

Web Engineering Reuse

Pardeep Mehta
Assistant Prof Computer Science
HMV College, Jalandhar (Punjab)
Email: mehta1_pardeep@yahoo.com

Abstract- Web engineering is a discipline which deals with the web-based systems and applications, their analysis, designing, cost-effective development, operations, testing of web applications according to their operations needed to be performed and maintenance of the high-quality applications. There are many things which are common in many websites in a particular domain. By reusing a successful web-based application, another one can be developed. This paper is critical for those who want to create there new web pages from there old pages. However, reuse, in this case, is not easy. As we know the reuse of the web applications is not so easy. This paper highlights some of the challenges for reuse in web-based applications.

Keywords: *Web engineering; Usability; Security; Navigability; UML*

I. Introduction

Web engineering is everywhere and is becoming more and more integrated part of small and large company's business strategies. Moreover, it is spreading at a breakneck pace. Almost everybody nowadays wants to host their websites and web-based applications on the net. As a result, millions of websites get hosted daily and become a part of the vast network. It is also encouraging to see that as companies are hosting their websites, they have recorded a tremendous increase in their business. Earlier, the website used to be static, but now these are changing to dynamic. The logic behind the design of dynamic websites is web engineering. As a traditional software process development, web engineering also has many phases of development. There are some portions of websites which are common to all websites. Thus, those parts can be designed from a reuse point of view to save time and efforts. This paper summarizes all the phases of web engineering and the one where reuse can be applied.

II. Phases of Web Engineering

Generally, the following phases are used in web app development. However, these may vary according to the engineer also. The phases are as follows:

A. Customer Communication

It is the first and foremost step in web app development as it deals with collecting the requirements to get an idea of why the web application needs to be developed. There are two major tasks in this phase: first, the business analysis and secondly the formulation.

In the business analysis, we find why we are developing the web-based applications, what help it can do or advantages it will provide to us, and will the new application be integrated with other applications and database.

The formulation is the activity which deals with customers and asks for requirements specifically to

Their needs, or gathers information through the survey, are not being developed for a particular customer. The web engineer must ask many questions to understand the requirements and what problems it can solve. Some of these questions can be: what is the purpose of the web app, who are the target audience, any specified type of look and feel required, etc.,

B. Planning

After getting the requirements, the next step is planning. In this step, usually the strategies about

How to proceed with the requirements are gathered, and some meaningful things are developed out of it. During planning, we do consider things like what technologies should be chosen to work upon, approximate period needed to complete the project work, taking care of business goals and interests of the company and understanding how to achieve those goals, risk related to the project, testing and quality assurances activities, even the post-release activities, etc.

C. Modelling

It is the process which gives us the blueprint or a model using which we can develop the web.

Applications. During designing a site map, the developer should keep in mind the generic views and some.

Specific views, as these views are the guidelines for development. However, the design must contain enough information that shows how the developer can translate the requirements into the final product. The designer must adhere to the requirements and make designs accordingly. If the designs are made for unknown users, the developer must check on the likes and dislikes of the target audience. The design goals that must be followed while developing a web application regardless of its domain, size, or complexity are simplicity, consistency, robustness, navigation, visual appeal (look and feel) and compatibility.

D. Construction

In this phase, the actual functional web app is developed. The aim is to develop a good interface which is easy to understand and navigate. The navigation is an essential part while dealing with web applications because the visitors must quickly navigate the web application. There should be no dead ends in the web sites; the user must at least reach a home page from the current page. The navigation helps a user feel comfortable with the interface. However, the question arises about managing the links between the functions provided and the objects providing them. For this, we have to apply the relationship-navigation analysis. This provides a series of steps which help us to identify the relationships.

Some basic rules must be followed while development these are - not too much text on a single page which makes it monotonous and boring to read, use of minimum animation and that too according to need. The development needs a wide range of skills, so teams are made, and roles are assigned to people accordingly. Some of the roles assigned are content developer, web publisher, business domain experts, administrator, etc. Building a team is not an easy task and making the team who jells together is certainly not. Specific vital points must be remembered while building a new team such as establishing a set of team guidelines, strong leadership, commitment from each member, etc.

There is an essential step in the life cycle where the testing of your web app is done. Testing begins with the completeness of functionality, user interface, design architecture, navigation, component, integration, configurational testing, performance testing and the cross-browser compatibility. So the developer must ensure that whatever the codes must be following the current technology and standards.

E. Delivery and feedback:

Once the testing gets over, and the developer gets approval from one and all, the web app is delivered to the customer. The development is not over after delivery, as the developers have to deal with the recent technological changes, updating new content or offering new products.

The customer feedbacks are also essential to keep the web app updated. All these updates help maintain the traffic and needs changes according to the customer's interests.

III. Challenges for Reuse

Over the past few decades, the web application developed has become complex from simple.

Implementation earlier. For example, the number of users has increased tremendously, the expected time for development has reduced, but a change in requirements has increased a lot. Due to this, there are several challenges faced in each life cycle phase of web-based application development. Some of these are summarized in Table 1.

Table 1: Reuse Challenges in Web Engineering

Web Engineering Phase	Reuse Challenges
Requirements Gathering	Complex and rapidly changing requirements, broader scope, multiple users with different cultures leading to more variations and conflicts in requirements
Planning	Time constraints; cost-effectiveness
Design	Object orientation to promote reuse of objects across websites, data structuring capabilities to reuse the data structures effectively, genericity, flexibility and adaptability, navigability and usability, use of UML
Development	Complexity, changeability, invisibility and unrealistic schedule
Testing and Delivery	Vast users with different demands, so extensive navigation testing and usability testing; security testing for web an application transmitting secure data like online shopping and banking etc.; stress and load testing to see the effects on performance with an increase in the number

	of users accessing the web sites; rigorous Regression testing.
Maintenance	Availability; immediacy; concurrency; network intensiveness

CONCLUSION

Web engineering is essential as web apps are increasing with the use of the Internet and technologies like cloud computing, grid computing etc. To find the scope of reuse in web-based applications, this paper highlights some of the challenges that must be handled effectively. All should be considered critical in order to succeed in a high level of reuse in the web app's development which can reduce the time, effort and cost by a large proportion and also Improve the quality of the web-based applications. This Paper can be very useful for those who want to create New website with there old website patter because there Are any things which are familiar with almost all the websites.

References

- [1] Pressman R.S.:Software Engineering A Practitioner's Approach.
- [2] Jarzabek S.: Pettersson U. Cost-Effective Engineering of Web Applications.
- [3] Murugesan S. : Deshpande Y., Hansen S. and Ginige A. Web Engineering: A New Discipline for Development of Web-based Systems.
- [4] Manola, F.: Technologies for a Web Object Model. Internet Computing.
- [5] Hadjerrouit S.: Designing a Pedagogical Model for Web Engineering Education.
- [6] Ginige, A.: Web Engineering: Methodologies for Developing Large and Maintainable, Proc IEEE International Conference on Networking India and the World.