

# ASP.NET MVC 5 FRAMEWORK ANALYSIS. PROTOTYPE SYSTEM FOR INTERNAL CONTROL TIME USE OF HUMAN RESOURCES CREATEC S.A.

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**Abstract:** Today development of web applications has opened an extensive field of research and study of new tools, methodologies and architectures that they facilitate the creation of web applications which perform quality standards.

The purpose of this degree work is to do the analysis of one of the web development frameworks with more projection to the future inside to Microsoft ecosystem, ASP.NET MV5; in order to exploit and to give to know all of their benefits, generating the necessary documentation to serve of a study guide to the development of new web applications within CREATEC S.A. and in general to students and professional people interested in learning that tool; developing the prototype of a system to the internal control of the time of use of the human resources of CREATEC S.A., to test all features of development of the framework to can appreciate the advantages to built web applications with ASP.NET MVC 5.

**Keywords:**

ASP.NET MVC 5, frameworks, research, web.

**Resumen:** En la actualidad el desarrollo de aplicaciones web ha abierto un extenso campo de investigación y estudio de nuevas herramientas, metodologías y arquitecturas que permiten la creación de aplicaciones web que cumplan con estándares de calidad.

El propósito de este proyecto de grado es realizar el análisis de uno de los frameworks de desarrollo web con más proyección a futuro dentro del ecosistema Microsoft, ASP.NET MVC 5; con el fin de explotar y dar a conocer todas sus bondades, generando la documentación necesaria que sirva de guía de estudio para el desarrollo de nuevas aplicaciones web dentro de CREATEC S.A. y en forma general para estudiantes y profesionales interesados en aprender la herramienta; desarrollando el prototipo de un sistema para el control interno de uso del tiempo de los recursos humanos de CREATEC S.A, que pondrá a prueba todas la características de

desarrollo del framework y poder apreciar las ventajas de construir aplicaciones web con ASP.NET MVC 5.

### **Palabras clave:**

ASP.NET MVC 5, frameworks, investigación, web.

### **Background.**

Before the advent of web applications exist other applications called client-server applications which its development and implementation were very expensive since they had to be installed separately on each computer user who requests to a server performing an update or improved systems usually meant an improvement of programs installed on clients, this originated a high cost in support which reduced productivity.

With the emergence of the new generation of applications many of the problems presented in the above were solved, allowing enjoys benefits such as:

- Time saving development and implementation.
- Fixed compatibility issues.
- Immediate updates software.
- Portability.
- Multiplatform.
- Lower costs in support.

### **Current situation.**

Currently ASP.NET MVC 5 is not widespread in the market, this causes programmers to develop

applications prefer the traditional way with ASP.NET WebForms. In addition it should be emphasized that students and IT professionals are inclined to use free software for application development , causing all these causes ignorance of the benefits of this framework , shortage of programmers and few applications on the market.

Today you can find information available on the official website of ASP.NET MVC; this information is a study guide that allows exploiting all the benefits of the framework.

### **Problem.**

Lack of knowledge and dissemination in the environment leads ignorance of the features and benefits of ASP.NET MVC 5 students and computer professionals reducing production ASP.NET applications following the MVC pattern.

### **General objective.**

Analyze the ASP.NET MVC 5 framework for the implementation of the prototype of a system of internal control time use of human resources CREATEC SA using new techniques of web development.

### **Justification**

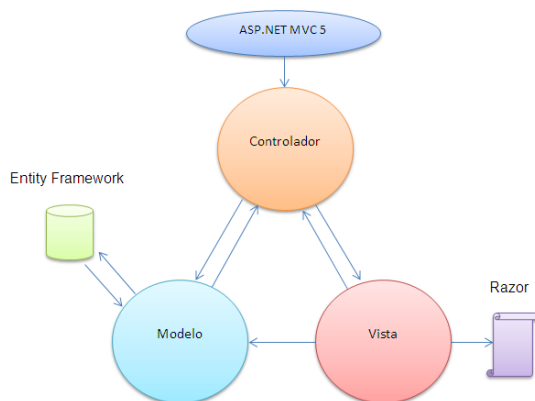
Analysis ASP.NET MVC 5 framework as a thesis project will allow to provide sufficient documentation to serve as a study guide for students and professionals in the area of

computing that will expand their knowledge of this framework, exploit all its benefits and ensure building quality applications.

It will encourage software developers to use this framework and new tools in building systems which will result in increased production of applications with patterns Model View Controller design.

It will encourage students to further research of new methodologies and application development framework, particularly in the area of web programming and that is the trend of recent times

### MVC design pattern.



"MVC (Model - View-Controller) design pattern is a software architecture that separates the business logic from the user interface facilitates the separate development of both layers and increases reusability and flexibility."(Mestras, 2012)

### Model

It contains the business logic of the application it can be provided in any data store, encapsulates the state of the application.

