A Web Site Engine for the Development of Heritage-related Sites

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Traditional Web site development follows several, independent stages: theme analysis, site-structure design, graphical design of the site, and site-structure implementation.

Under the project GEIRA, a large number of Web sites, for archaeological sites and museums, are being created. Each one, in its own way, is unique. But, many features are common to all sites, or, at the very least, are widespread. Attempts have been made to take advantage of these common features [NETSQUARED, 1996]. The time and effort involved, in implementing similar features, could certainly be very useful elsewhere, should it become available.

While developing a number of sites, for museums in the north of Portugal, the need for a systematic approach to site development became evident (sites under construction are listed in a companion paper entitled, "Beyond traditional Web page designs - a communication language, between designers and web page developers"). Figure 1 shows a screenshot of a page from one of these sites, a silk-industry, archaeological project site, in the region of Macedo de Cavaleiros.

The key idea was to take a systematic approach [LAYZELL 1989]. The Web-site engine associated a web-site page structure with a database. Inserting a new record into the web-site database then automatically generated the main features and the structure of a new web site. This was a step beyond the current, database-oriented, web site development approach, which is mainly content-based [GORMAN, 1997].

The development team effort could then focus on the unique features and requirements of each site.

Two steps composed the development of such an engine:

- Definition of the database fields – identifying the relevant features, common throughout the several sites;
- Implementation of a flexible structure for the Web pages, capable of responding to the different design demands of each new site, using Active Server Pages [MICROSOFT, 1997].

The first step started out as a flat-level study – that is, collecting as much information as possible, sorting it out, and finally stepping back, in an effort to see the full picture. Common information fields would then be detected, ranked for relevancy and selected for inclusion in the Web sites.

Co-operation with a graphic design team was then necessary, to ascertain a group of possible designs to be used for all sites. Those designs required the use of specific, graphic elements for decoration, clearer presentation of information, etc. Together, the "design elements" and the information fields, made up the web site database. For greater access speed and efficiency, graphic elements were stored in the database as references – links – to the actual graphic files, which resided in the Web site's directory structure.

The second step considered the several, graphic design possibilities and used Active Server Page (ASP) technology, to dynamically create Web pages, based on the database elements. The server-interpreted code technology of ASP allowed each page to adjust itself, according to each database record's properties. This could also be achieved with DHTML, but the result would then have been browser-dependent, since a DHTML-compatible browser would have to have been used. That, in itself was a complex issue, since the two main browsers' DHTML implementations are different. Using ASP ensured that the Web pages would be viewable by the largest possible audience, since the client file is in plain HTML code.

The main point to be addressed in this second step was ensuring that the underlying structure could automatically respond to each site record's properties, avoiding the need for a tune-up, at each subsequent web site development.

The potential uniqueness of each heritage-related site is allowed for in the database-field definition stage. At that stage, specific screen areas can be reserved for the display of independent information, i.e. areas that are capable of hosting sub-sites. Specific control areas must also be defined at such a stage in order to account for possible communication requirements between the unique sub-sites and the enclosing site structure. The sub-sites can then be developed by independent teams, and be fitted into the overall structure as simple plug-in/plug-out "modules".

Acknowledgements

This work has been supported by the EC Programms Interreg II (contract number 02/REGII/6/96) and Feder, and by the FCT (Fundação para a Ciência e Tecnologia).

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List of Figures in CD-ROM.

Figure 1. Screen of the silk-industry, archaeological project site, Macedo de Cavaleiros' region