

Database-Driven Applications Provide Competitive Advantages and Streamline Site Maintenance

by Catherine Weber, president CW Consulting Group

CW Consulting Group's approach

CW Consulting Group takes a strategic approach to database design to ensure that it fulfills the needs of all users. The approach encompasses the following stages:

Stage 1: Conduct a thorough assessment to understand who will be using the content and how they will be using it.

Stage 2: Design the database content. This involves making a list of each data type to be collected and how it relates to all of the other data. At the National Park Service, for example, the park was the key element for data. All programs are associated with a park, and each program had data associated with it. The developer needs to first understand the relationship between the sets of data before the architecture can be built.

Stage 3: Develop the database architecture and visually display how data interacts with each other.

Stage 4: From this architecture, build a data model. This involves creating a physical database and then importing data into it to test its functionality.

Stage 5: Create user interfaces to display the data in a variety of ways to different audiences.

Stage 6: Create a content management system with data entry screens and different levels of security dependent on number of users and frequency of updates required.

Many organizations are grappling with the best way to manage and share vast amounts of information with their customers, partners, and employees. If they produce a significant amount of parallel data that needs to be shared with others, they likely will benefit from using a database-driven website. Parallel information is defined as information that has the same fields in common. For example:

- Common fields for an online retailer might be product number, price, product description, etc.
- Common fields for a financial services company might be stock symbol, company name, last sale, share volume, net change, etc.
- Common fields for a training company might be course name, course description, prerequisites, course location, price, etc.

Benefits of database-driven websites

Instead of creating hundreds or virtually thousands of individual web pages, site managers can employ a backend database that stores and displays parallel content in whatever format required. This frees them to categorize content in a unique way. For example, one online retailer appeals to fans of classical music by enabling them to search for music by composer name, conductor name, composition title, instrument, etc. This provides a more enjoyable shopping experience by allowing the user to search for music the way that they want. By letting people shop for what they want in the way that they want to, the retailer is building a loyal customer base.

Potential applications for database-driven websites

Database-driven sites aren't exclusively the domain of online retailers. Any organization looking to better manage vast amounts of similar information can benefit from this technology. For example, database-driven sites are used for:

- Managing employee records
- Checking inventory
- Tracking sales numbers
- Sharing financial data
- Collaborating on research projects
- Distributing educational materials

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Customize content for each audience

Database-driven websites also make it easy to “slice and dice” data in many ways for many audiences, tailoring the results for very unique uses. For example, the National Park Service uses a database to collect information about all of their parks in various regions. Some of this information is displayed externally to teachers looking for park field trip information, and some of the information is displayed on an intranet for park staff working on budget writing, grant proposals, and administrative reporting. Both sets of data are pulled from one central database. The database stores information that is useful to both audiences and the websites pull certain fields of information from the database to display to their individual audience.

The possibilities for database-driven sites are truly endless. An organization may have six different types of data and they are free to display it in six different ways to please each audience,

be it investors, customers, partners, or employees.

Simplify site maintenance

Databases provide a much more efficient way to maintain a website. For example, MyEnergyStar.com has a backend database to simplify managing their various online promotions. The database includes an expiration date field for each new promotion. When that date arrives, the promotion is automatically deleted from the site with no human intervention.

Elements of database design

Database design has to be done strategically. The first step is to understand what purpose the data will serve. Before building a database, a developer will evaluate not only what kind of data the organization collects but which data is valuable and to whom. They seek to understand how site visitors will use the data. This information is key to extracting the data in the way that users need it. All of these elements

need to be thought through very carefully before the architecture is created. Developers may ask to hold a session with the actual users to get their input. Initial questions include:

- What file formats do you want to generate?
- How will you use the data?
- Do you prefer that data is shown in a visual way?
- Do you search by category, product name, product type, or other criteria?

In addition, the developer will explore how the information realistically will be collected. For example, if a company relies on its customers to provide information via a lengthy online form, this may not be realistic. Obviously, the database is only as good as the data put into it. It can't generate information that wasn't entered or collected. This requires careful planning and good design.

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Success Stories

ENERGY STAR Northeast

MyEnergyStar.com is driven by a database of product and retailer information that helps consumers find ENERGY STAR products in the Northeast. It features product rebates and promotional events that motivate consumers to buy energy efficient products. The database is designed to deliver audience specific, dated content to millions of utility customers.

Essex National Heritage Commission's Educators Resource Guide

Essexheritage.org is the host of an educational program database of event and resources geared for teachers. CW replaced the organization's outdated resource guide books with the database-driven site that makes it easier for teachers to find the information they need, and makes it much easier for the organization to maintain.

Brigham & Women's Hospital

and Harvard Medical School needed an effective system to track usage and

disposal of radioactive materials in their many research laboratories. CW Consulting Group developed a LAN based system that easily enables administrators to know whom at the hospital is licensed to use radiation in the research lab, how many radioisotopes they have, and how they are disposing of radioactive waste. For more than ten years, this system has enabled the hospital to avoid potential fines by demonstrating to the regulating commission in a specific reporting manner how they were properly handling materials. In 2004, CW is upgrading the system to a secure web-based application using ASP and Access.

creative vision [with a plan]