

Janak Pandey

DEVELOPING A RESPONSIVE WEBSITE FOR NEUTROSYS INC

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ABSTRACT

Centria University of Applied Sciences	Date November 2019	Author Janak Pandey
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Name of thesis DEVELOPING A RESPONSIVE WEBSITE FOR NEUTROSYS INC		
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<p>The main aim of this thesis was to build a responsive website for Neutrosys Inc. Responsive website is a website which is designed in such a way that the characteristics such as width, alignment of data will be adjusted according to the width of screen to make the website look professional in all devices (Desktops, tablets and phones).</p> <p>Neutrosys Inc. is an USA based IT resources staffing and employment agency located in Texas, USA which provides IT resources to various clients throughout the United States.</p> <p>WordPress is currently the most popular content management system (CMS) in the world. WordPress powers more than 30% of the websites around the world. It is written in PHP. WordPress' latest version 7.2.2 was used for the creation of this website. This project will go through the process of development of serviceable website for Neutrosys Inc using WordPress.</p>		

<p>Key words Bitnami, CMS, Page-builder, Plugins, Responsive web design, Themes, Web-based, WordPress</p>
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CONCEPT DEFINITIONS

HTML	Hypertext Markup Language
CSS	Cascading Style Sheets
WWW	World Wide Web
CMS	Content Management System
WP	WordPress
RWD	Responsive Web Design

ABSTRACT
CONCEPT DEFINITIONS
CONTENTS

1 INTRODUCTION.....	1
2 RESPONSIVE WEB DESIGN	2
3 CONTENT MANAGEMENT SYSTEMS.....	4
3.1 Drupal.....	4
3.2 Joomla	5
3.3 WordPress.....	5
3.3.1 Why WordPress	5
3.3.2 Wordpress History	6
3.3.3 WordPress Requirements.....	7
3.3.4 Bitnami WordPress Stack	7
3.3.5 Downloading and Installing WordPress	7
3.3.6 Features of WordPress	10
4 WORDPRESS ADMINISTRATION BASICS	12
4.1 WordPress Dashboard.....	12
4.1.1 Toolbar	13
4.1.2 Admin Menu	13
4.1.3 Admin Panel	13
4.2 WordPress Extension.....	14
4.2.1 Plugins	14
4.2.2 Templates.....	14
5 WEBSITE DEVELOPMENT PROCESS	15
5.1 Website Requirements	15
5.2 Design	15
5.3 Implementation	16
5.4 Publishing.....	16
6 WEBSITE FOR NEUTROSYS	17
6.1 User Requirements.....	17
6.2 Design	19
6.2.1 Website Structure.....	19
6.2.2 Wireframe Of The Website	20
6.2.3 Website Navigation	22
6.3 Implementation	22
6.3.1 Home.....	23
6.3.2 About Us.....	25
6.3.3 Services.....	26
6.3.4 Careers	28
6.3.5 Contact Us.....	30
6.4 Publishing the website.....	32
7 THEMES AND PLUGINS	33
7.1 Website Theme	33

7.2 Website Plugins	33
7.2.1 Contact Form 7.....	34
7.2.2 Elementor Page Builder.....	34
7.2.3 WP Job Manager.....	35
7.2.4 All-in-One WP Migration.....	36
8 EXPECTATIONS AND RESULT	37
8.1 Simple, Friendly User-interface and Navigation.....	37
8.2 A Sense of what company offers	37
8.3 Proof of wins	37
8.4 Responsiveness.....	38
9 CONCLUSION	41
REFERENCES.....	42

FIGURE 1 Responsive design for different devices (Solnet, 2018).....	3
FIGURE 2 Installing WordPress-Bitnami Admin Page	8
FIGURE 3 Installation page.....	8
FIGURE 4 Default WordPress Page.....	9
FIGURE 5 Login Page of WordPress	10
FIGURE 6 WordPress Dashboard	12
FIGURE 7 Use Case	18
FIGURE 8 Website Structure	20
FIGURE 9 Wireframe of Neutrosys Website	21
FIGURE 10 Horizontal Navigation for website	22
FIGURE 11 Homepage of Neutrosys' Website.....	24
FIGURE 12 About Us page of Neutrosys Website part 1	25
FIGURE 13 About Us page part 2	26
FIGURE 14 Services page	27
FIGURE 15 Career Page of Neutrosys Website	28
FIGURE 16 Job Listing- Back-end view	29
FIGURE 17 Job Search Page- Front End view.....	29
FIGURE 18 Contact page of the website.....	31
FIGURE 19 Contact form email setup.....	34
FIGURE 20 Elementor page builder.....	35
FIGURE 21 Company Statistics	38
FIGURE 22 Clients of the company	38
FIGURE 23 Mobile Responsiveness	39
FIGURE 24 Mobile Menu	40

1 INTRODUCTION

In this digital world a website for any kind of business has become a must. Companies, large or small, a website can create businesses, promote goodwill among customers and clients. A good website is also a way to establish credibility as a business in a market. So, having a good and professional looking website can help to increase business and attract opportunities.

