A comparison of technologies for database-driven websites for medical education

Jens, D, Michael S H, Lars R R and Kristoffer W L

Medical informatics (2002) vol 27, No 4

Presented by Pengbo Liu 4, Jul 2003
Outline:

- Brief introduction of database driven websites
- Current available programming techniques
- Comparison and discussion
- Conclusion
Benefits of database-driven website

• It allows separation of design from contents, thus make it easier to adhere to a standardized setup of the pages.
• With database driven design, editing can be done from any internet connection.
Information flow for database-driven site
How to implement a database connection:

- Programming language-based access: C/C++, java
- Script language based access: VB Script, JavaScript, Perl, PHP, Python and ASP
- Application based access (middleware application): ColdFusion
How to connect databases: java approach
— ODBC standards

ODBC enables database-application connectivity by building a data source (Which is called DSN). It’s an abstraction of the database that includes the database driver, source file name and so on. Before the user send the query, the DSN must be created using ODBC administrator.
DSN view:
How to connect database: scripts language

1. Read the query parameter from the form submitted by the client
2. Connect to database, construct a SQL query and send it to the database
3. Receive the results of the query from the database and format them into html
4. Send the html page back to client for display
How to connect databases: Middle-ware application:

— perform security, user authentication, language support (java, C++, VB script), server fault tolerance, query caching, and database access. It supports ODBC.

— The major advantages of coldfusion is the drill-down capabilities, which is to click the data to reveal more detailed information
## Compare of 4 languages:

<table>
<thead>
<tr>
<th></th>
<th>Perl</th>
<th>PHP</th>
<th>ASP</th>
<th>CF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong>†</td>
<td>Free</td>
<td>Free</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td><strong>Embedded in HTML</strong></td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Ease of use</strong>‡</td>
<td>+</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Scalability/portability</strong></td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Database Interface</strong></td>
<td>+++</td>
<td>++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Text handling</strong></td>
<td>+++</td>
<td>+++</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Image handling</strong>§</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

†(+) : ASP is an integrated as part of MS Windows IIS server. (++) : ColdFusion comes in three editions: two commercial (Enterprise and Pro) and a feature limited free edition.

‡Based on learning curves and complexity of the code: ++++: Easier; + : More difficult.

§Based on power and availability of image handling modules.
Conclusion:

- For small organizations with low levels of expertise, relatively few data request, script language can be good choices.
- For larger organizations with more resources, or for applications that expect a number of data requests, Coldfusion is recommended.
- For larger organizations or those with specialized requirements, ODBC/JDBC can be considered.
Reference:

- Web-enabled database connectivity: a comparison of programming, scripting and application-based access Information System management 2002, 19, 14-22
- Evaluations of architectural designs and implementation for database-driven web sites Data and knowledge engineering, 2002, Vol 43 151-177
- Web portal: [www.intermed.dk/datadriven](http://www.intermed.dk/datadriven)