trails and/or version tracking

  h. Collaborative workspace functions, including:
      i.   Posting/sharing of documents
      ii. Posting of comments
      iii. Version control

  i. Public feedback utilities for working documents, presumably including:
      i.   Ability to moderate and/or organize submissions (via bulletin board?)
      ii. Survey functions

  j. Ability to retain or delete previous versions, mark as hidden/public, etc.

  k. Ability to record metadata
      i.   Record creation date
      ii. Created by X
      iii. Last modified date
      iv. Modified by X
      v. Access setting (e.g., hidden, restricted, public)
      vi. Related SAA committee(s)/authorized access group(s)
      vii. Topic keyword(s) selected from controlled vocabulary
      viii. Record type
      ix. Record series identifier
      x. Retention period (i.e., future date)

  l. Optional use of global page design template and/or ability to choose from a selection of predefined templates

  m. Ability to run report identifying all records for selected sub-portal(s) where current date is later than retention period date

  n. Ability to export content in multiple formats
      i.   Plain text
      ii. Rich text
      iii. HTML
      iv. XML?

  o. In-house advertising management (e.g., conference, education, pubs promos)

IV.   Robust search engine and indexing functions

Because the CMS will be one part of SAA's entire information systems network (as discussed in Item I), a unified search function will necessarily require multiple entry points for indexing. Therefore, a separate search function may be needed to accommodate the CMS, the AMS, the list server, and any other content maintained on third-party servers. Other desired search functions include:

  a. Ability to search text documents by open keyword(s) with Boolean operators

  b. Ability to narrow search by sub-portal(s)

  c. Ability to browse/narrow search by controlled vocabulary

Appendix B: CMS Matrix

The following matrix was created to help evaluate prospective CMS systems against SAA's required specifications (see Appendix A).

- Information displayed in the 2nd, 4th, 5th, 6th, and 7th columns is copied from the website, www.cmsmatrix.org.
- Values listed in the "Weight" column represent informed opinion and seek to quantify the importance of the various specifications, which were subsequently sorted within in sub-section (e.g., System Requirements, Security, etc.):
  - Weight 3 = "Critical"   (Highlighted in BRIGHT YELLOW)
  - Weight 2 = "Important"   (Highlighted in LIGHT YELLOW)
  - Weight 1 = "Marginal" (or Undetermined)
  - Weight 0 = "Irrelevant"   (Highlighted in GREY)
- Values in the "SAA" column cross-reference the outline in Appendix A.
- Functional gaps for the three listed CMS solutions are highlighted for Weight categories 2 and 3:
  - "Critical" gaps are highlighted in BRIGHT MAGENTA
  - "Important" gaps are highlighted in LIGHT MAGENTA
  - "Marginal" gaps are highlighted in TAN
- The number of functional gaps for each of the displayed systems is manually calculated in the last row of the matrix.

WEIGHT	CMSMATRIX.ORG SPECS	SAA	DESCRIPTION OF SPECIFICATION	TYPO3	DotNetNuke	Drupal
	System Requirements					
3	Approximate Cost		The approximate licensing cost of this CMS. Note that there are almost always hard and soft costs beyond licensing costs for any CMS.	Free	Free	Free
2	License		The type of license this CMS is distributed under.	GNU GPL	BSD (Modified)	GNU GPL
2	Programming Language		The programming language that the CMS is written in and/or can be extended using.	PHP	ASP.NET 2.0, VB.NET, C#	PHP

