Web Information Systems Engineering: problems and solutions

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Recently a growing demand has arisen for methods for the development of small- and medium scale Web Information Systems (WIS). Web applications are being built in a rapidly changing environment where requirements are usually unstable. Short-time design and implementation are needed in response to the new technologies. Designing and maintaining Web applications are major challenges for today's software industry and researchers.

In this paper, we will try to give some basic ideas about Web site development, discussing modeling issues and techniques. We will consider the current techniques, implementations, and introduce some (conceptual) problems as well.

Our work focuses rather on the design and construction of Web application, than management. Flexibility is a major requirement in such applications, and also in a database-backed environment for the structure and presentation of the sites.

We want to reveal the problems with current methodologies and development approaches, and to introduce a new aspect of the modeling. How to divide the business logic layer into two parts: the pure application logic for managing the workflow of the application and the storage logic responsible for the data structures. We will show the role of XML: why to use XML to support both the reuse of content and context- dependent delivery. The XML documents can be easily transformed with XSLT templates and transformers to achieve universal client access.

We will show some code examples to demonstrate problems with modularity and code mixture of business logic and presentation elements within one software module. This has to be clearly separated into two distinct modules to allow of the reuse of both logic and presentation modules. Following the guidelines of the Model-View-Controller design pattern during the development process makes it possible to achieve a well- structured and modular system.

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