Web Design Programs and Tools

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Preview

Web design long ago grew beyond its origins as a relatively simple development practice focused mainly on a site's appearance and basic navigational structure. Design now incorporates database administration, content management, and software architectural considerations as well. But new concerns continue to emerge, including the recent rise of Web 2.0 technologies and services. Programs and tools can help to perform design tasks - provided that the right products are chosen according to the specific goals and demands of each individual project.

Report Contents:

Executive Summary

[return to top of this report]

As the Web has grown more complex, the number of tools needed to create and manage a typical site has increased accordingly.

A team of Web developers today might use different applications for each of the following tasks: page layout, graphic design, rich media creation, and building or integrating software programs. Many sites also use blogs, syndicated feeds (e.g., really simple syndication), and podcasts, which are created and distributed using additional tools. In the future, growth in the mobile Web and - further down the road - the semantic Web, may create the need for even more products.

The amount and diversity of all the files published on a typical business Web site create the need for content

management software to track and control items. Even project management software is sometimes needed to help coordinate the activities of a large, multidisciplinary Web team.

Organizations sometimes standardize on a certain Web development architecture to better integrate various projects. For instance, an organization that favors open source software may choose to adopt the LAMP development stack, which uses Linux as its operating platform, Apache as its Web server, MySQL as its database, and either PHP, Python, or Perl as its primary scripting language. (An alternative software stack, WAMP, substitutes Windows for Linux.)

An organization could foster interoperability by limiting the number of tools it uses and by trying to select tools from a small range of vendors. For instance, it could standardize on Adobe products for graphics and rich media applications. Yet even with the most aggressive efforts, the process of developing a Web site will still be complex, making it as much of a management task as a technical one. Therefore, the leader of a development team might be a chief information officer or project manager rather than a programmer or designer.

Description

[return to top of this report]

Designing a business Web site is a multi-faceted process. It involves creating a visually-appealing online presence that is also convenient to use, delivers a range of services (e.g., credit-card processing, searching), and manages a large volume of data (e.g., customer order history, product catalogs, billing information). Furthermore, corporate executives are likely to demand that Web development teams provide information about customer buying trends and other data for use in strategy development. And on top of all this, the site must be secure.

Organizations will use a multitude of tools to accomplish these tasks. Table 1 provides an overview of common categories of Web development tools and identifies some of the most popular products in each category.

Table 1. *Web Design Programs and Tools Overview*

Category	Description	Representative Products
Web Authoring	Web authoring tools are the key products used for creating Web pages and designing the fundamental layout and functionality of a site. The most basic of these tools, HTML editors, enable users to create simple Web pages. Although the simplest of these tools are not up to the task of being the primary application for building a complex corporate site, they may still be used as a tool for ordinary users to contribute HTML content that will be published online.	Adobe ColdFusion, Dreamweaver, and HomeSite; Microsoft FrontPage. There are also many inexpensive or free HTML editors, including the W3C's Amaya

Graphics Editors	Graphics editors provide designers with tools for manipulating image files. These tools are essential for creating images that conform to the look and style of a Web site, matching its overall design.	Adobe Photoshop
Content Management	Content management applications automate many of the tasks associated with tracking and storing data published on a Web site, from HTML files to video clips. In Web design, content managers serve two primary functions. First, they help regulate the approval of content for publication, and then automatically post approved content to its designated location on a site. Second, they provide the mechanism for offering Web site visitors personalized content.	EMC Documentum Platform, IBM FileNet Content Manager, Microsoft SharePoint, Open Text Livelink, Vignette Records Manager
Middleware/ Application Servers	Most of today's large Web sites pull data from a backend database. Middleware is a type of software that brokers connections between Web servers and databases.	Oracle/BEA WebLogic, IBM WebSphere, Oracle Application Server 10g
Web 2.0 Tools	These applications enable organizations to create and distribute content in one of the newer forms now popular on the Web, including blogs, podcasts, RSS feeds, and wikis. Many products address several of these technologies.	eTouch SamePage, MindTouch Applications

Decisions about which applications and tools to use for each of these functions will often be made in coordination. Many organizations choose to standardize their development efforts on a particular software stack, which is a group of platforms that collectively constitute a development platform. One of the most popular stacks is LAMP, which comprises the following:

- **L**inux
- **A**pache
- **M**ySQL
- **P**HP/Perl/Python

Each of these components is an independent environment. They were not designed to work together, but they have been deployed extensively as a bundle and have proven to be effective together. Also, many of the development issues involved in integrated these components of the stack have been worked out through the open source model.

The components of LAMP are all free and open source. As a result, using LAMP as a development platform can help organizations to contain costs. There are other benefits as well: LAMP is flexible, allowing organizations to build their own applications. Furthermore, the add-ons, application programming interfaces (APIs), and components that other organizations have built using LAMP are often available for use, providing proven, pre-built tools. Also, in the view of some developers, LAMP is more secure than Windows and other proprietary environments.

An alternative to LAMP is WAMP, which comprises the following:

- **W**indows
- **A**pache
- **M**ySQL
- **P**HP/Perl/Python

Application development technology and tools are often parts of a Web development team's arsenal. For instance, although a fair amount of scripting work is still done manually, there are some commercial products designed to assist in the development of Web-based applications. Debuggers may be considered a subset of this category. Products for rapid application development (commonly called "RAD") or software modeling are other related tools.

