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Web Publishing for the Individual, Not the Enterprise

by Jonathan Maybaum

Academic Web publishing is a complex and difficult challenge. Consider these paradoxical circumstances:

Technology administrators at academic institutions strive to produce Web sites that have a consistent look and feel.	<i>but...</i>	Individual faculty members and students need the freedom to express themselves creatively.
Public Web sites are necessary to support missions such as community relations, dissemination of scholarly output, and recruitment of faculty members, students, and staff.	<i>but...</i>	Private Web sites are needed to support research collaborations, the selective sharing of copyrighted materials, and the delivery of personalized data and services.
Novice users need a system that is simple enough for them make Web sites with hardly any training.	<i>but...</i>	More advanced users need a system that is flexible enough for them to make Web sites with few limits.
Central administrators need to be able to limit resource utilization and enforce policies.	<i>but...</i>	Local support staff need enough authority to be able to help their users expeditiously.

It is not surprising that most universities find it necessary to provide different types of Web publishing infrastructures for their constituents, such as conventional, do-it-yourself Web and database services, as well as template-driven solutions that include portals, [course management systems](#), and [content management systems](#). Even with these options, there are still important areas of academic Web publishing that lack complementary software. In particular, many individuals and small groups find it difficult to create and maintain customized Web sites and databases that fit their unique requirements.

In this article, I discuss the issues that preclude individuals from using existing software to produce highly customized Web products. I then describe a system ([UM.SiteMaker](#)) that was developed to addresses these issues, and identify the expected and unexpected outcomes of its use at the University of Michigan ([UM](#)).

The Age of Specialization in Web Publishing

In theory, anyone can create a Web site by taking advantage of the power and flexibility of conventional Web servers and databases. In reality, of course, the complexity of these tools is far more than most people can handle. This problem has spurred the development of various types of Web publishing programs such as [Blackboard](#) or [WebCT](#) that simplify the process by reducing the scope of choices presented to users. Although limiting choices has obvious benefits, it also curtails the user's ability to customize the site.

Most academic Web publishing systems have been designed to create Web sites that serve a single, specialized purpose. Focusing on one overall function allows developers to make a number of assumptions about the nature of the site content, the types of users who will visit and manage the sites, and the functions and behaviors that will likely be needed. Course management systems, a prominent example of this approach, capitalize on the fact that many logistical issues involved in classroom teaching apply to a wide range of courses. Because these issues are so common and well understood, software developers can design options that are appropriate for most classes. Faculty users can then concentrate on working within the predefined structure and enriching it with relevant materials. The stereotyped nature of Web sites within a

course management system is also beneficial to students who use the system for multiple classes, in that it gives them a consistent work environment.

Class Web sites typically contain copyrighted materials and other intellectual property that cannot be distributed freely. As a result, they usually are constructed as Web portals, another large part of academic Web publishing. There are different concepts of what a portal comprises. One common view is that it is a "customized, personalized adaptive desktop" (Strauss 2002, 36) that requires users to sign in so that they can access previously selected or private information and manage certain activities. Grades and class registration status for students, payroll and benefit information for staff members, grant management and other research administration functions for faculty members, and ubiquitous access to institutional e-mail accounts could all be part of a portal design. Although portals can take many forms, they share the overall purpose of aggregating information for display to a specific, authenticated user; typically they are not suitable for such functions as making a public Web site for professor's research lab, organizing a seminar series or scholarly conference, providing information about a university facility or resource, or other more-or-less idiosyncratic activities.

Content Management Systems: Designed for the Enterprise, Not for the Individual

At first glance, content management systems appear to be the obvious way to support the publication of all sorts of university Web sites, since their fundamental purpose is to provide a mechanism for template-driven site authoring (Clyman 2002). Indeed, a number of universities use content management systems for gateways and other high-level sites. However, I am not aware of any such systems that are made available to individuals, for their own personal sites. Why are content management systems not in routine use for *individual* Web publishing?