This thesis is the presentation of the website development with WordPress. The main goal of this thesis was to create a fully functioning responsive website for the consulting and staffing company, Neutrosys Inc. This work was commissioned by Neutrosys Inc. Neutrosys is a USA based IT resources staffing and employment agency located at 5605 North MacArthur Blvd, Irving, Texas which provides IT resources to various clients throughout the United States. The purpose of development of this website was to replace the old existing website for the company, which was designed with Wix.com, a cloud-based web development platform, which was not up to the standard of modern websites. The new website will help the company to increase the number of consultants and build credibility with vendors and clients. The website will be mobile responsive.

Before working on this project, several meetings were held with representatives of the company to understand the requirements. The requirements were the following: website should be responsive, informative and professional looking with easy user-interface. Also, the website should be able to support future updates and the commissioner should be able to manage content. Considering the requirements, several researches were conducted on current website trends, web technologies and content management systems platforms. WordPress (WP) was chosen for the creation of this website because it would be easier for the client to update and administrate the website in future.

The support of blogs and journals were used during the development and documentation of this thesis. Website building without webhosting and domain name was quite tricky, but Bitnami WordPress stack was used to create the website in web based localhost and then transferred the website from local server to web-server with the help of WP-Plugin named "All-in-One WP Migration" which is explained at the end of this thesis. This thesis was done in an interactive and incremental way. The screenshots of the prototype were used to explain the features and functionality of the product. Agile methodology was used in this thesis project.

2 RESPONSIVE WEB DESIGN

Responsive Web Design (RWD) is an approach that suggests that design and development should respond to the user's behavior and environment based on screen size, platform and orientation (DCI, 2019). The goal of responsive design is to build web pages that detect the visitor's screen size and orientation and change the layout accordingly (Rouse 2012).

The term "Responsive web design" was first introduced by Ethan Marcotte in 2010 on his website called "A book apart". Ever since, numerous projects have been created using his techniques (Rekhi 2013). The term is often used to imply the same meaning as several other descriptions such as fluid design, elastic layout, adaptive layout, liquid design, and cross-device design. Responsive web design enables the user to experience the best practices while using website through devices such as smartphones, tablets and laptops as the website design respond to any devices in portrait and landscape mode. (Baturay 2013.)

The main features of responsive web design are media queries and screen resolutions, flexible grid layout, and flexible images and media. Responsive web design use fluid proportion-based grids which helps the content in the webpage to rearrange and resize according to the expansion and contraction of proportion-based width of the webpage. For that, HTML and CSS3 media queries should be used so that the website determines how the content is shown depending on the screen of each device. Thus, RWD automatically changes layout, resizes the images and rearranges the media content depending on the size of the screen (Baturay 2013.)

Responsive web design is a necessity in today's digital market. Statistics show that the user spending time online on mobile is more than on personal computer, so the website should be responsive and mobile friendly to ensure that the visitors have a seamless experience. (Burashid 2019.) Figure 1 illustrates the responsive design used in different devices.



FIGURE 1 Responsive design for different devices (Solnet, 2018)

3 CONTENT MANAGEMENT SYSTEMS

Content Management Systems (CMS) is a software system that provides authoring and administrative tools that enable the management of Web content development, including authoring, reviewing, editing, and publishing. (Shelly 2012.) A CMS is a platform that allows a user to manage and publish the content in a page. It can be hosted on multiple types of servers or own server. Website can be built using multiple tools and they could be expanded through plugins, extensions, templates, themes and own code. (Brown 2018)

Content Management Systems provides an easy approach to create a website or blogs rather than coding from scratch. Even a person with no idea of code can build a fully functioning website with the help of content management systems. Not only a beginner but also a professional web developer tends to use Content management systems because they make the work very easy. Almost every content management system has add-ons such as plugins, themes and other security features. (Brown 2018.)

