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## A Web Architectural Study of HTML5 with MVC Framework

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**Abstract**— In the modern web application environment lot of changes are observed at different level of web access and processing. These changes include the Mobile and Android dominated Web applications, platform and browser independent web frameworks and the technologies. Client side web deployment using Flash and HTML5. In this presented work, A Study of such an integrated MVC framework architecture is studied under HTML5. The Integrated framework provides the effective Web application development for the Mobile and PC users. The analysis is also done respective to the MVC components and the collaboration with HTML5.

**Keywords**— HTML5, MVC Framework, Mobile Application, Web Application, Web Architecture

### I. INTRODUCTION

The modern business software and the applications are defined under the web environment. Most of these applications are customer oriented to distribute the services and the products over the web to different users. There also exist different payments to purchase products, to pay bills, reservation etc. A Web Architecture is a three-tier architecture that includes the client, server and the database. In the modern Web System, the server side of web architecture is future divided in number of levels [1][2]. The standard Web architecture is shown in Fig 1.

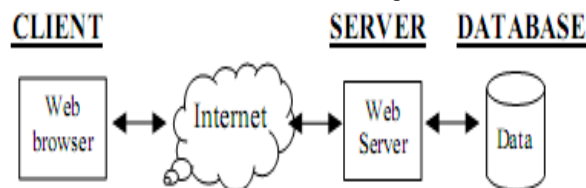


Fig 1: Standard Web Architecture

As shown in Fig 1, the two ends of internet are the server and the client. Server here distributes the services and products to web clients. The server interact with DB to perform work on user requests and to provide the effective query results [3][4]. With the increasing number of users and the development of different web requirements, lot of enhancement is done in existing web architecture and the applications. This application architecture is been improved in last few years. The evolution of the web architecture, component and application from the conventional web system to modern web systems is shown in Fig 2.

The development of web system begins from 1990 when the HTML 1.0 was used as the basic web language. Most of the web pages were static. Later on the improvement was done in the form of server side involvement to the web architecture. This involvement was been defined using CGI scripting. It gives the generation of Server side language and the dynamic pages over the web. Along with this, the first MVC framework was introduced to provide the effective client-server architecture. ASPs, PHP, ColdFusion were the base language of this era. With the years, the improvement on the web browser structure was also done and new client effective web browsers were introduced. That shared the load and the privacy of server side and connects it with client side. Along with this, number of different web applications and the components were introduced that are integrated with existing web architecture in the form of web plugins [5][6].



Fig 2: Evolution of Web System

This advancement includes the dynamic web page generation and the active web page management. Different web API's were introduced to improve the functionality of server side and client side functioning. These improvement were done in browser, language constructs, application based as well as server based. To provide the inclusion of different kind of web data as well as security, different HTML versions were introduced. These versions are compatible to different available web browsers and the platforms. In the recent time, the modern web architecture is introduced with the involvement of HTML5 and the new MVC framework. In this new framework, the support is provided for different web and mobile applications as well as the environments [7].

In this section, the Conventional and Modern Web architectures are discussed. In section II, the detail study of the MVC framework is defined along with its features and the components. In section III, the study on the HTML5 and its integration with modern web architecture and MVC framework is defined. In section IV, the conclusion derived from the work is discussed.

## II. MVC FRAMEWORK

MVC (Model-View-Controller) is actually a design pattern adapted by most of the web applications as the base architecture or the framework. This architecture is defined under different components that include the pattern specification, language specification and the implementation in the specific framework. The main feature of this architecture is the definition of three main components in a clean connection form. These three components are Model, View and controller. MVC defines these three components independently with complete separation as well as provide an integrated connection between them. The component based architecture of MVC is shown in Fig 3. The clean separation in this architecture is in the application and presentation layer of the mode [8]. The component based description of the model is given as under.