### View

It contains the presentation layer modeling, responsible for displaying the user interface of the application.

### Controller

Is the intermediate layer between the layer interacts model and view.

### MVC web application.

"Although originally MVC was developed for client-server applications, has been widely adapted as architecture to design and implement web applications in major programming languages. We have developed a number of frameworks, commercial and noncommercial, which implement this pattern; these frameworks differ mainly in the interpretation of how the MVC functions are divided between client and server."(Asp.Net, 2013)

### Asp .Net MVC.

"It is a web development framework that implements the model -view-controller pattern it is based on ASP.NET, allows software

developers to build web applications using the MVC (Model View Controller ) design" (Asp .Net, 2013)

### **Features ASP.NET MVC framework.**

- Separation of application tasks (control logic, business logic and UI logic)
- The ability to test and development based on (TDD) by default.
- The components of the MVC ASP.NET framework are designed so that they can be replaced or easily customized.
- A powerful URL mapping component that enables you to create applications that are understandable URLs and search.
- The MVC framework supports using the existing ASP.NET: aspx, ascx files and Master marked as view templates.

### **Advantages of developing with ASP.NET MVC.**

The ASP.NET MVC framework provides the following benefits:

- Divide easily an application on the model, view and controller.
- Provides complete control over the behavior of an application.
- Processes requests for Web applications through a single controller.

- Allows the design of an application that supports a rich routing infrastructure.

- Provides better support for test-driven development (TDD).

- Works well for Web applications that are supported by large teams of developers and web designers who need a high degree of control over application behavior.

### **Introduction to Asp.net MVC 5.**

"ASP.NET MVC in its fifth version is a framework for building scalable web applications using standards-based well established design patterns and the power of ASP.NET framework" ( Asp.Net , 2013)

### **What's New in ASP.NET MVC 5?**

- You can configure smoothly ASP.NET MVC 5 project using the wizard to create an ASP.NET project.

- MVC project templates are configured to use ASP.NET identity for authentication and identity management.

- MVC project template has been updated to use Bootstrap, this framework will give an elegant applications developed with ASP.NET MVC appearance.

- ASP.NET MVC 5 allows you to specify the authentication logic: per share, for controller or globally for all drivers.

- ASP.NET MVC 5 supports ASP.NET MVC routing attributes with routing attributes can specify their routes to record the actions and controllers.

### Comparison Chart (MVC 5 y Web Forms)

Metrics	MVC 5	WEB FORMS
Learning Curve	1	4
Scalability	4	2
Compatibility	4	3
Yield	4	2
Trend of Use	3	3
Support	4	4
Easy Development	1	4
Unit Testing	3	1
HTML Control	4	3
Architecture	4	2
<b>Total</b>	<b>32</b>	<b>28</b>

As assessed in the comparative table positions the ASP.NET MVC framework with 32 points for best development option above 28 points for Web Forms.

The advantage of ASP.NET MVC is basically to scalability, compatibility, performance, technical support, control over HTML and architecture; but this does not mean that this technology replaces the other, both technologies are very good, it all depends on the requirements, the type of project to be developed and skills to present the development team as Web Forms has a high productivity, flexibility and maturity in the market, ideal for developing web applications quickly with a small learning curve .

### Internal control system time use of human resources Createc.



To apply the knowledge obtained in the analysis of the ASP.NET MVC framework, operate in practice the benefits and advantages of the framework and to feel the experience of developing applications with the MVC model, the prototype of a web application is developed.

The application consists of track projects and activities implemented in CREATEC SA to keep tabs on human resources invested by the company in the development of pampering time, the web application will have the ability to:

- Bring a catalog of clients who call for the development of one or more projects to the company.
- Maintain catalog company personnel. The staff is responsible for implementing the projects and activities must be classified by their office and the department to which it belongs, staff should have two states: active in case you are working normally in the company or inactive if it is temporarily outside the company, specify the person or employee acting chief, staff should handle a username and password the same as valid to enter the application.
- Bring a slate of projects. Projects must be classified by the type of project, and projects consist of one or more activities. Projects can be in states: pending, planned, initiated and completed.
- Keep a list of activities that need to be executed the project. The activities will be classified by type of activity, each activity has an employee responsible for executing it; an activity can have one or more sub activities, activities have states: pending, working over.

- Working with a blog. In the log records the time spent by staff in the implementation of the activities of each project will be.
- Up evidence. The system must keep a record of the evidence of work done in each activity.
- Post deliverables. The deliverables are the results or the final product is delivered to be developed certain project or activity, which previously must be reviewed and guaranteed operation.
- Record of daily activities performed by the staff of the company that are not related to a planned project.
- Reports and results should reflect the time spent on each project and activity time.
- User management and audit of the application.