There are thousands of CMS available in internet. The most popular platforms based on W3Tech content management usage for September, 2019 are WordPress, Joomla!, Drupal and Shopify. WordPress remains the most used platform with 34.5% of all website and claiming 61.3% of CMS market share whereas, Joomla! stands on second most used platform with 2.8% of all website with 4.9% CMS market share and third most used is Drupal with 1.8% with 3.1% CMS market share. (W3Techs 2019)

3.1 Drupal

Drupal is free, open source CMS (Content Management Systems) which can be used to build and manage websites and web applications. Drupal is written in PHP programming language and distributed under GPL (General Public License), which means anyone can download it for free and use the software as they like. Drupal was founded on 2001 by Dries Buytaert. Drupal is one of the most powerful content management systems. It is the third most used content management system with more than 1.3 million active users. Drupal is famous among global organizations and governments because it is the most powerful CMS and has the capacity to manage large volume of the contents. Drupal has one of the most supportive communities contributing to make it stronger every day. (Rouse 2012)

3.2 Joomla

Joomla is also an open source content management system which is based on PHP and SQL. It is maintained by the strong community of volunteers. It was established on 2005. It is the second most used CMS platform with more than 2.8% of all websites. Joomla was downloaded over 97 million times and it is running on more than 2.5 million active sites. Joomla is known for its flexibility, better user management and multilingual features. Joomla is mostly used to build e-commerce and social networking websites as it is the most secure platform. (Joomla 2019)

3.3 WordPress

WordPress (WP) is an online, open source CMS (Content Management System) which is written in PHP. It is the most popular and preferred CMS in the world because it has up to date development framework, extended features and multilingual ability. Another reason that WordPress is preferred is that it has thousands of free themes and plugins available for every type of website. WordPress has become the most used Content Management System which manages over 34.5% of all Websites and 61.3% of the CMS market share. (W3Techs 2019.)

3.3.1 Why WordPress

WordPress is very popular because it is open source, easy to use, SEO friendly, highly customizable, it has strong community support and it is completely free. There are many open source CMS in the internet like Drupal and Joomla which are very powerful and direct competitor of WordPress. The main reason behind choosing WordPress over any other CMS are given below. (Sabin-Wilson 2010.)

WordPress is very easy to use. WordPress has simple interface, a user without any coding experience can build a fully functional website which makes WordPress an ideal choice for bloggers, designers and publishers. WordPress offers the easiest way to build a professional website. Installation process, website building, publishing and maintaining the website is easier with WordPress than any other CMS. Not only it is easy to use, but it is also extremely powerful. (Sabin-Wilson 2010.)

WordPress is proven, controls over more than 31% of all the websites online. WordPress is trusted and used by leading publishers like CNN, The NY times, BBC America, Chicago Sun Times, Vogue and

Microsoft News. Also, WordPress is very customizable and extremely extensible, meaning that plugins and tools are easily available, and it offers the greatest number of themes and plugins. WordPress has more than 47,000 active plugins and hundreds of themes in WordPress. Also, WordPress has a strong community of large number of users and loyal members helping by contributing numbers of themes and plugins for the users. Member helps community via public support forums, mailing lists and blogs. Thus, any kind of information and tutorial about WordPress is easily available. (Sabin-Wilson 2010.)

3.3.2 Wordpress History

Matt Mullenweg and Mike Little co-founded WordPress in 2001, which they launched in May 2003 with the help of several core contributing developers. At that time, the WordPress was just a free blogging forum for the users. Since then, WordPress has grown to be a full content management system which supports widgets, plugins and themes. WordPress is distributed under GPL, which allows the users freedom to copy, modify and share any free software. (Rouse 2012.)

WordPress is an official successor of b2/cafelog. WordPress is modern software, but its roots and development go back to 2003 when Matt Mullenweg and Mike Little began to build a new blogging platform on top of abandoned software called b2/cafelog which was abandoned due to the death of Michel Valdrighi, founder of b2/cageblog decided to fork it and continue to develop their own software. They released the first version of WordPress (WordPress 1.0) in January, 2004. The first version of WordPress (WordPress 1.0), 2004 was very simple and different from the feature-rich CMS today but it had most of the core features that are still in use in today's WordPress such as installation process, WP editor, and user management system. (Gediminas 2019.)

Since then, WordPress has gone through remarkable transformation. Today WP is an open source which means the WordPress project is developed, managed and maintained by the community of worldwide members, mostly by the volunteers. WordPress is growing rapidly, and a new version is released almost every couple of months. Each version adds new updates and security features. (Gediminas 2019.)

