

Servilistapr.Com –Grade the Service which You Receive, Web Application

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Abstract —A web application design is as important and the development of a typical Software development Life cycle (SDLC). The ServiListaPR web application comes to birth from the necessity of the users, trying to search a service provider and not knowing the quality of the service they will be receiving. Current, similar and local, web applications do not provide such a service

Key Terms —HCI, Responsive, Services, Web Application.

PROBLEM

Currently, there is a need in Puerto Rico, that when regular people ask or look for a service provider of any nature, usually people ask around with their families and friends so that they recommend someone. There is no web page, in the Puerto Rico vicinity that can suggest for the services that someone provides, or even know for certain if the provider is any good.

The main objective of the ServiListaPR Web Application is to serve the community, so that a user can load the App in the browser of their device and do a search on the different types of services that will be available. After the service is rendered by the provider, that same user can go in again and give a rating to the service provider, from which they received the service from. Therefore, when another user surfs the ServiListaPR web and looks for any service, they can view the ratings that other people have provided for that service. Very important the use of alternate text [1] for the visually impaired.

- ServiListaPR, main purpose is to have the largest database, big data, of service providers in the island of Puerto Rico. The most important goal of the system is to have the population accept and trust the system. Therefore, in order for a user to rate a service provider, they will

have to enter in the receipt of the provided service.

The user interface will be a web portal, using LAMP, Linux-Apache-MySQL-PHP. It will run on a hosted Server in the Cloud. The development tool will be Notepad++, DreamWeaver, XAMP and the data layer of the system will be generated using PHP with encryption. From Figure 1 below, we can see a very simple page format that appeals to any age group.



Figure 1
Simplistic Page

PROPOSED PROJECT PLAN

Figure 2 shows a graph of the proposed project plan. The items are divided into phases. The phases are the Requirement Gathering, Analysis Phase, Design Phase, Coding Phase, Test Phase, Deployment Phase and Maintenance Phase.

A traditional project should follow a Waterfall Method yet it has been found that an Iteration and/or Agile Method for team use is much better suited. The Agile movement proposes alternatives to traditional project management. Agile approaches are typically used in software development to help businesses respond to unpredictability.

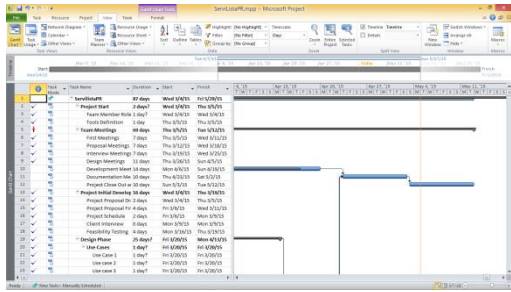


Figure 2
ServiListPR Project Plan

DESIGN CONSIDERATIONS

The system has the following dependencies.

- PHP 5.6
- Robust MySQL Server 5.6
- IE9 or higher, Firefox, Google Chrome, Safari
- LAN connectivity and Internet Connectivity

DESIGN ASSUMPTIONS

- The system will need to be available 24/7/365
- The only person allowed to create a rating, is the person that received the service. Evidence to this should be supplied.
- The only person to be allowed to enter service providers is the system administrator.

General Constraints

Following is the listing of all constraints for the servilistapr system.

Table 1
General Constraints Table

Category	Description
Software Environment	Server Side: Linux Server MySQL Server PHP + Zend Framework + Bootstrap ClientSide WebBrowser
Hardware Environment	ServerSide: 2GhzProcessor or more 16GB of RAM BandWidth will increase Networkconnection

	ClientSide: Regular PC or mobile device
Availability	System will be available for work 24/7/365
Data Repository	MySQL Server Store Data Backups of this data should be done at Regular intervals and should be done by the clients DBA. Information from the user store the information into the database. The system must be able to handle data management, updates, reports generation
Performance Requirements	The system must be able to be Accessed through a web interface. The system must be able to gather

*These are minimum requirements for ServilistaPR

Goals

- Have as much possible service providers available to the users for their retrieval
- Integrity of the evaluations performed by users.
- User will choose Appointment Date and Time

Architectural Strategies

- Based on LAMP (Linux, Apache, MySQL and PHP) Development Environment
- Cloud based Service, SaaS (Software as a Service)
- Reusable Web Form [2]
- Responsive web design. By developing on a responsive mode, all types of devices will achieve better screen performance. For example, regular browser on a PC, as well as tablets and mobile phones. They will benefit from a user experience point of view, that is well organized, screen wise.

Software Requirements Specifications

Currently, local internet services for searching information of different service providers of any nature, only can provide the telephone, address and email of information of the providers to be stored in ServilistaPR available at almost all offices and centers using the internet in Puerto Rico. Although not all facilities have accessibility though the internet to help users register for services, nor tools to obtain faster access to information, because of internet policies of use on certain offices. The objective is to submit and obtain the service provider information and availability and provide a faster and better service by having the information at hand.

