UNIVERSIDAD TÉCNICA DEL NORTE

FACULTAD DE INGENIERÍA EN CIENCIAS APLICADAS

CARRERA DE INGENIERÍA EN SISTEMAS COMPUTACIONALES

"INFORME TÉCNICO"

(INGLÉS)

"DESARROLLO DE UNA APLICACIÓN HIBRIDA-MÓVIL PARA DETERMINAR LOS TIPOS DE ESPECIES DE VEGETACIÓN INDICADORAS SEGÚN LOS PISOS ZOOGEOGRÁFICOS DEL ECUADOR, MEDIANTE EL USO DE LAS HERRAMIENTAS PHONEGAP Y JQUERY MOBILE PARA LA PLATAFORMA ANDROID"

AUTOR: CARLOS XAVIER RAMÍREZ MUÑOZ

DIRECTOR: ING. MAURICIO REA

IBARRA– ECUADOR

2015

DEVELOPMENT OF A HYBRID-MOBILE APPLICATION FOR DETERMINING THE TYPES SPECIES OF VEGETATION INDICATOR OF ACOORDING FLOORS ZOOGEOGRAPHICAL ECUADOR, USING THE TOOLS PHONEGAP AND JQUERY MOBILE FOR ANDROID PLATFORM

Carlos Xavier Ramírez Muñoz

Universidad Técnica del Norte, Av. 17 de Julio, Ibarra, Imbabura

Cramire_xavi@hotmail.com

SUMMARY

In the Species Information System Indicator Vegetation according to ecuadorian zoogeographical regions, the species more representative of each region is showing.

The system gives a brief description of each zoogeographic region, its main characteristics as: altitude, climate, localization. Likewise, it shows information of each indicator specie as: taxonomy, geographical distribution, botanical description and uses.

This document contains four chapters. The first chapter contains the preliminary information of Project such as: problem, justification, aims and also it shows a description of geography from Ecuador. The second chapter shows tools of development for software, as: PhoneGap, JQuery Mobile and Android. The third chapter contains the development of project, the RUP methodology. Consequently in the last chapter, the fourth, it shows conclusions and recommendations obtained after doing the technical application. Finally, the document also has Appendices, which are technical manuals and user's manuals.

1. Introduction

The new mobile platforms such as phones and tablets PC tablets have opened new lines for the uses and applications, which until recently were limited to personal computers. Users of such platforms are ubiquitous and instantly access multiple resources available through the Internet, and use many specific applications that are being developed for these devices and use their technological features: access to email, web browsing, geolocation, access social networking, e-book reading, consultation office documents, watch videos, video conferencing, etc.

2. Problem Description

Ecuador is a country that by the presence of the Andes and the volcanic island formations have given the four natural regions such as the coastal region, inter-Andean, Amazon and Galapagos archipelago which allowed to have a variety of vegetation in mostly unknown to tourists and researchers. Mobile technology has been developing rapidly, which offers a variety of services agilitan daily processes, but there is little development of applications oriented study or research. It has been considered several existing mobile platforms, and opted for the Android platform and that

59% of mobile devices in the world use this operating system (http://www.wayerless.com/2012/05/android-domina-con-un-59-el-mercado-mundial-de-los-smartphones/) and likewise their distribution is gratuita.

Today most of the information of vegetation in the country is found in a traditional way as books. In itself many know that for a better study of the natural regions of Ecuador these have been divided into zoogeographical floors (Albuja-Urgiles-Barriga 1980).

The system to be developed will provide a more dynamic vision of the type of vegetation that has Ecuador and by dividing the zoogeographical floors can put different species of vegetation in a geographic location.

What is to be achieved with the application it is that any individual who obtains this information can go to any point in Ecuador and know what kind of kind of vegetation exists in that site.

3. Objectives

- **General Objective**

Implement a hybrid-mobile application for the Android platform which will identify indicator species of vegetation according to zoogeographical floors of Ecuador by using the jQuery Mobile and PhoneGap tools.

- **Specific Objectives**

  o Collect the information necessary for application development.
  o Study the tools to use PhoneGap and JQuery Mobile.
  o Develop the application for the Android platform.
  o Package the application so that it can be displayed on the IOS platform.
  o Testing on different devices.

4. Scope

The application developed to work properly on devices with the Android platform.

The application can be viewed in the IOS and Windows Phone platforms.

This project is intended to contribute to the dissemination of information on the type of vegetation in Ecuador according to zoogeographical floors.

The application was limited to the use of tools jQuery Mobile and PhoneGap

5. Justification

Today a lot of companies are entering the market of mobile devices, as this is a market that is growing on a large scale, so these companies are moving many of their applications to these devices as a marketing strategy.