				TYPO3	DotNetNuke	Drupal
2	Root Access		Is root (or administrator) access required to install this application?	No	No	No
2	Shell Access		Is shell access required to install this application? In other words, do you need to be able to log in to the machine (other than through FTP) in order to install this application?	No	No	No
1	Application Server		The application server or application environment required to run this CMS.	PHP 5.2+	IIS	PHP 4.3.5+
1	Database		The database engine this CMS uses to store content and settings.	MySQL, PostGreSQL, Oracle, MSSQL	MSSQL 2005/2000, MSSQL Express 2005, MSDE	MySQL, Postgres
1	Operating System		The operating systems this CMS is compatible with.	Any	Windows	Any
1	Web Server		The web servers this CMS is compatible with.	Apache, IIS	IIS 5.0 & IIS 6.0 & IIS 7.0	Apache, IIS
	Security			**TYPO3**	**DotNetNuke**	**Drupal**
3	Content Approval	III.F	Does the system provide for some level of system-wide content approval?	Yes	Limited	Yes
3	Granular Privileges	III.E.	Does the system allow read and write privileges on a per page or per content item basis, as well as separate privileges for other system functions?	Yes	Yes	Yes
3	Versioning	III.G	Does the system provide for some level of system-wide content versioning?	Yes	Limited	Yes
2	Audit Trail	III.G	Does the system keep track of who made additions, updates, or deletions?	Yes	Limited	Yes
2	Captcha		A challenge-response system designed to defeat bots from being able to use user-only features of a system. See http://en.wikipedia.org/wiki/Captcha for more information.	Free Add On	Yes	Free Add On
2	Email Verification		Does the system send an activation key to users to make sure they've entered a valid email address?	Yes	Yes	Yes
2	Login History	III.G	Does the system keep track of who logged in and when? Such systems also usually keep track of things like what browser the user was using and what IP address they came from, as well as unsuccessful attempts.	Yes	Yes	Yes
2	Problem Notification		Does the system provide a mechanism for alerting administrators (email, instant messenger, cell phone, etc) when it detects a problem? (Logging does not count.)	Yes	Yes	No
2	Sandbox		Does the system allow for a private area for content managers to try new content ideas without the worry of affecting the rest of the site?	Yes	Yes	No

1	Kerberos Authentication		Does the system support authentication via Kerberos?	Free Add On	No	No
1	LDAP Authentication		Does the system allow for LDAP-based authentication?	Free Add On	No	Free Add On
1	NIS Authentication		Does the system support authentication via NIS?	Free Add On	No	No
1	NTLM Authentication		Does the system support authentication via NTLM?	Free Add On	Yes	Free Add On
1	Pluggable Authentication		Does the system allow an administrator to plug in additional authentication schemes (from a vendor or homegrown) beyond the default proprietary authentication scheme and an LDAP authentication mechanism?	Free Add On	Yes	Yes
1	Session Management		Does the system provide some facility for an administrator to see who is logged in, what they are doing, and log them out if necessary?	Yes	Yes	Yes
1	SMB Authentication		Does the system support authentication via SMB?	Free Add On	No	No
1	SSL Compatible		Can this system be used with an SSL certificate on the web server?	Yes	Yes	Yes
1	SSL Logins		Can this system be configured to switch to SSL mode (HTTPS) for logins, and then back to normal HTTP after the login? This kind of functionality protects user login information from being sniffed.	Yes	Yes	No
1	SSL Pages		Can this system be configured to switch to SSL mode for certain pages (or sections), and then back to straight HTTP for other pages (or sections)? You may want this if the system is used partially for regular site content and partially to distribute confidential data such as customer invoices or medical records.	Free Add On	Yes	No

	Support			**TYPO3**	**DotNetNuke**	**Drupal**
3	Commercial Support	II.D	Can support be purchased from a commercial organization with trained staff members?	Yes	Yes	Yes
3	Online Help		Is there an integrated context-sensitive help system built in to the CMS?	Yes	Yes	Yes
3	Pluggable API		Can the system be extended through an open and documented application programming interface (API)?	Yes	Yes	Yes
3	Professional Hosting	II.D	Is there a vendor supplied professionally tuned hosting environment (application service provider) or has a certified hosting partner program.	Yes	Yes	Yes
3	Professional Services	II.D	Are there commercially available professional services organizations to customize or provide administrative services for this CMS?	Yes	Yes	Yes
3	Public Forum	II.B	Is there a publicly available forum or message board for the system?	Yes	Yes	Yes
3	Public Mailing List	II.B	Is there a publicly available mailing list for the system?	Yes	Yes	Yes

