

# Aplicación para la Enseñanza y Desarrollo de Clases Bíblicas utilizando una Plataforma AWS para su Implementación

Karla Cecilia OLIVA OSEJOS<sup>1</sup>

<sup>1</sup> Carrera de Ingeniería en Sistemas Computacionales, Universidad Técnica del Norte, Av. 17 de Julio 5-21 y Gral. José María Córdova, Ibarra, Imbabura, Ecuador

karla.oliva1993@hotmail.com

**Resumen.** *Tras la falta de una herramienta tecnológica que recopile clases bíblicas listas para usarse y que al mismo tiempo brinde una alternativa sana para todos los niños, nace la idea de implementar el presente sistema. El proyecto consta de dos módulos: el módulo estudiante que brinda a los niños acceso a videos de enseñanza de clases bíblicas ya preparadas, galería multimedia y juegos y el módulo maestra que brinda a las maestras facilidades para crear clases nuevas, acceso a chat entre maestras y a la galería multimedia.*

*El sistema esta codificado en Symfony con PHP y la base de datos usa un motor MySQL, esto se implementó en una plataforma Amazon Web Services que cuenta con más de 50 servicios entre los cuales se ha utilizado Elastic BeanStalk<sup>1</sup>, EC2<sup>2</sup>, S3<sup>3</sup> y RDS<sup>4</sup>.*

## Palabras Claves

Amazon Web Services, Clases Bíblicas, Cloud, Elastic BeanStalk, Sistema Web, Symfony, PHP, MySQL.

**Abstract.** *After the lack of a technological tool that collects Bible classes ready for use and at the same time provide a healthy alternative for all children born the idea of implementing this system. The project consists of two modules: the student module that gives children access to videos teaching Bible classes already prepared, multimedia gallery and games and the master module provides the master facilities to*

*create new classes, access to chat between teachers and multimedia gallery.*

*The system is coded in PHP and Symfony with the database engine uses a MySQL, this is implemented on a platform Amazon Web Services, which has more than 50 services among which has been used Elastic Beanstalk, EC2, S3 and RDS.*

## Keywords

Amazon Web Services, Bible Classes, Cloud, Elastic BeanStalk, Web System, Symfony, PHP, MySQL.

## 1. Introduction

In the city of Ibarra, province of Imbabura, Ecuador Republic, exist Christian Corporation "Dos Olivos" under ministerial agreement 0520, as a religious entity, which will be governed by mandates from the Holy Bible, the Constitution of the Republic of Ecuador, law of cults, regulation of religious cults, its statutes and its internal regulations, and more related rules, as well as by resolutions adopted for its better structuring and the fulfilment of its purposes. (Statute of the Corporation Christian "Dos Olivos". Article 1. 2013)

In the interview with Mr. Wilson Gonzalo Lugo Aldas President of the Corporación Cristiana "Dos Olivos" it was found that currently, there are Bible study groups made up of people of different ages in

<sup>1</sup> **Elastic BeanStalk:** container of applications for the deployment and management of applications.

<sup>2</sup> **EC2:** Amazon Elastic Compute Cloud provides capability of variable size in the cloud.

<sup>3</sup> **S3:** Amazon Simple Storage Service can be used to store and retrieve any amount of data.

<sup>4</sup> **RDS:** makes it easy to configure, operate and manage relational databases of scale in the cloud.

large and small cities from across Latin America, since children require a special education teaching it resorted to the creation of a Sunday school, few groups have voluntary nursery schools that have the ability to create classes Bible from the teachings of Dr. William Soto (humanist theologian), in remaining groups are volunteers wanting to help and love for children who are in charge of the Sunday school, but often do not have the information or assistance necessary to do a good job. (User report 1, 2015)

Today there are few web applications that collect information for the teaching of religious sphere, however do not meet the needs of the "Dos Olivos" Corporation which are: ready-made biblical classes, supporting material and teaching strategies; on the other hand, many educational processes are based on types of technological tools. Also, in the Corporation "Dos Olivos" can also use this type of techniques is in the process of teaching of Bible knowledge.

This project will be implemented in a web platform and collect information in Spanish Bible classes ready for use performed by volunteers and based on the teachings of Dr. William Soto (<http://williamsotosantiago.com/es/>), the web application will contain 2 modules: master and student mode.

- Mode Master: the master may revise the Bible classes available on the page, along with instructions for what should be at the stage before, during and after shared biblical teaching; can also build new Bible classes to share them on the page or in turn make suggestions to modify or supplement the topics that already structured.