In this thesis paper it is to develop a native application by bundling a web application for devices with Android platform; It is

developed in this way as the native application will have several of the advantages of a web application, so it can be distributed in stores (App Store, AndroidMarket),

The importance of developing this application is that through this may have information which can identify the main species of vegetation as classified by the zoogeographical floors of Ecuador and with this and learn to enjoy the wide variety of species the country offers.

Each floor features unique zoogeographical climate characteristics, precipitation, temperature and altitude regimes, these biophysical characteristics are linked directly to the presence of vegetation in a given floor; therefore, each zoogeographic floor presents representative species, with large distribution within each, while many may be endemic or native.

In order to make the development of this application has been chosen to use the tools jQquery Mobile and PhoneGap.

PhoneGap allows programmers to develop applications for mobile devices using generic tools such as JavaScript, HTML5 and CSS3. The resulting applications are hybrid, ie they are not really native applications to the device as the views being considered include web and not specific to each system graphical interfaces, but does not try to web applications, considering that are applications they are packaged to be displayed on the device even working with the native system API.

Moreover **JQuery Mobile** Framework is a java script for creating websites optimized for the most popular mobile devices. Adds another layer to the traditional JQuery and

seeks to fill some needs that programmers suffer mobile devices.

6. System Architecture
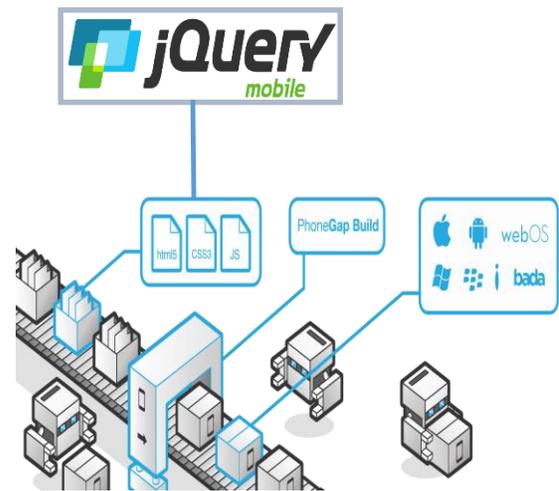
Ilustrati1n1: Overall system architecture fountain: own

In architecture the use of JQuery Mobile framework as the main development tool which consists of components that are made with the use of HTML5, CSS3 and Java script language is observed.

Another framewor used is PhoneGap which it is used for a packaging system which is in web form to a native application. With this tool you can perform various packings couple the application can run on multiple mobile platforms such as Android, IOS.

By implementing the RUP in our project we defined the following phases:

PHASE	INTERACTION
START	Iteration 1: Preliminary Concept Project - Initial research

ELABORATION	Iteration 1: Design and Solution Architecture - Final Documentation
CONSTRUCTIÓN	Iteration 1: Model and component design
	Iteration 2: Modeling and design of Black Box
	Iteration 3: Prototype Software by implementing development tools
TRANSITION	Iteration 1: Plan application testing
	Iteration 2: Writing manuals and training.
	Iteration 3: Deployment, Support and Completion

Table 1: Phases Methodology RUP
Source: Own

7. Impact Analysis

The project has been made what would analyze both the social, economic and environmental fields.

IMPACTO SOCIAL

The system developed shows the great diversity of vegetation that exists in Ecuador, apart from this it can be seen as Ecuador it has been divided into zoogeographical floors which is characterized by the height, climate, and several factors, it is here that there is the indicator species of vegetation for each zoogeographic floor.

The system similarly was developed for that tourist or general feeling affinity for botany, and likewise would like to know the type of plant that belongs to a region, or being in a region by the system identify the type of species vegetation exists in this.

IMPACTO AMBIENTAL

As has been mentioned a lot of information on the species of vegetation are found in books, so to make this system for mobile devices will no longer be a need to continue to collect information of plants in paper, and so we will be careful to environmental trying to reduce deforestation.

IMPACTO ECONÓMICO

In Chapter III, Table 22 theses document, references to the economic development of this project has been spent, with reference to the total expenditure was handled by the developer is done.

8. CONCLUCIONES

- o The development of the Information System Indicator Species Vegetation According to the story Zoogeográficaos Ecuador, many users will benefit both researchers and tourists.

- o Access to information through the management and friendly graphical interface make the system user friendly and that have a good link with the system.

- o The use of the jQuery framework Mobilebrinda a different experience in managing web tools, this framework the record with themas already created that enable much faster application development.

- The use of PhoneGap frameworw would provide the possibility that a mobile web application can be transformed into a native application, which is known as a hybrid. Similarly as we have seen in this paper web applications do not have great access to the APIs of devices while using this framewor it will be accessible to all device APIs.
- In particular the development of hybrid applications get the best of both worlds in mobile development as they are the web and native applications.