				TYPO3	DotNetNuke	Drupal
2	Commercial Manuals	II.C	Are there books or other commercially available documentation for this CMS?	Yes	Yes	Yes
2	Commercial Training	II.D	Can training be purchased from a commercial organization that has dedicated training staff for this CMS?	Yes	Yes	Yes
2	Developer Community	II.B	Is there a free online developer community specifically for this product?	Yes	Yes	Yes
1	Certification Program		Is there a professional certification or degree program for this CMS?	No	Yes	No
1	Code Skeletons		Does the system provide code skeletons or code templates to make it easy for new developers to write plug-ins for it?	Free Add On	Yes	Yes
1	Test Framework		Does the system have an automated test framework that can be used to test the codebase to ensure that it is functioning properly? This sort of framework is sometimes called Unit Tests or Smoke Tests.	Free Add On	Yes	Free Add On
1	Third-Party Developers		Are there third-party developers who manufacture plug-ins for this system?	Yes	Yes	Yes
1	Users Conference	II.B	Is there an annual users conference for this system where it's users can get together, discuss ideas, get training, etc?	Yes	Yes	Yes
	Ease of Use			**TYPO3**	**DotNetNuke**	**Drupal**
3	Server Page Language		Is there a server page language available like PHP, JSP, or ASP for easy one-off functionality?	Yes	Yes	Yes
3	WYSIWYG Editor		Is there a web-based rich text editor to allow publishers to create formatted content without knowing HTML, CSS, XML, or XSL?	Yes	Yes	Free Add On
2	Friendly URLs		Does the system have human-readable and search engine friendly URLs? (The alternative is that there are a bunch of symbols and numbers in the URL and the URLs are typically quite long.)	Yes	Yes	Yes
2	Image Resizing		Is the system capable of allowing users to resize uploaded images so they need not mess around with an external image editor?	Yes	Free Add On	Free Add On
2	Macro Language		Is there a macro language that allows content managers to place powerful functionality (like auto-generated navigation systems) without any programming knowledge?	Yes	Yes	Free Add On
2	Mass Upload		Does the system have a way of uploading/importing many images and other files all at once to save time?	Free Add On	Yes	Free Add On
2	Prototyping		Does the system allow the user to create custom default settings for the different kinds of content objects to save them extra clicks when creating those object types. For instance, if there is a particular template they like to use, can they set it as a default?	Free Add On	Yes	Limited
2	Spell Checker		Does the system have an integrated spell checker?	Yes	Free Add On	Free Add On

				TYPO3	DotNetNuke	Drupal
2	Subscriptions		Can the user subscribe to various sections of the site and receive notifications on new/updated content? These types of functions are typically found in the news feeds, forums, and blogs.	Free Add On	Yes	Free Add On
2	Template Language		Is there a templating language for powerful layout controls? (Note that templating languages are different from server page languages in that they are not capable of full programmatic functions, and are fully HTML compliant.)	Yes	Yes	Limited
2	UI Levels		Is there a means of "dumbing down" the publishing interface for less sophisticated publishers while keeping a more sophisticated interface for power users?	Yes	Yes	No
2	Undo		Does the system allow users to "undo" operations if they make a mistake?	Yes	Limited	Limited
1	Drag-N-Drop Content		Does the product allow the user to position content in a drag and drop fashion?	Free Add On	Yes	Free Add On
1	Email To Discussion		Can messages be emailed to the system so that they automatically appear in community discussions (forums/message boards)?	Free Add On	Costs Extra	Free Add On
1	Site Setup Wizard		Does the system give the user the option to create default content areas, styles, and other settings during setup of the site or installation?	Free Add On	No	Limited
1	Style Wizard		Does the system have a wizard for generating styles/themes/templates or whatever else a look and feel might be called in the system? These wizards would allow the user to step by step choose colors, layouts, logos, etc to create their own look and feel without knowing anything about HTML/CSS.	Yes	Yes	Limited
1	Zip Archives		Does the system allow a user to upload a zip (or other compressed file) full of static content, which is then published to the site? This sort of feature is used to do web-based mass uploads of static content.	Free Add On	Yes	No
	Performance			**TYPO3**	**DotNetNuke**	**Drupal**
3	Static Content Export	III.N.	Does the system have the ability to export it's content as static HTML so it may be served up from regional cache servers, or from static HTML web servers?	Free Add On	Yes	No
1	Advanced Caching		Does the system have advanced caching mechanisms that go beyond simple page caching? For instance, navigation, template, or content object caching?	Yes	Yes	Yes
1	Database Replication		Can the system take advantage of database replication for better scalability? The system would need to be able to perform reads from slaves and writes to the database master.	Free Add On	No	Limited

