A Survey on Re engineering Approaches: Web site Evolution

CSE6329-Project proposal-Team 3
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Sounds familiar, Okay make sure to do the scholarly article survey of several sources, not just one single book or just another survey paper.

Paper Proposal:

Abstract:

All Web-based systems do not share same characteristics and requirements. There are various categories of web-based systems. Each category requires different technology and evolutionary path or reengineering approach for an organization's development. This paper presents the processing of V-model for reengineering in web application which is an extension of V-model used in software domain. In addition to that, the paper also presents the transaction reengineering framework Ubiquitous Web Application (UWA) which is used for reengineering of transaction-oriented web sites. The paper also talks about a process that can be used to reengineer the traditional web project with AJAX used in interactive dynamic web applications.

The reason for considering various reengineering approaches is to avoid the increase in the software maintenance cost that occurs due to poor understanding of the system code and design to implement a new code. Reengineering based on web based system improves the quality, reliability and maintainability of a web site throughout the software life cycle.

This is a survey paper which will be organized as follows:

1) We briefly describe the various web based systems
2) Reengineering methodologies and tools used for various web systems.
3) Merits and Demerits of each methodology
4) Result of case studies
5) Problems faced during each approach
6) Manual reengineering and automated reengineering of the web sites along with the effort estimation.

Introduction:

The demand for redesigning of existing websites is growing day by day, as technology and design styles change quickly and it is important that the website remain consistent and current with these changes. Many Organizations want their websites to be migrated from traditional system to modern ones so that they can get maximum benefits out of the new options/opportunities that are available. Reengineering is an approach used for such a transformation of websites. Here an existing system is analyzed and altered into a new form. Reengineering approach mainly used when the maintenance cost is not feasible.

Reengineering has following three stages:

- Reverse Engineering: In this phase, the design or specification of an existing system is obtained from its source code using static analysis and dynamic analysis.
- Transformation: In this phase, the web architecture is altered, modified and improved to cope with the new technology and new environment.
- Forward engineering: In this phase, high level abstraction and logical implementation is moved to independent design and physical implementation. It includes sequence of steps from requirement, design and implementation.

All web-based systems do not share the same characteristics and requirements. There are various categories of web-based systems. Each category requires different technology and evolutionary path for an organization's development. The web sites would range from static, limited-purpose to the highly dynamic ones. Accordingly the reengineering procedures would change based on the web-based system type.

Category	**Examples**
Interactive	Registration Forms ,Customized information Presentation
Transaction	Electronic shopping, ordering goods and services, banking
Informational	Online newspapers, catalogues, newsletters, electronic books

Following are the re-engineering process models used for evolution in web-based environment:

Re engineering V Model - Informational web sites/Interactive web bites: Reengineering V-model is similar to traditional V-model where the left side of the model describes the stages of the design and coding and right side describes the corresponding stages of validation process.

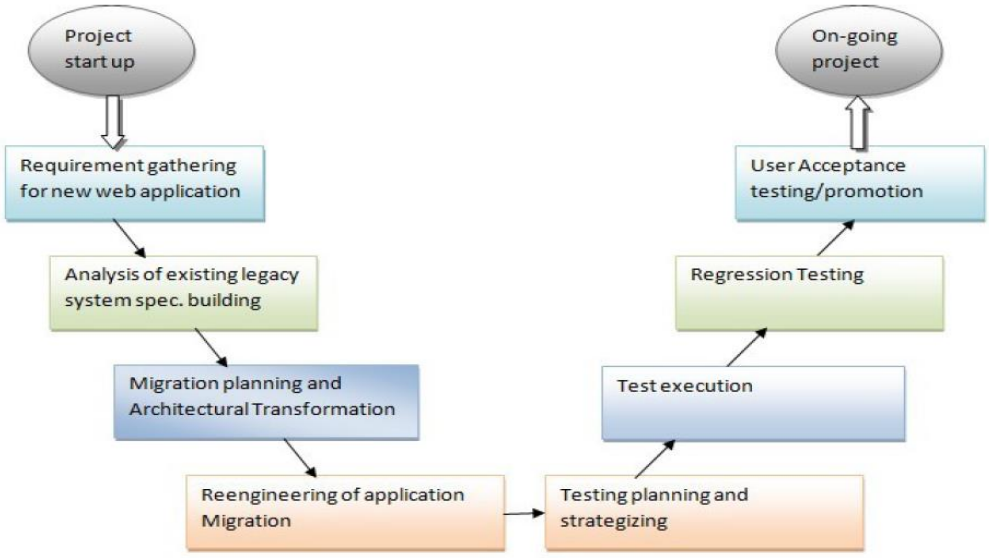

Figure 2: Web re-engineering V Model

The proposed V-model has its own advantages – It increases the maintainability and effectiveness of website as it provides better validation and verification. It saves the reconstructing or refactoring time due to strong testing and validation. Further details on this will be provided in the final paper.

Transaction reengineering framework – Transaction-based web sites: In transaction-oriented web sites, series of activities are executed by a user to carry out a specific task (e.g. Railway Reservation website).In most of the cases the transaction design is hidden in the overall system implementation and the system has unpredictable workflow, which makes the evolution of transaction-oriented websites difficult. In this paper we would like to discuss about a technique for website evolution via transaction reengineering.
The transaction reengineering process relies on formalism that is a user-centered extension of the Transaction Design Model of the Ubiquitous Web Applications (UWA) framework. Here the goal of this approach is to build a transaction design that better reflects the user experience and helps in better evolution of the web-based application. An example of the travel industry is used to explain this process.
The UWA framework provides a suitable starting point. UWA is a simple and elegant web apps framework that uses XHTML for structure, CSS for styling and JavaScript/Ajax for behavioral/DOM control. UWA lets developers "build once and run everywhere". This framework provides a methodology for web applications with characteristics like multi-channel, multi-user, and context aware. It focuses on four main areas in developing a web application. The transaction design process with UWA methodology produces two conceptual models. These models concentrate on hierarchical relations, semantic relations and design issues with have direct user impact.

Swift Converting Process - Traditional Interactive web sites: The process in used to reengineer the existing traditional interactive web site to AJAX swiftly.
The process includes following steps:

- Extract Template
- Generate Skeleton
- Rewrite Index Page
- Rewrite Front Controller
- Convert JSP to JAVA code automatically
- Merge the result above

The web site reengineering can be done automatically, the approach mentioned in this paper uses **automatic convert tool**, which will complete the entire process quick while saving 90% of workload.

Result of case studies:
The paper provides set of case studies with results .Which are obtained by considering an example of the travel industry and Google.com website to illustrate the various reengineering processes.

Problems faced during each approach:
Apart from identifying the advantage of each approach the paper also addresses the problems associated with it such as creating unique design models, identifying form requests in interactive web sites etc.

In this paper, we intend to explore various techniques and tools that can be used for website reengineering based on their types. The results of these studies will be completely explained and published in the final paper.

References:

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