By implementing this solution, the client will benefit in the following:

- Competitive advantage compared to other industries.
- Added benefits for the provider, which can attract other providers to begin accepting the system with the added value they will receive by being member of the service.
- Central solution for the management of the both users and service providers.
- Facilitate communication between user requesting service and service provider

Product Perspective

ServilistaPR System is intended to be a service search listing manager, whose purpose is to have as much providers of different type of services provided in an electronic form. These type of services include electricians, plumbers, pool cleaners etc. For now, the part being implemented is the initial user screen, where the user can login and request to subscribe to the service webpage.

Product Functions

In general, ServilistaPR System will offer the following:

- Gathering of the demographic information of the patient
- Gathering of the medical information of the patient.

- Appointment management of the provider

User Characteristics

The prospective user of this system will only need to have a basic knowledge of computers. The user should be familiarized with internet searches using a browser, so he/she can understand better the application.

Assumptions and Dependencies

First assumption is that the user will have some sort of Internet connected device, this refers to a PC, tablet or mobile cell phone. Dependency on the Internet that it will be up with no communication disruptions. Another dependency is that the cloud Server be up and running 99% of the time.

User Requirements

- User Registration.
- User authentication and authorization
- reCAPTCHA tools for the authentication process.
- Appointment confirmation, reschedule and deletion
- Secure ServilistaPR database information
- Search tool by providers and service
- User Appointment Notification by email either cancellation or confirmation
- System will let Users Rate the service of Providers for others to see. This will be an Average system in which only the average of the rating will be displayed and not the persons that rated.

From the users perspective, the beforehand mentioned, are the most important factors to be considered.

Specific Requirements

Regarding the User interface:

- The user interface will offer a responsive design (must adapt to different screen sizes).
- The user interface will be a web portal viewable on a regular web browser.

Regarding the Hardware interface:

- The system will run on a Linux Server with Apache services.
- Initial launch will be on a Shared Hosting Server; upon a year on launch, will move to a dedicated hosting Server.

Regarding the Software Interface:

- The system will run the latest version of MySQL
- The development tool will be Notepad++ and Dreamweaver CS6
- XAMPP, a free and open source cross-platform web server solution stack package, consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP and Perl programming languages.

FUNCTIONAL REQUIREMENTS

The proposed software must be able to be accessed through a web browser. User will enter its own information, requested by the software as needed. Main process is the I/O of the Relational Data Base Management Service (RDBMS). Outputs, service appointments, and service providers Information. Error Handling will be using Try/Catch usage throughout the code.

Do not abbreviate “Table”; use Arabic numerals to number tables. Use the following format guidelines for Figures and Tables:

The system must be able to be available for portable devices (smartphones, tablets, etc). Figure 3 is an emulation of the web page being presented at within a mobile device. Therefore, representing a Responsive web design. It is important the use of mobile searches [3]. Now searchers can more easily find high-quality and relevant results where text is readable without tapping or zooming, tap targets are spaced appropriately, and the page avoids unplayable content or horizontal scrolling.

Google has recently in 2015 made aware the use of mobile technology as all trends and tendencies are pointing to the Post-PC era and the wider use of mobile technologies [4]. Therefore, giving mobile

devices priority on their famous search engine algorithm.

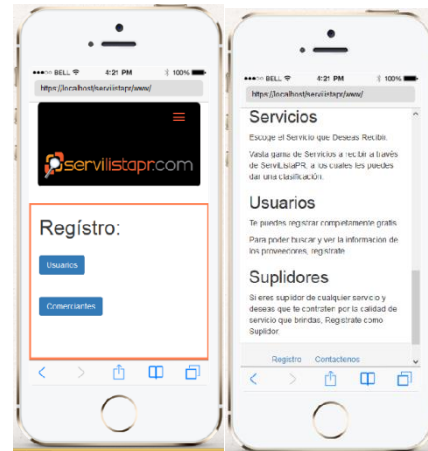


Figure 3
Responsive Mobile Page

Most important of all is to understand and to follow responsive web design [5]. Since the developer is bound to size restriction as well as what the users want to see and acquire faster the information they need.

THE SYSTEM MUST BE ABLE TO PROVIDE A MEAN TO AUTHENTICATE AND AUTHORIZE USERS

The user must be able to be authenticated (identify the user as a real person with rights on the system) and authorized (limit the user activity depending on his/her roles once is authenticated) on the system using a username and password. In addition, for the authentication process, in order to further prove that the user is a real person, the system must provide a CAPTCHA functionality that will constitute as an integral part of the authentication process. Figure 4, shows the use of the reCaptcha, to avoid a bot device making inputs into the system. Captcha minimizes the use of a script to auto fill forms in the internet.