				TYPO3	DotNetNuke	Drupal
1	Load Balancing		Does the system allow you to put a load balancer in front of it to split the load between multiple servers? This would require that user sessions can be passed between all the nodes transparently.	Yes	Yes	Yes
1	Page Caching		Does the system have a mechanism for caching the contents of a page so that if it's requested again it can skip most of the work to create the page?	Yes	Yes	Yes
	Management			**TYPO3**	**DotNetNuke**	**Drupal**
3	Online Administration		Can the system be completely managed through a web browser? (The alternative is that there is some sort of offline client software that must be used to manage at least some components.)	Yes	Yes	Yes
3	Sub-sites / Roots	III.L	Does the system allow for sub-sites within a site that are self-contained with their own navigation and content hierarchy?	Yes	Yes	Yes
2	Advertising Management	III.O.	Does the CMS have a banner or other management system?	Free Add On	Yes	Free Add On
2	Asset Management		Is there a central repository for uploading images and other files so they can be reused through-out the site?	Yes	Yes	Yes
2	Clipboard		Is there a clipboard system that allows publishers to easily cut and paste content from one area of the site to another?	Yes	Limited	No
2	Content Scheduling		Does the system allow for content to be automatically added or removed from a site based upon date?	Yes	Yes	Free Add On
2	Inline Administration		Is content edited directly in the page that it will be placed? (The alternative is that there is a wholly separate interface for managing content.)	Yes	Yes	Yes
2	Themes / Skins	III.L.	Does the system have a mechanism to transport styles, templates, etc between sites so that you can create a theme on one site and then reuse it on many others?	Yes	Yes	Yes
2	Web Statistics		Does the system have built in web site statistics reporting for things such as pages/content items viewed, number of users per time period, etc?	Free Add On	Yes	Yes
2	Web-based Style/Template Management	III.L.	Is there a web-based interface for adding styles and templates to the system for design and layout control?	Yes	Yes	Yes
1	Content Staging		Can content be created on one server and easily "pushed" to another server?	Free Add On	Yes	Free Add On
1	Package Deployment		Can content and applications be packaged so that tedious repetitive publishing functions can be easily deployed time and time again without the repetition?	Yes	Yes	No
1	Trash		Is there a trash system to allow administrators or publishers to recover content that has been removed from the site? Note that this is not the same as recovering items from a versioning archive.	Free Add On	Yes	No

				TYPO3	DotNetNuke	Drupal
1	Web-based Translation Management		Can language translations be managed through and easy web-based interface?	Yes	Yes	Yes
1	Workflow Engine		Is there a full-fledged workflow system integrated into the CMS that can be used for business process management (or other duties beyond just content approval)?	Limited	Free Add On	Limited
	Interoperability			**TYPO3**	**DotNetNuke**	**Drupal**
3	Content Syndication (RSS)	III.C.	Can the system export RSS/XML feeds so that the content can be republished on other sites? Note that if it can only syndicate content from one function, such a "news" then it should be labeled as only limited support.	Yes	Yes	Yes
2	UTF-8 Support		Does the system support UTF-8 character encoding to enable multi-lingual sites without the use of separate code pages for each language?	Yes	Yes	Yes
2	XHTML Compliant		Does the system follow the W3C specification for XHTML compliance?	Yes	Yes	Yes
1	FTP Support		Does the system allow users to upload internal content and/or files via FTP?	Yes	Yes	Limited
1	iCal		If the system implements calendars, does it allow for the import and export of the iCal standard?	Free Add On	Yes	Free Add On
1	WAI Compliant		Does the system follow the W3C specification for WAI compliance?	Free Add On	Limited	Limited
1	WebDAV Support		Does the system allow users to upload internal content and/or files via WebDAV?	Free Add On	Costs Extra	No
	Flexibility			**TYPO3**	**DotNetNuke**	**Drupal**
3	Extensible User Profiles		Does the system provide a user profiling that can be extended with new profile properties through an administrative interface?	Free Add On	Yes	Yes
3	Metadata		Does the system support the adding of arbitrary metadata properties to all the content objects? The metadata is typically then used for profiling, indexing, or even auxiliary display functions.	Yes	Yes	Yes
2	Content Reuse		Does the system allow content to be mirrored (not copied, but reused) from one location to another on a site?	Yes	Yes	Limited
2	Multi-lingual Content		Does the system support the creation of sites with multiple languages?	Yes	Free Add On	Yes
2	Multi-Site Deployment		Is the system capable of hosting multiple sites from one software deployment? This means you can install the software once and host as many sites as you want. It also means that when it comes time to upgrade you only need to upgrade the software in one place, not for each separate site.	Yes	Yes	Yes
2	URL Rewriting		Is the system capable of rewriting URL or working with some other URL rewriting mechanism to provide shorter or friendlier URLs?	Yes	Yes	Yes