Teachers can create different evaluations for each Bible class as appropriate; on the other hand, they may also receive tips of teaching and enter the chat masters to share anecdotes and enrich their knowledge.

- Mode student: infants have access to Bible classes; after taking a class can access documents with questions that different teachers have done so the child auto evaluate their learning of the biblical theme made.

Because children between the ages of 3 to 5, 6 to 9 and 10 to 12 years require learning styles according to their ages, this application will possess an area of entertainment in which there will be games with which you can increase knowledge in an entertaining way.

## 2. Materials and Methods

### 2.1 Software

The tools that were used for the implementation of this system are:

In database modeling and design stage was used brmodel, power software designer and engine of MySQL database along with your visual editor MySQL Workbench.

In the stage of coding the software was used phpDesigner 8 the same as being specialized in editing code in the programming language PHP facilitated much error detection.

In the implementation phase was used several services of Amazon Web Services technology platform which were: RDS for the implementation of the database, Elastic BeanStalk, S3 and EC2 for the implementation of the previous encoded software mind.

### 2.2 Hardware

Laptop with following features:

- Brand: Toshiba
- Model: Satellite S55t-A
- Memory RAM: 12 GB
- Processor: Intel Core I7
- Hard Disk: 1TB
- Operating System: Windows 10 Home 64bits

### 2.3 SCRUM Methodology

SCRUM is a way to work in a team where the result occurs incrementally. Schwaber and Sutherland (2013) say: "SCRUM is based on the theory that knowledge comes from experience and make decisions based on what is known, so it uses an iterative and incremental approach to optimize risk control and predictability." Short periods of work is established in that same pattern is followed.

Is part of a list of requirements prioritized by the applicant for the job, who at the beginning of each cycle with the team decides which points of the list it will be possible to carry out at the specified time. The same team will determine which tasks are required and how will be allocated among the members of the team.

Is a methodology of agile software development, which has as a feature the daily meeting with the Product Owner (owner of the product), in which

questions are answered such as: do I made yesterday?, and what will do tomorrow?

At the end of the cycle is the result and who has requested it be given approved or not your requirements. Then the team reflects altogether over how it has worked in this cycle: right, wrong and how to improve it, to start again.

### 2.3.1 SCRUM methodology life cycle

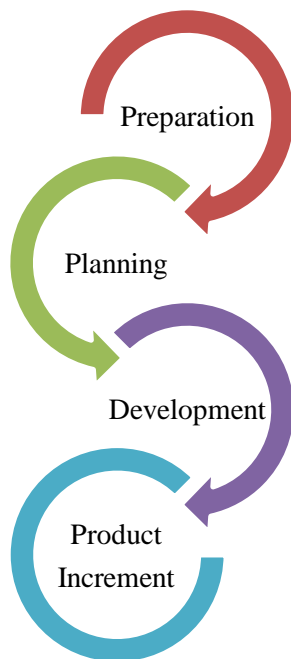


Figure 1. SCRUM methodology life cycle

Source. Oliva, Karla

The cycle of life is a project that can start with any activity and can be passed from one activity to another at any time maximizing flexibility and productivity of the team. "Scrum project is running in short and fixed temporary blocks (iterations of a calendar month and up to two weeks if so needed)." Each iteration has to provide a full result, an increase in the final product"(Heredia, Alvarez, & Linares, 2011, p. 5).

### 2.3.2 Elements of SCRUM methodology

#### Product Backlog

- List of user requirements.

#### Sprint Backlog

- List of works that should make the team during the iteration.

#### Product Increment

- Result of each iteration.

Figure 2. Elements of SCRUM methodology

Source. Oliva, Karla

### 2.3.3 Roles of methodology SCRUM

Schwabe and Sutherland (2013, p5-8) conclude that the roles of the SCRUM methodology are:

- SCRUM Master: monitors compliance with the rules and guide the development.
- Product Owner: fixed tasks to complete and priorities.
- Team Members: in charge of delivering the product.
- Stakeholders: who can attend meetings, but they can't talk.

The team for the development of the application is presented then:

Table 1 System roles

Role	Name	Position
SCRUM Master	Karla Oliva	Developer
Product Owner	Mr. Wilson Gonzalo Lugo Aldas, President of the Corporación Cristiana "Dos Olivos"	Sponsor Entity

Team Masters	Karla Oliva	Developer
Stakeholders	Ing. Pedro Granda	Tesis II Teacher

Source. Oliva, Karla

### 3. Results

It should be noted that the results were very satisfactory, managing to generate a stable, efficient and quality system. The "Dos Olivos" Christian Corporation can make full use of all the features offered by the system.