Cost may be one factor, especially when the fee for a content management system is based on the number of users registered in it. Some high-end solutions can cost hundreds of thousands of dollars, but there are also inexpensive and open-source content management systems, such as [Zope](#), [Lenya](#), and [Midgard](#). Cost is therefore not the only explanation.

Another possibility is that the requirements for enterprise Web publishing differ from the requirements for individual Web publishing, to the extent that systems designed for the former are unsuitable for the latter. For example, one assumption built into most content management systems is that defining the hierarchy of pages within a site, and establishing the links for navigation among those pages, should be the responsibility of a technically skilled person with the role of "designer" (or some equivalent name). A second assumption is that control of permissions for viewing or editing site content should rest with a system administrator—again, a role that demands significant technical knowledge.

These assumptions are appropriate for enterprise Web publishing, but they do not fit well with the usual scenario for individual Web publishing—in which a single, technically unskilled person is responsible not only for content creation, but also for determining page hierarchy and navigation, access permissions, and publication status.

UM.SiteMaker vs. Enterprise Content Management Systems

In 1998, while serving as Director of Academic IT for the UM Medical School, I initiated a project to develop a resource for individual Web publishing in response to faculty requests. This resource, which was funded jointly by the Medical School and UM central administration, became known as [UM.SiteMaker](#). Version 1.0 was deployed as a Medical School pilot service in 2000, and versions 2.0 through 2.5 were deployed on a university-wide production basis in 2001-2002. Versions 3.0 through 3.2, in which the [Data Tables](#) capability was introduced and enhanced, were deployed in 2003-2004.

Our major goals in designing UM.SiteMaker were to align the needs of individual Web publishers with specific

features and capabilities and to make as few assumptions as possible about the purpose of an individual's Web site, the content it might contain, and how that content might be organized.

The table below compares the roles and rights typically found in most enterprise content management systems with the roles and rights that can be assigned in UM.SiteMaker.

Enterprise Content Management		UM.SiteMaker	
Writer	Writes content	Site Owner	Writes, edits content Defines page hierarchy Sets publication status Defines tables to hold structured data Defines access groups Applies access control to assets
Editor	Writes, edits content Sets publication status Defines page hierarchy	Unit Admin	Creates sites Sets file space quotas for sites
Designer	Designs graphics and layout for page templates Creates sites	Style Admin	Designs graphics and layout for page templates
System Admin	Defines tables to hold structured data Defines access groups Applies access control to assets	System Admin	Determines unit hierarchy Sets file space quotas for units

This comparison is only an approximation, since each content management system entails its own unique framework of roles and rights. However, to the extent that the table is representative, it illustrates how UM.SiteMaker empowers individual site owners with control over many more aspects of their site than they would have, as a content contributor or editor, in a typical enterprise content management system.

In UM.SiteMaker, the Data Tables feature allows site owners to define their own customized data structures, and the Data Access feature provides a prebuilt front end for data tables. Unlike enterprise content management systems, which require the user to have programming and database administration skills to create customized data structures, UM.SiteMaker allows nonprogrammers to perform this task. This is UM.SiteMaker's most distinguishing capability.

Outcomes: Sample Sites at the University of Michigan

At this time (summer 2004), about 2,500 UM.SiteMaker Web sites are published at the University of Michigan. While many of these sites serve purposes that we anticipated, a large number have purposes that we did not foresee. The following list contains examples of both.

- *Faculty lab Web site.* Like other sites of its kind, the [Telesnitsky Lab](#) serves as a public relations hub for the lab director, her students, and her staff. It also is an important instrument for recruiting.
- *Student portfolio.* We expected that students would use UM.SiteMaker to create collections of their work in the form of portfolios, like [Alaina Dillon Feliks' MCOATT Application](#). Although it is quite possible that UM may adopt one (or more) systems currently under development for the specific purpose of organizing e-portfolios, it remains to be seen whether these highly structured products will be flexible enough to accommodate the various ways in which students want to display their materials.