				TYPO3	DotNetNuke	Drupal
1	CGI-mode Support		Can the system run in CGI mode for development purposes or on low-end systems?	Yes	No	Yes
1	Interface Localization		Is the system localized/internationalized so it can be translated into other languages and take locale preferences like date/time preferences into account?	Yes	Yes	Yes
1	Multi-lingual Content Integration		Does the system support a multi-lingual version of each content object without republishing the content object. For example, if you create an FAQ in English, then all that needs to be done to display the FAQ in Spanish or another language is to translate the content, not create another page with another FAQ content object. Then depending upon user preferences it either shows one version or the other.	Yes	Free Add On	Free Add On

	Built-in Applications			**TYPO3**	**DotNetNuke**	**Drupal**
3	Blog	III.B.	Does the system have a blog or web log? (See slashdot.org for an example.)	Free Add On	Yes	Yes
3	Discussion / Forum	III.I.	Does the system have a message board?	Free Add On	Yes	Yes
3	File Distribution	III.H	Does the system have an application for distributing files including privileges for who is allowed to view/download those files?	Free Add On	Yes	Free Add On
3	Mail Form		Does the CMS have an application for creating customizable contact us type forms?	Yes	Yes	Free Add On
3	Syndicated Content (RSS)	III.C.	Does the CMS have an application for retrieving and displaying RDF/RSS/XML syndicated content?	Free Add On	Yes	Yes
3	Wiki	III.A.	Does the system support wiki or wiki-like functionality? Wiki provides online collaboration functionality as well as a simple text formatting language.	Free Add On	Yes	Free Add On
2	Database Reports	III.M.	Does the system have an application for creating database reports?	Free Add On	Yes	No
2	Events Calendar		Does the system have an application for tracking events and displaying events calendars?	Free Add On	Yes	Free Add On
2	FAQ Management		Does the system have an application to organize frequently asked questions?	Free Add On	Yes	Yes
2	Help Desk / Bug Reporting		Does the system have an application for trouble ticketing or bug reporting?	Free Add On	Costs Extra	Free Add On
2	Job Postings		Does the system have a mechanism for posting job listings?	Free Add On	Free Add On	Free Add On
2	Link Management		Does the system have an application to manage links?	Free Add On	Yes	Free Add On
2	Polls	III.I.	Does the system have an application for conducting simple single question polls?	Free Add On	Yes	Yes
2	Surveys	III.I.	Does the CMS have an application for conducting complex multi-question surveys?	Free Add On	Yes	Free Add On
2	User Contributions		Does the CMS have a system for allowing a user community to contribute stories and other content to the site?	Yes	Yes	Yes