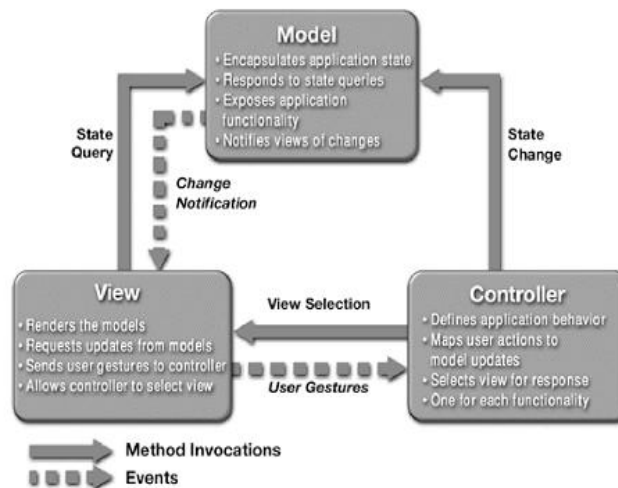


Fig 3: MVC Architecture

The model component of this architecture represents the data. It basically contains the application data, logic definition, function specification, business rule involvement. This layer can manage the data and also allow the database communication. This layer not only defines different web data forms but also provide the access objects and the mechanisms. Another consideration is also given to the application or the environment based data analysis so that the service interaction will be done effectively. The second layer of this architecture is "View" component that actually defines the user interface to the web architecture. This user interface is described using HTML along with graphical components. This component specification is independent to the browser environment as well as to the application. The third and final component of this architecture is the controller. The controller is defined in the form of events and the change analysis in the web model and view. It basically work as the over layer to other two layer of the MVC architecture [9][10].

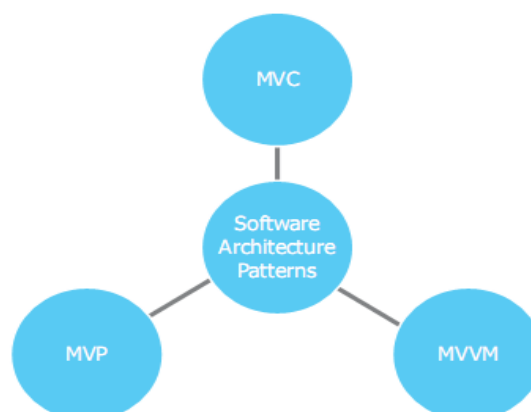


Fig 4: Design Patterns of Software Architecture

The software architecture under the MVC is defined under different design pattern. This design pattern differs respective to the software architecture in which they are implemented. According to the software architecture, the software system is defined under three main design patterns are shown in Fig 4.

*A. Model-View Controller*

MVC is the defined as the software pattern architecture that separate the information view from the user view. It means user cannot get the information about the representational definition of data. To manage all this flow, the controller is defined as the mediator between the model and the view. This includes the observation to the view change and data change so that the updated model will be implemented without any notification. This architecture pattern emerges with different language environments such as java or spring.

*B. Model-View-Presenter*

This architecture is the derivation from the MVC design pattern. Many of the existing web technologies and the software applications use this architecture as the user interface. The presenter component defined in association with view component so that the reference view is generated. The presenter is here also responsible to do the required changes in the different sub components based on the external requirements including the application based and the environment based. This also include the effective logic based user interaction so that the model will not be affected from the changes performed by the user on the model component

*C. Model-View-View Model*

This model is UI based development respective to the platform and the application in a user interactive environment. Such kind of model is supportive to event driven programming model. It includes the representation through programming languages and the frameworks. The language and the language framework including in this model are HTML5, Windows Presentation Foundation (WPF), Silver light, ZK Framework etc. The main benefit provided by this view model is the separate development of GUI from the programming model or the business model. This GUI code is defined under the HTML5 so that the support to different application environment will be achieved. This graphical model is supportive to the mobile based web environment. The database logic and business logic not affect this UI model so that the platform and browser independent approach is provided under this model. HTML5 is the core UI generation scripting language adapted by this model.

### **III. HTML5 INTEGRATED MVC MODEL**

The HTML5 based MVC model is a view based model that provide the platform independent development model. This model provides the data representation under the user view based modelling. To attain this view model, data binding between the user and information view is performed. This view is not aware to the data change and its integration with the view structure and the web interface. It provides the support to web and mobile application environments as well support different client side browsers and the application with affecting the graphical component.

