Faceless Componentization in Web Dynpro ABAP - IT Project Management Strategy

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Abstract

To face the challenges of the modern competitive business environment, the best companies ensure transparency in all the aspects of their work, enabling them to react quickly, with high quality information, efficiency, and flexibility. With the help of the SAP NetWeaver technological and integration platform, the software applications enable the companies worldwide to improve their relationships with both customers and partners, to streamline their business and gain significant benefits throughout the organization. The goal of this paperwork is to study the faceless componentization technique of a Web Dynpro project as strategy for an IT management project. © 2012 Published by Elsevier Ltd.

1. Introduction

Regardless the evolution degree of the software development processes or methodologies used in software project development, their success is a problem for most IT companies. Most software projects fail because of their excessive complexity, constant changes, as well as poor communication between the final users and the IT professionals.

Issues about finding solutions for the software projects success is linked with good project management practice. We have to solve some problems, such as new organization and constant improvement with particular emphasis on cooperation amongst people. And enterprise management software should generate itself and promote the value of the environment for cooperation.

Various studies [1], [2] show that there is no general solution for the organization and development of the software projects. Instead, we should concentrate on constant improvement. The software is very difficult to fit in ISO 9001, because it is too special and too different from the production materials. These particular features of a software project (problems such as: understanding all needs, unceasing change, inevitable uncertainty, and inherent compromise) are targeted to be directed toward the improvement efforts.

In this paper, we intend to point out, based on a case study application (Figure 1), that the faceless componentisation technique of a Web Dynpro project is a good project management strategy. The subject of our

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study is the application Web Dynpro implemented through faceless component, meant for internet promotion based on specific methods. We implemented the application in a measurement and control electronics company.

The application provides information about the company and its business, an online product catalogue with relevant information about the company, including data sheets, possibilities of online product ordering, as well as services, news and information about the measurement and control devices.

2. Web Dynpro ABAP Framework - General Features

The Web Dynpro for ABAP [3] (shortly called WD4A or WDA) is the SAP current standard for the Web development in ABAP environments. It contains a runtime environment and a graphical development environment with Web Dynpro tools that make up a special framework, already integrated within the ABAP Workbench.

Ever since the beginning, there was an excellent communication between the first developers of all the applications that use the core WD4A framework and the groups responsible for the development and implementation of this framework. As a result, new ideas and suggestions about WD4A expansion have aroused the interest and confidence of the development departments. Surely, the WD4A framework will be developed and expanded constantly with new features.

The WD4A framework was completely developed in ABAP Objects. The WD4A applications use a variety of technologies, such as: HTTP, HTML, CSS, XML, and client-side scripts behind any Web application. The WD4A development objective is to encapsulate specific details and connections among these technologies, so they become easy to any programmer who can fully concentrate on the implementation of logic programs.

The basic paradigm for this framework is the MVC paradigm - Figure 2 [4]. The MVC design is not a new concept (developed in 1979 by SmallTalk developers for Xerox Company). The applications have also increased their size and complexity over time. The MVC design is widely used and accepted.

![Figure 2. Web Dynpro ABAP design](image-url)
MVC stands for Model-View-Controller [5] and it is a software design pattern (pattern, structure, and model) that enables decoupling of the data view model (user interface).

The controller is an intermediate component that facilitates the communication between them. Any framework works on the MVC principle. However, in case of a Web Dynpro framework, the design data separation is reflected by the objects producing data and the data consuming objects. Meanwhile, the entire structure is designed with components.

The user interfaces can be developed in the WD4A framework by two techniques: the declarative interface, when the structure is known before the runtime, and dynamic, when the interface structure is partially known at runtime.

One of the advantages of the Web Dynpro framework in the web development is the web dynpro components reuse in other components [6]. Therefore, the components are similar to the classes in object-oriented programming. They can be instantiated, but cannot be used as types and classes and, similar to the classes, they do not use the concept of inheritance.

3. Faceless Componentization Structuring Technique

The stages of developing such a complex project according to the faceless technology are: implementation and training components for enabling the structure, as well as component structure preparation by making the 3 components - view, model and controller; linking the components for enabling the structure and decoupling in the visual model is also important.

First of all, the faceless component of a project contains nodes which are common to several components used for the project. They also contain other nodes, nodes that we want to be visible in order to extend the project. It also contains some popular methods of these nodes (supply methods) and logical methods belonging to the project (after the last phase of design and implementation).