- Using methodology RUP development in this application, it has allowed the construction of a software quality.

- During the development of this project various concepts are learned and reinforced several previously obtained, and the preparation of this document is expected that the person who reads it can acquire the skills to develop applications with the tools described here skills.

9. RECOMMENDATIONS

- Promote research to mobile technology as it is a field that is expanding and has a promising future.

- Investigate other frameworks that are in the market for the development of hybrid applications.

- Try to infuse the development of applications in different fields of research.

- Encourage the development of applications using free software tools and they are easy to use and free access.
- Disseminate information presented in this project, to be known as Ecuador is divided according to zoogeographical floors, this division is the relizó for a better study of the species found in these pisos.

- Try to encourage the development of hybrid applications for mobile devices as they are equipped with the advantages of web and native applications.

10. BIBLIOGRAPHY

Books:

Broultk, B. (2011). Pro jQuery Mobile. New York: Apress

Firtman, M. (2012). jQuery Mobile Up and Running. Boston: O'REILLY

Meza Vargas Mario, D. (2002). Ecology and Biodiversity of Ecuador (1 ed.). Quito: Cámara Ecuatoriana del Libro - Núcleo de Pichincha

Solís, C. (2012). Manual del Guerrero Móvil: PhoneGap (Kindle Edition). Amazon Digital Services, Inc

Online Publications:

eJanitoalevic. (03 de Mayo de 2014). Ecuador Regions (División de las Regiones Naturales del Ecuador). Recovered from:

https://forum.erepublik.com/index.php?/topic/2750-new-countries-results/page-9

FUNDAR, Galápagos. (16 de Mayo de 2007). Mapa de Galápagos. Recovered from: http://www.fundargalapagos.org/portalj/index.php?option=com_content&task=view&id=67&Itemid=75

Geospatial. (s.f). Tipos de Aplicaciones Móviles. Recovered from: http://geospatialtraininges.com/recursos-gratuitos/tipos-de-aplicaciones-moviles/ startcapps. (s.f) web, app y app nativas. Recovered from: http://www.startcapps.com/blog/tag/web-app-y-app-nativas/

Arkaitzgarro. (s.f) PhoneGap: Como funciona PhoneGap. Recovered from: http://www.arkaitzgarro.com/phonegap

Galeano, D. (15 de Octubre de 2012). Limpiando Asperezas para Iniciarse con PhoneGap - Descripción de los APIs de PhoneGap. Recovered from: http://www.desarrolloweb.com/articulos/iniciarse-phonegap.html

Solis, C. (03 de Mayo de 2013). Crear Aplicaciones con JqueryMobile. Recovered from: http://revolucion.mobi/2013/05/03/aplicaciones-moviles-con-jquery-movile/

JQuery Manual. (s.f). Cuadros de Dialogo con JQuery Mobile. Recovered from: http://jquery-manual.blogspot.com/2013/02/cuadros-de-dialogo-con-jquery-mobile.html
Desarrolloweb.com. (19 de Octubre de 2012). Manual de JQuery Mobile. Recuperadode:http://www.desarrolloweb.com/manuales/manual-jquery-mobile.html

Navarro Herrera, D. (06 de Noviembre de 2012). Manejo de Listas con jQuery Mobile. Recovered from: http://www.lawebera.es/jquery-mobile/manejo-listas-jquery-mobile.php

The jQuery Foundation. (2013). Listas. Recovered from: http://demos.jquerymobile.com/1.3.2/widgets/listviews/#&ui-state=dialog

Varios. (s.f). Programación en dispositivos móviles portables – Android. Recuperado del sitio web del área de Software de Comunicaciones de la Universidad Carlos III de Madrid, de https://sites.google.com/site/swcuc3m/home/android/generalidades

WIKIPEDIA.(s.f). Android. Recovered from: http://es.wikipedia.org/wiki/Android

Diego, C. (18 de abril de 2013). Versiones Android. Recovered from: http://androidmundolibre.blogspot.com/2013/04/versiones-android.html

Condesa. (04 de julio de 2011). Arquitectura de Android. Recovered from: http://androideity.com/2011/07/04/arquitectura-de-android/

Varios. (s.f). Programación en dispositivos móviles portables –Arquitectura de Android. Recuperado del sitio web del área de Software de Comunicaciones de la Universidad Carlos III de Madrid, de https://sites.google.com/site/swcuc3m/home/android/generalidades/2-2-arquitectura-de-android

Salinas, P. Hitschfeld, N.(s.f). UML -
Casos de Uso. Recuperado del sitio web
de la Universidad de Chile, Facultad de
Ciencias Físicas y Matemáticas,