- *Student organization Web site.* Organizations are an essential part of student life, in both professional and extracurricular areas. They typically have few, if any, resources designated to support their activities. As a result, when student groups have a Web presence at all, it is usually of low quality and functionality, and it often is not maintained over the life of the society. Organizations like the [American Student Dental Association](#) have found UM.SiteMaker to be an effective tool for creating and sustaining their Web sites.
- *Seminar series database.* The [Neural Plasticity: From Genes to Behavior](#) site was built by a graduate student who included a simple database for organizing her program's seminar series. We did not expect this to be a common application, but several other students and faculty members have used UM.SiteMaker to create an event calendar with features customized to fit their needs.
- *Conference registration and abstract submission.* Colleges and universities regularly host small- to medium-sized conferences, symposia, and other academic meetings. Event planners for a graduate student symposium in medicinal chemistry used UM.SiteMaker data tables to create the [MAGSS-2003 Abstract Submission](#) site and to collect registrations.
- *Service request form.* Data tables are particularly useful for developing survey or request forms. [Figure 1](#) is a form that allows users to specify international television broadcasts that they would like to have recorded. (Because it is meant only for University of Michigan users, the form is not available for public access.)

These examples only scratch the surface of what users have created with UM.SiteMaker; nevertheless, they reflect the degree to which the Web publishing needs of individual academic citizens are broad and, at times, unforeseeable.

Changing the Balance of Power

For the designers of UM.SiteMaker, one major strategic goal was to change the balance of power in academic Web site development—to shift the ability to determine Web site functionality from experts to nonprogrammers, to the greatest extent possible. Although many types of academic software are modular in nature and permit the addition of functionality at a local level, only a tiny fraction of people in the academic community actually have the programming skills to take advantage of this modularity. The Data Tables feature of UM.SiteMaker significantly expands the circle of users who can add functionality, by permitting faculty members, students, and local (nonprogrammer) support staff rapidly and inexpensively to build simple, customized database applications that otherwise could cost thousands of dollars and take weeks or months to implement.

The concept of simple, end-user development may be particularly relevant when it comes to enhancing the pedagogical value of course management systems. Most of the current features of these systems are designed to deal with common logistical issues like distributing resources and facilitating communication among class participants, but the systems generally do not provide functionality that is specific and/or unique to the scholarly aspects of a particular class. Although it is technically feasible to add customized tools or modules to course management systems, the programming resources needed to do so are not available to the great majority of faculty members. By providing an environment in which instructors can develop their own modest Web-database applications (or modify previously developed applications), UM.SiteMaker opens the door to the creation of tools that serve a unique set of requirements for an instructional or research project.

Conclusion

To the best of my knowledge, UM.SiteMaker is the first (and currently only) production service that offers academic *individuals and small groups* a template-driven alternative to conventional Web space, for general purpose Web publishing and Web-database development. The success of this system is affirmed by the rate and scope of its adoption (i.e., across virtually all major units at UM), as well as by the rich variety of creative

purposes for which it has been used.

Why has such a solution not been implemented elsewhere? The reasons are open to speculation, but my personal conclusion is that it is because the paradigm that dominates the design of most content management systems carries an implicit assumption of service to the enterprise (in the form of a publication where most people can contribute bits of content, but cannot create an independent publication), rather than service to the individual (by permitting each person to define their own unique publication). Weblogs represent a form of content management that does permit individuals to have (in effect) their own publications, and the popularity of this type of Web site reinforces the idea that autonomous Web publishing is an enormously under-served need. UM.SiteMaker takes this autonomy several steps further and, we hope, represents an example to show what individual academic users are capable of doing when given an appropriate set of choices and features.

[Author's note: The University of Michigan has signed an agreement with Global Village Consulting (Vancouver, CA) that makes the latter the developer and exclusive licensee of the application, under the name GVC.SiteMaker. This partnership enables other institutions and organizations to adopt [UM.SiteMaker](#) and have access to responsive and professional support. Although GVC.SiteMaker is not an open-source project, source code will be made available to institutions that make a significant commitment to improve the application. For information about online demonstrations and pilot installations, see the [Test Drive](#) section of the GVC.SiteMaker Web site.]

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