The regular inputs will be Username, password and CAPTCHA characters. The system will first check if the CAPTCHA character were entered correctly. Then the system will authenticate against the database if the username and password belongs to someone. In everything goes well, then the system

will show the functionalities that the user has access to, and will hide the other ones.

In case that something went wrong on the authentication process, a message stating the reason for authentication failure.

The Error Handling, the system must show the reason why the authentication failed.



Figure 4
Screen Using reCaptcha

USER INFORMATION

User register will be done by acquiring the following information:

- Email
- Password
- Telephone Number

This is to keep it as simple as possible.

SERVICE PROVIDER INFORMATION

Service provider register will be done by acquiring the following information:

- Email
- Password
- The Service being Provided
- City being serviced
- Address

This also to keep it as simple as possible.

MANAGEMENT OF APPOINTMENTS

The system must manage the calendar of each of the appointments made for each service provider.

NON FUNCTIONAL REQUIREMENTS

Non-functional requirements may exist for the following attributes. Often these requirements must be achieved at a system-wide level rather than at a unit level. Stated below are the requirements in measurable terms

- The system must be responsive to the user interactions.
- The system must be running 99.9% of the time.
- The system must have the availability to be viewed in different devices
- The system must provide a CAPTCHA tool for robots avoidance.
- The system must be designed using the best practices possible, in order to assure easy maintenance in the future.

DESIGN CONSTRAINTS

Viewable in any kind of Internet platform PC, Tablets, Mobile. Use of Alternate Text on all Graphic User Interface, (GUI), objects for people with visual impairment. Best practice not to refer to any buttons to be pressed by color, but by its functionality and description.

LOGICAL DATABASE REQUIREMENTS

Online use of MySQL, redundancy required to avoid data loss. Secured connection String is required to avoid interception of data.

Encryption of data within the Database will be applied for security purposes and compliance practice.

ANALYSIS MODEL

This system uses the Waterfall method and Rational Unified process for the entire SDLC.

SEQUENCE DIAGRAM

On Figure 5 we show the Sequence of events happening in the system, in his most simple way.

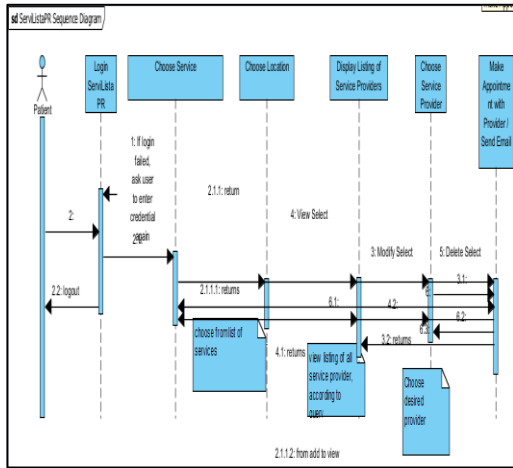


Figure 5
Sequence Diagram

TEST PLAN

Within table 2 we can see the test procedure that will be implemented for the system.

Table 2
ServilistaPR Test Plan

Category	Description
BlackBox Login	The enduser will enter his user name, password and enter Captcha to Log in to the system
BlackBox Search Provider	The end user will Search a Service from a particular Service
BlackBox manage Appoinments	End user will request appointment with selected provider.
WhiteBox User Registration	Create regular user for system
WhiteBox Provider Registration	Create provider user for a particular Service

*These are a few of ServilistaPR Test Cases

CONCLUSION

With today's smarter technologies being developed, we can help out communities with this

types of initiatives. This service will help regular users, from the tech savvy to then non-tech find the home targeted service. With fair scoring by the users receiving the service, themselves, can assure other customers that the service provider is as good as they say they are or as not so good.

REFERENCES

- [1] Y. Lele, C. Kariya, N. Kale, A. Nandgaonkar and M. Phatak. "Human Computer Interaction for Visually Impaired Users in Web Based Applications," in *International Journal of Scientific & Engineering Research*, Vol. 4, no 8,, pp. 1213-1215, Aug 2013,
- [2] M. Seckler, et al., "Designing usable web forms: empirical evaluation of web form improvement guidelines," In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems ACM*, New York, NY, USA, pp. 1275-1284. doi:10.1145/2556288.2557265
- [3] R. Ainworth. *Google's Mobile Search Now Gives Priority to Mobile Enabled Websites* [Online]. Available: <http://www.eteknix.com/googles-mobile-search-now-gives-priority-to-mobile-enabled-websites/>.
- [4] E. Smith. *Mobile Matters: Google Gives Smartphones SEO Priority, (Associations & Now)* [Online]. Available: <http://associationsnow.com/2013/06/mobile-matters-google-gives-mobile-seo-priority/>.
- [5] N. Pettit. *The 2014 Guide to Responsive Web Design, (treehouse blog)* [Online]. Available: <http://blog.teamtreehouse.com/modern-field-guide-responsive-web-design>.