The link between the Model (Faceless component) and the visual (View component) is enabled according to the MVC paradigm, through the Controller component.

The Web Dynpro project component design is possible due to the MVC design, which is the basic structure for the Web Dynpro ABAP's framework. It has some advantages, such as: entrusting the project to several design team members, modelling and structuring the project, and reusing all the components. Thus, the Web Dynpro project consists of a number of Web Dynpro components (controller, model and view). In such case, the controller is the main component that connects both model and view, and which contains the Web Dynpro application.

For better maintenance of the project, as well as for properly expanding and allowing the component reuse in other projects, we would rather build the logic within the component model. This requires a greater programming effort, and we perform it only if necessary (i.e. large scale projects).

4. Faceless Component Technique - IT Project Management Strategy

The concept of the Model View Controller (MVC) design-pattern is based on the separation of the data model from the visual elements. The link between them is made by the controller. The benefit of such a design is that it enables developing different views of this same information and reuse components containing these views. Within a system developed in accordance with the MVC design pattern, the individual components are independent of each other and may be modified and extended.

Using the MVC design, we reduce the development time of an application, by reusing all its elements and using less time and effort for enabling the project maintenance.

The Faceless Component Engineering for a Web Dynpro project implements the concept behind the MVC (Model View Controller) design-pattern by itself. Therefore, it will also take over all its benefits. Thus, the component structure contains a component view, a component model, and a controller component that connects them.
4.1. Project organization in terms of technique faceless component structuring

The goals of the project can be clearly divided into components. Each component should visually resolve such an objective. Therefore, the project planning may be effective.

By dividing the project requirements, we are able to develop independent components. Thus, the work can be also entrusted to all the team members. Also, the team can be effectively selected, based on its members’ skills.

The software development cycle of the project can be easily done. The project development stages can be clearly delineated according to their activities: local components development and testing, preparing components for segregation, making component structure and binding components to the structure, decoupling the data model of the visual design and testing the project.

The project management is obvious because it is possible to control the project by intermediate testing.

By decoupling the data model of the visual, the logic control of the project is concentrated on the model element, so that any change required by the client in the intermediate stages can be easily performed as far as the codes are concerned, according to the appropriate methods, and since the nodes population with the data of the model component are obvious throughout the project.

4.2. Project Testing In Terms Of Faceless Technique Component Structuring

The whole project testing is made with the controller component, in which the Web Dynpro application is performed.

4.3. Project Change from the Faceless Technique Point of View

The Faceless component structuring enables changing both the logical and project level, as far as the visual components are concerned. We can add new components to the component structure, or to remove some structural components by detaching them. Thus, the maintenance and further development of the project may be done effectively within a team.

So far, we conclude that the faceless component structuring technique is a good strategy for the IT project management.

5. Conclusions

The Web Dynpro is one of the leading technologies used for the development of Web applications from a SAP integrated high quality system, and the faceless component structuring technique is based on the MVC (Model View Controller) concept, which is the best strategy, both in terms of management and strategy software.

The experiments we have described show that the faceless component structuring technique of a Web Dynpro project is a powerful strategy for the IT project management. Using this technique, we can achieve very complex projects through teamwork. The project is divided into components that can be individually made and tested. We can easily manage the project during the implementation phases. Then, the individual components are prepared for component structuring. At this point, they can be reused in other projects. By attaching these components to the component structure, the data becomes accessible throughout the project (the popular methods of context-node turn into component model, which is the faceless component).

By segregating the data model of the visual design, the entire logic control moves to the component model. A code sequence used in several components may be written once as a model of the component interface method, and then method may be invoked when required. The visual component is enclosed in the view, and the controller component links both the view and the model. Such a complex project, made of individual components, becomes a global assembly which is logically controlled by one single component. Adding components to enable the project development is very easy. It is possible to remove several components without “corrupting” the integrity of the project. This technique makes the project stages easier. The monitoring phase of their deployment may be also accurate, since each team member knows very well what to do. Thus, a very complex project becomes easier to plan, monitor, develop and, subsequently, change for enabling the development. A stated argument is the application of the case study that helped us capturing all these aspects.
To conclude, the Web Dynpro framework is not only a tool for creating sophisticated presentation pages with graphics and animations, but it is also a powerful tool that allows the availability of techniques and the development of new generation complex business applications.

References


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