The implementation of this view based MVC pattern architecture improves the traditional web architecture to the effective modern architecture. This architecture pattern is developer oriented. According to this architecture, the mobile and web application UI framework is generated for the mobile based web applications. HTML5 provides the view structure and the element to the modelling of this architecture. This architecture can retrieve data either from database or from the web services.

This improved MVC model is having different extensions and the components. This model is defined the data model in separated from the viewpoint model. The data retrieval in this model is done on different sources using XML. The XML modelling is done using different components such as HTTP request based retrieval. The generation of the sub modules for the request handing under different domains such as AJAX is done in this architecture. This model provides the data retrieval from the remote server. It also includes the configuration based specification to the component modelling. The component model adapted for the mobile web application is called Widget specification. These widgets or gadgets are provided by the view layer of this architecture. All the constraints of this view architecture are defined under the HTML constraints under the caching model. Caching is another effective approach that improve the web-mobile interaction architecture and provide the local storage to the web-mobile browser so that the web contents will be available locally to reduce the web processing [4][5].

HTML5 is the next level HTML language that provides the structural and presentation based changes to the web contents over the mobile and web systems. HTML5 is defined under the cooperation of World Wide Web Consortium (W3C) and Web Hypertext Application Technology Working Group (WHATWG) for the web integrated graphical framework of MVC framework. This language includes the improved presentational features like video play back and drag and drop features. It also includes the plug in inclusion using browser such as Flash components, Silverlight components and Google Gear components. It provides support to vast range of browsers. These browsers are defined for different environments including the mobile systems.

### **IV. CONCLUSIONS**

In this paper, a study on the HTML5 integrated MVC architecture and different components of MVC model are defined. It also includes the design pattern study under the view point analysis. The study includes the HTML5 feature representation for the Mobile and web Applications under MVC framework.

**REFERENCES**

- [1] O'Reilly, T.: What is Web 2.0 – Design Pattern and Business Models for the next Generation of Software (2005), <http://www.oreillyn.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html> (last visited in December 2009)
- [2] Downes, S.: e-Learning 2.0, ACM e-Learn Magazine (2005), October 2005 (10)
- [3] Ebner, M., Scerbakov, N., Taraghi, B., Nagler, W. & Kamrat, I.: Teaching and Learning in Higher Education – An Integral Approach. In C. Crawford et al. (Eds.), Proceedings of Society for Information Technology & Teacher Education International Conference 2010 (pp. 428-436). Chesapeake, VA: AACE (2010).
- [4] Schaffert, S., Ebner, M.: New Forms of and Tools for Cooperative Learning with Social Software in Higher Education. In: Brayden A. Morris & George M. Ferguson (Ed.), Computer-Assisted Teaching: New Developments. Nova Science Pub, p. 151-165 (2010).
- [5] Nagler, W., Ebner, M.: Is Your University Ready For the Ne(x)t-Generation?, Proceedings of 21st ED-Media Conference, pp. 4344-4351; World Conference on Educational Multimedia, Hypermedia and Telecommunications (2009)
- [6] Ebner, M., Taraghi, B.: Personal Learning Environment for Higher Education – A First Prototype. In Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2010 (pp. 1158-1166). Chesapeake, VA: AACE (2010).
- [7] Tuchinda, R., Szekely, P., Knoblock, C.: Building Mashups By Example. ACM Proceedings of IUI 2008, Maspalomas, Spain (2008)
- [8] Widgets 1.0 Packaging and Configuration - W3C Working Draft, <http://www.w3.org/TR/widgets/> (2008)
- [9] Taraghi, B., Ebner, M., Schaffert, S.: Personal Learning Environments for Higher Education: A Mashup Based Widget Concept, Proceedings of the Second International Workshop on Mashup Personal Learning Environments (MUPPLE09), Nice, France (2009), ISSN 1613-0073, Vol-506 <http://ceur-ws.org/Vol-506/>
- [10] Crockford, D.: JavaScript: The Good Parts. O'Reilly Media / Yahoo Press (2008)