Current View

[return to top of this report]

In the early days of the Internet, Web design focused primarily on how Web pages looked. Today, however, design focuses just as much on what a Web site does - whether it provides RSS feeds, user customization, multimedia, and so on. This shift in the market has been mirrored by changes in Web design products. For instance, years ago, Microsoft's showcase Web development tool was FrontPage, an HTML editor with a WYSIWYG interface and compatibility with other Office products. Today, however, Microsoft's Windows SharePoint Services, which is designed to enable users to create business applications for the Web, is becoming more important within the company's product line.

Partly as a result of Web 2.0 developments, many organizations will use multiple tools for Web design. In the past, most organizations would use just one Web development tool for all (or at least almost all) of their Web design processes. They might have used one or two supplementary tools (e.g., Adobe Flash), but today, design teams are likely to find themselves using even more tools.

Outlook

[return to top of this report]

It is now a period of rapid growth and change in the Web sector, with new technologies and new applications for these technologies emerging quickly. Not long ago, talk about business uses for blogging, RSS, or Wiki technology was rare and highly speculative. Now, however, these technologies are part of the public consciousness and are being used by a fair number of businesses.

The use of service oriented architectures (SOAs) will continue to affect Web development efforts. An SOA consists of a network of individual software components that can be brought together and used as needed for specific projects. The SOA can form the back end of a front-end Web service. An SOA is a type of infrastructure, not a specific technology, but there are commercial tools that can be used to create this infrastructure:

- HP SOA Policy Enforcer (formerly OpenView SOA Manager)
- IBM WebSphere SOA

- Oracle SOA Suite (Includes software obtained in the BEA Systems acquisition)

Looking further down the road, there is a movement underway to fundamentally change the nature of data published on the Web. The movement seeks to make data easier for computer applications to automatically search and sort, creating a "semantic Web." Achieving this goal will involve the use of languages such as XML and Web Ontology Language (abbreviated as "OWL"). The development of the semantic Web will take considerable time, and it is not yet something developers need to consider when building sites. Developers may benefit from occasionally tracking the evolution of the semantic Web, however, because it could eventually be part of a massive shift in design practices.

Recommendations

[return to top of this report]

All but the simplest of today's online businesses are built with multiple design tools. There are two approaches to choosing which tools to use:

- The best-of-breed approach, which entails individually selecting the tool for each Web-design function. Organizations that adopt this approach will often allow individual members of the development team to choose their preferred tools.
- Approve a suite or a narrow range of products that can be used. With this approach, the interoperability of tools will be as important of a selection criteria as the capabilities of each. An advantage of this approach is that it is often less expensive because organizations will wring as much functionality as possible out of each product rather than purchasing a separate, specialized tool to fulfill a certain need.

Most organizations will use a hybrid of these two approaches. Organizations will already have many Web design tools in place, and these tools were likely acquired at different times. It would be disruptive and financially impractical for an organization to abruptly change all of the products it uses for Web development. Over time, however, as the natural lifecycles of products are completed and as circumstances demand the addition of new tools, organizations can enforce more uniformity on the line up of tools used to build their Web sites. Some flexibility can still be allowed, however. For instance, a list of products approved for use can include more than one item in a given category, giving individual designers and developers some latitude to choose their preferred tools.

Today, the process of designing a corporate Web site often involves many practices outside of IT, so Web development projects require a multidisciplinary effort. A Web team could be led someone other than a developer, such as a chief information officer, project manager, or even a business manager with little IT experience. There are project management tools available to help in overseeing a team. These applications may already be in use by other departments in the organization - there may even be some unused licenses. This could help to smooth some growing pains.

Finally, the effectiveness of any product should be put into perspective. No matter which tools an organization implements, there will likely still be the need for some manual processes (e.g., scripting), and a significant amount of staff expertise will still be required.

Web Links

[return to top of this report]

Adobe: http://www.adobe.com/
Apple Computer: http://www.apple.com/
EMC: http://software.emc.com/
Java (Sun Developer Network): http://java.sun.com/
HP: http://www.hp.com/
IBM: http://www.ibm.com/
Microsoft: http://www.microsoft.com/
Microsoft Windows SharePoint Server: http://www.microsoft.com/technet/windowsserver/sharepoint/default.mspx
MindTouch: http://www.mindtouch.com/
Mozilla: http://www.mozilla.org/
Open Text: http://www.opentext.com/
Oracle: http://www.oracle.com/
Vignette: http://www.vignette.com/
W3C: http://www.w3.org/
W3C's Amaya: http://www.w3.org/Amaya/
W3C's OWL: http://www.w3.org/TR/owl-features/

About the Author

[return to top of this report]

Geoff Keston is a project manager for a leading technology consulting and services company. In this role, he has been responsible for the successful completion of enterprise software implementations, network upgrades, and telephony implementations for major retailers, financial firms, and public institutions. Geoff also writes extensively on issues relating to software, data networking, and e-commerce, as well as on the cultural, economic, and political issues raised by technology. He is a Microsoft Certified Systems Engineer and a Certified Novell Administrator.

[return to top of this report]