All the features of the web system were properly tested and functional to 100 percent.

At the end of the project the following results were obtained:

- Student User



Figure 3. Page Index running on AWS.

Source: Oliva, Karla.



Figure 4. Page Bible Classes running on AWS.

Source: Oliva, Karla.



Figure 5. Page gallery of images running on AWS.

Source: Oliva, Karla.

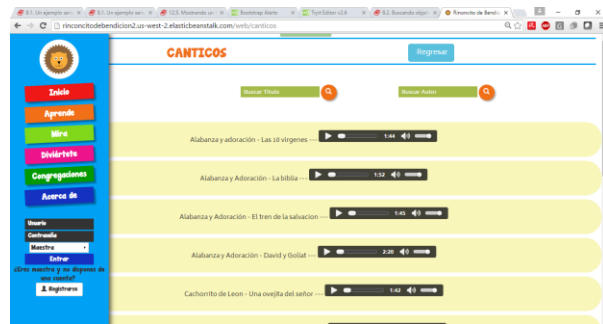


Figure 6. Page Canticles running on AWS.

Source: Oliva, Karla.



Figure 7. Page Puzzle game running on AWS.

Source: Oliva, Karla.

- Teacher User

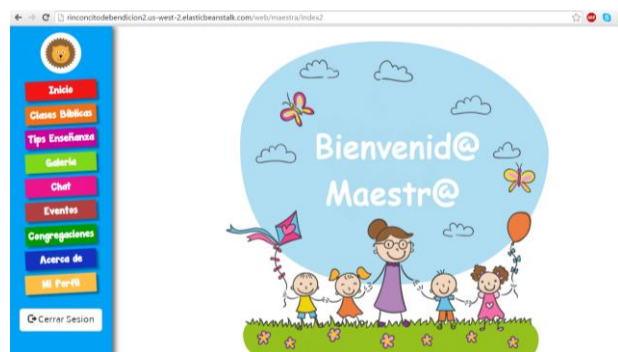


Figure 8. Page teacher index

Source: Oliva, Karla.

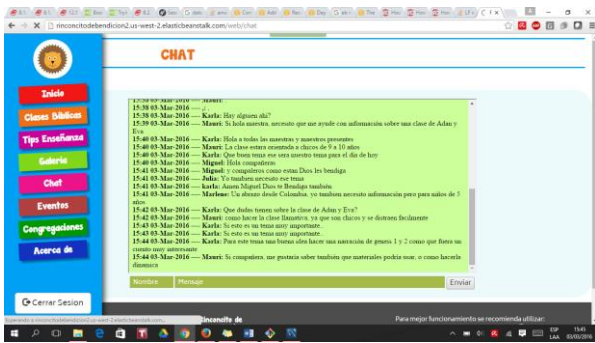


Figure 9. Page Chat running on AWS.

Source: Oliva, Karla.

### Clases Bíblicas

Formulario de creación de la Clase Bíblica Regresar

Nombre\*:

Categoría\*:

Objetivo\*:

Cita Bíblica\*:

Extracto\*:

Desarrollo\*:

formatos permitidos: pdf Seleccione Archivo

Cántico:

Figure 10. Page to create Bible classes.

Source: Oliva, Karla.

## Perfil de Usuario

Verifica tu información de contacto

Nombres\*:

Apellidos\*:

E-mail\*:

Clave\*:

Confirme su clave\*:

Pastor\*:

Teléfono\*:

Años de ser maestra\*:

Género\*:

Cursos Afines:

Figure 11. User Profile.

Source: Oliva, Karla.

- Pastor User



Figure 12. Welcome index page for pastors.

Source: Oliva, Karla.



Figure 13. Create suggestion and evaluations in classes.

Source: Oliva, Karla.

- Supervisor User



Figure 14. Monitor classes or evaluations newly created or with suggestions.

Source: Oliva, Karla.