### **Conclusions.**

The achievement of this research was to spread the benefits to developing web applications with ASP.NET MVC 5, in order to increase production in the market.

In the comparison made between Web Forms and MVC can appreciate the advantage of MVC due to the analysis in aspects of scalability, compatibility, performance, technical support, control over HTML and architecture. But not to say that one replaces the other. Their use depends on the type of project you want to develop.

Using SCRUM as development methodology in implementing the application, promoted the organization and teamwork, prioritizing customer requirements, allowing obtaining very good results quickly.

In building the application could exploit its features and demonstrate the advantages presented by this framework, increasing productivity development in topics such as: scalability, performance, compatibility, management architecture and ease of unit testing, making it a robust tool and perfect for building enterprise-level applications.

ASP.NET MVC 5 was used in developing the system; this encouraged to innovate in building new Web applications within the company to be traded in the future.

### **Recommended.**

To develop robust web applications that solve complex problems at the enterprise level we recommend using ASP.NET MVC, since it is a very mature tool has all the support and official support of the technical team of ASP.NET.

For information and support tool visit the official pages of ASP.NET.

In case of developing an ASP.NET MVC application is recommended prior knowledge of

the MVC architectural design pattern and at least basic knowledge in .NET technologies.

To contribute to the development and troubleshooting of ASP.NET MVC recommend visiting the site hosting open source projects of Microsoft CodePlex.

To create friendly and colorful web interfaces on a project with ASP.NET MVC recommend using Bootstrap and JQuery Mobile, as these besides being very rich in colorful web interfaces meet the standards of HTML 5.

### **Bibliography**

Albaladejo, X. (2013). *Proyectos agiles*.

Obtenido de

<http://www.proyectosagiles.org/>

Albaladejo, X. (2013). *Proyectos agiles*.

Obtenido de

<http://www.proyectosagiles.org/fundamentos-de-scrum>

Asp.Net. (27 de Enero de 2013). *ASP.NET MVC*

*Overview*. Obtenido de

<http://www.asp.net/mvc/tutorials/older-versions/overview/asp-net-mvc-overview>

Castillo, A. (2013). Manual de HTML5. En A.

Castillo, *Manual de HTML5*. Theproc.

- Developer\_Network. (2014). *Controladores y metodos de acción en apliccaiones MVC*.  
Obtenido de  
[http://msdn.microsoft.com/es-es/library/dd410269\(v=vs.100\).aspx](http://msdn.microsoft.com/es-es/library/dd410269(v=vs.100).aspx)
- Developer\_Network. (2014). *DataAnnotations*.  
Obtenido de  
<http://msdn.microsoft.com/en-us/library/system.componentmodel.dataannotations.aspx>
- Developer\_Network. (2014). *Referencias de ASP.NET MVC*. Obtenido de  
[http://msdn.microsoft.com/es-es/library/gg416515\(v=vs.108\).aspx](http://msdn.microsoft.com/es-es/library/gg416515(v=vs.108).aspx)
- Freeman, A. (2013). Pro ASP.NET MVC4. En A. Freeman, *Pro ASP.NET MVC4*. Apress.
- Freman, A. (2013). Pro ASP.NET 4.5 in c#. En A. Freman, *Pro ASP.NET 4.5 in c#*. Apress.
- Gómez, J. (2014). *Analisis del framework ASP.NET MVC*. Ibarra.
- Haack, J. G. (2013). Professional ASP.NET MVC3. En J. G. Haack, *Professional ASP.NET MVC3*. Programmer to Programmer.
- Madrid, U. C. (2012). *MVC TIW*. Obtenido de  
<http://www.lab.inf.uc3m.es/~a0080802/RAI/index.html>
- Mestras, J. P. (2012). *Programación orientada a objetos*.
- Microsoft. (2014). *Developer Network*. Obtenido de [http://msdn.microsoft.com/es-es/library/dd381412\(v=vs.108\).aspx](http://msdn.microsoft.com/es-es/library/dd381412(v=vs.108).aspx)
- Microsoft. (2014). *MSDN Magazine*. Obtenido de <http://msdn.microsoft.com/es-es/magazine/>
- MSDN. (2014). *Entity Framework*. Obtenido de <http://msdn.microsoft.com/es-es/data/ef.aspx>
- MSDN. (2014). *Visual Studio*. Obtenido de <http://www.visualstudio.com/>
- Palermo, J. (2012). ASP.NET MVC 4 in Action. En J. Palermo, *ASP.NET MVC 4 in Action*. MANNING.
- Seekdotnet. (2012). *Seekdotnet.com Blog*. Obtenido de <http://blog.seekdotnet.com/asp-net/>
- Vega, J. (2012). Guia HTML5. En J. Vega, *Guia HTML5*. Maestros del web.
- Walker, S. (2013). *MUGPERU Blog*. Obtenido de <http://blog.mugperu.com/>

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