1	Chat		Does the system have an application for real-time online chat?	Free Add On	Yes	Free Add On
1	Contact Management		Does the system have a contact management or rolodex type of application?	Free Add On	Yes	Free Add On
1	Data Entry		Does the system have an application for creating arbitrary data entry applications?	Free Add On	Yes	Free Add On
1	Document Management		Does the system have an application for managing offline document storage and versioning?	Free Add On	Yes	Limited
1	My Page / Dashboard		Does the CMS have a dashboard application (sometimes called a portal)? (See my.yahoo.com for an example.)	Free Add On	Yes	Free Add On
1	Newsletter		Does the system have the ability to allow users to add/delete themselves to/from a list so that they can be sent email from the system on various topics?	Yes	Yes	Free Add On
1	Photo Gallery		Does the system have an application for displaying a thumbnail / image repository?	Free Add On	Yes	Free Add On
1	Search Engine		Does the system have an integrated search engine that can index the managed content and allow the user to search the indexed content?	Yes	Yes	Yes
1	Site Map		Can the system generate a tree showing all of the pages in the system dynamically so it doesn't have to be maintained separately by the content managers?	Yes	Yes	Free Add On
1	Tests / Quizzes		Does the system have an application for administering tests and quizzes?	Free Add On	Costs Extra	Free Add On
1	Web Services Front End		Does the system have an application for directly interfacing with arbitrary web services such as the Google API and the various available methods from X-Methods, and then creating a templated user interface without coding?	Free Add On	Free Add On	Limited
0	Classifieds		Does the system have a classifieds application?	Free Add On	Free Add On	Free Add On
0	Events Management		Does the system have a way to create events and allow users to sign up for those events.	Free Add On	Yes	Free Add On
0	Expense Reports		Does the system have an application for tracking employee expense reports?	Free Add On	Costs Extra	No
0	Graphs and Charts		Does the system have an application that will allow the user to generate graphs and charts based upon some data set (SQL, text file, xml file, etc)?	Free Add On	Yes	No
0	Groupware		Does the system have email and calendaring (group scheduling) applications?	Free Add On	Free Add On	Free Add On
0	Guest Book		Does the system have a guest book or graffiti application?	Free Add On	Yes	Free Add On
0	HTTP Proxy		Does the system have a mechanism to proxy or mirror HTML and other content and applications from other web servers?	Free Add On	Free Add On	No
0	In/Out Board		An intranet application that allows staff to post their status. In the building. Out for the day, be back tomorrow. Etc.	No	Costs Extra	No

			TYPO3	DotNetNuke	Drupal
0	Matrix	Does the system have a matrix application similar to what you see here on CMS Matrix?	Free Add On	No	No
0	Product Management	Does the system have an application for displaying organized product information?	Free Add On	Yes	Free Add On
0	Project Tracking	Does the system have an application for managing project tasks?	Free Add On	Costs Extra	Free Add On
0	Stock Quotes	Does the system have an application for displaying stock ticker information?	Free Add On	Costs Extra	Free Add On
0	Time Tracking	Does the system have an application for tracking employee time for payroll or billing purposes?	Free Add On	Costs Extra	Free Add On
0	Weather	Does the system have a weather information system?	Free Add On	Free Add On	Free Add On
	Commerce		**TYPO3**	**DotNetNuke**	**Drupal**
0	Affiliate Tracking	Does the system have an affiliate tracking or referrals system for tracking partner sites that link in to the site?	Free Add On	Yes	Free Add On
0	Inventory Management	Does the system provide the site owner a way to manage inventory levels (quantities of product on hand)?	Free Add On	Costs Extra	Free Add On
0	Pluggable Payments	Does the system allow the site owner to plug in new payment gateways so they may use whatever payment processing mechanism (PayPal, PayFlowPro, 2checkout, iTransact, Authorize.net, etc) they choose?	Free Add On	Yes	Free Add On
0	Pluggable Shipping	Does the system allow the site owner to plug in their own shipping calculator so that they can charge based upon their needs?	Free Add On	Costs Extra	Free Add On
0	Pluggable Tax	Does the system allow the site owner to plug in new tax calculators?	Free Add On	Costs Extra	Free Add On
0	Point of Sale	Does the system tie into (or have built in) a point of sale system to enable site owners to run a brick and mortar store from the same inventory?	No	Costs Extra	No
0	Shopping Cart	Does the system have a mechanism for allowing the user to create a list of adhoc items to purchase, and then purchase all of them at once?	Free Add On	Yes	Free Add On
0	Subscriptions	Does the system have a way manage timed subscriptions that are tied into the commerce function? This requires recurring billing, billing cancellation, etc.	No	Yes	Free Add On
0	Wish Lists	Does the system allow users to create wish lists?	Free Add On	Yes	Free Add On
	Gaps (Crit./Imp./Marg.)		**0/0/0**	**0/3/3**	**1/5/4**