- Administrator User

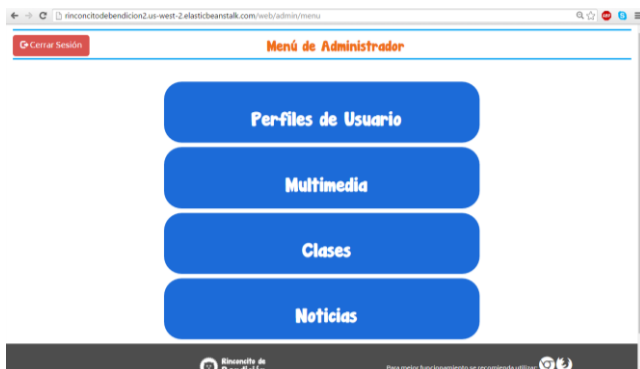


Figure 15. Home page of administrator user.

Source: Oliva, Karla.

The screenshot shows a table titled 'Listado de Maestras' with a 'Regresar' button in the top right and a 'Crear Maestra' button in the top left. The table has 10 columns: 'Codigo Maestra', 'Nombre', 'Pastor', 'Telefono', 'Correo', 'Años como maestra', 'Genero', and two empty columns. Each row contains data for a teacher and has 'Editar' and 'Eliminar' buttons at the end.

Codigo Maestra	Nombre	Pastor	Telefono	Correo	Años como maestra	Genero		
1	Genesis Corama Collaguazo Hidrovo	Pedro Daniel Rodriguez Mulla	789454	ejemplo17@hotmail.com	7	Femenino	Editar	Eliminar
2	Edith Maria Ripol Calcedo	Carlos Samuel Oliva Garcia	456123	ejemplo14@hotmail.com	1	Femenino	Editar	Eliminar
3	Adiana Mshel Pajuelo Romero	Jose Benjamin Perez Matos	456123	ejemplo3@hotmail.com	3	Femenino	Editar	Eliminar
8	Karla Cecilia Oliva Diepols	Carlos Samuel Oliva Garcia	789456123	kalapa1@hotmail.com	1	Femenino	Editar	Eliminar
12	Maria de las Mercedes Perez	Carlos Samuel Oliva Garcia	4561234	kalapa5@hotmail.com	1	Femenino	Editar	Eliminar
14	Genesis Mera Aguirreaga	Carlos Samuel Oliva Garcia	566	ejemplo2@gmail.com	2	Femenino	Editar	Eliminar
16	Genesis Corama Collaguazo Hidrovo	Carlos Samuel Oliva Garcia	59395463290	genesis_13-2@hotmail.com	1	Femenino	Editar	Eliminar

Figure 16. Editing, creating and deleting database records.

Source: Oliva, Karla.

The screenshot shows a form titled 'Crear cuenta de Usuario' with a 'Regresar' button in the top right. Below the title is the instruction 'Ingresa todos los datos que se solicitan.' The form contains the following fields: 'Nombres:', 'Apellidos:', 'E-mail:', 'Clave:', 'Confirme su clave:', 'País\*' (dropdown), 'Ciudad\*' (dropdown), 'Pastor\*' (dropdown), 'Teléfono:', 'Años de ser Maestra:' (dropdown with value 1), and 'Género\*' (dropdown with value Femenino).

Figure 17. Forms of creation of Records.

Source: Oliva, Karla.

## 4. Conclusions

Finishing this work, the following conclusions can be defined:

- Gathering information through the stories of user allows to have a better implementation of the technical requirements of Christian Corporation “Dos Olivos”.
- The SCRUM methodology allows a quality software in a short time thanks to the alignment between the customer and the team of developers.
- The AWS platform enables to implement educational type software.
- The AWS Elastic Beanstalk service takes care of all server configurations and allows the developer to focus on programming.

- The MVC architecture of the Symfony framework helps the developer to have less code, more orderly and reusable.

- When performing a system that this focused infants be must prioritize user interfaces are colorful and eye-catching to capture their attention and keep their curiosity.

- MySQL is a robust database and adapted to the needs of the system.

## Thanks

Special thanks to Christian Corporation "Dos Olivos" who plotted the requirements and guidelines of the system, everything related to Bible classes taught, made observations and tests the system and always had time to thoroughly review all the features in the project.

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## About the authors...



**Karla OLIVA** was born in Ibarra on February 16, 1993. My parents: Carlos Oliva and Miriam Osejos.

Primary education in the educational "La Victoria" unit, subsequently enter the private school "Los Arrayanes", make my last year of high school in the United States, and finally entering Northern technical college as a student of engineering degree in computer systems, Faculty of Sciences applied of the University technique of the North of the city of Ibarra Ecuador.