3.3.3 WordPress Requirements

To run the WordPress, designer needs to have access to a server which is compatible with PHP version later than 7.3, MYSQL version later than 5.6, MariaDB version later than 10.0 and support HTTPS.. Normally, to build a WordPress site, one needs to buy domain and hosting first and then launch a website. For this project, a computer was used as local host server and a website was built locally by using software called 'Bitnami WordPress Stack'. (WordPress 2018.)

3.3.4 Bitnami WordPress Stack

Bitnami WordPress Stack is a free, self-contained, easy-to-install package that bundles every piece of software necessary to run WordPress for development or production purposes. It includes the configured latest version of WordPress which is ready-to-install and ready-to-use. It is completely free and easily available. This is a software which allows the user to run WordPress on their computer. Bitnami WordPress Stack for Windows OS or Linux can be downloaded from www.bitnami.com/stack/wordpress. (Josue 2011.)

3.3.5 Downloading and Installing WordPress

WordPress is one of the most used open source applications in the world which is easily available. In this part of the thesis, the process of downloading and installing of WordPress is shown. The platform used for this project was WordPress 7.2.2. Full installation of WordPress 7.2.2 is shown and described. The very first step was downloading the latest version of WordPress Stack from the Bitnami website, www.bitnami.com/stack/wordpress. The installer file (bitnami-wordpress-5.2.3-0-windows-x64-installer.exe) recently downloaded file was double clicked to launch. After that, next button was clicked until this following page came which is shown in FIGURE 2. In that page one should enter the login detail of local WordPress site. The required credentials such as name, email address and password were entered. In this case, Neutrosys was entered because the project was to build the website for Neutrosys Inc. The login id and password are required to login to local WordPress site later.

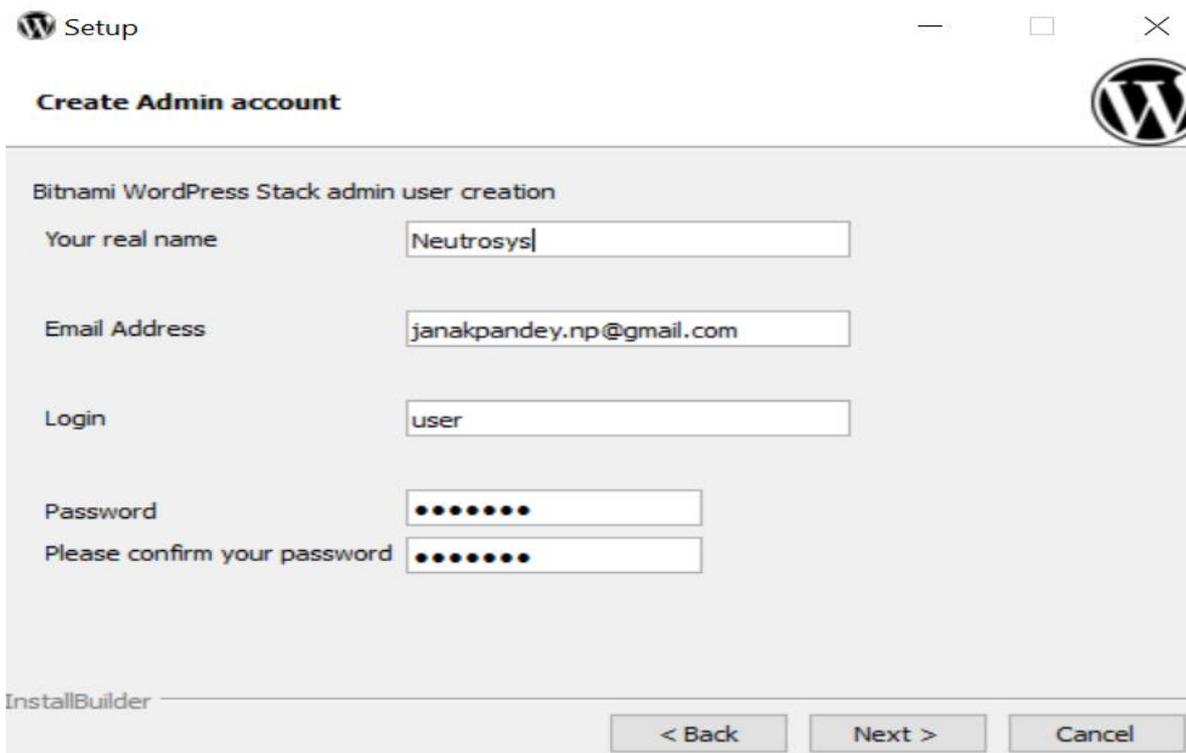


FIGURE 2 Installing WordPress-Bitnami Admin Page

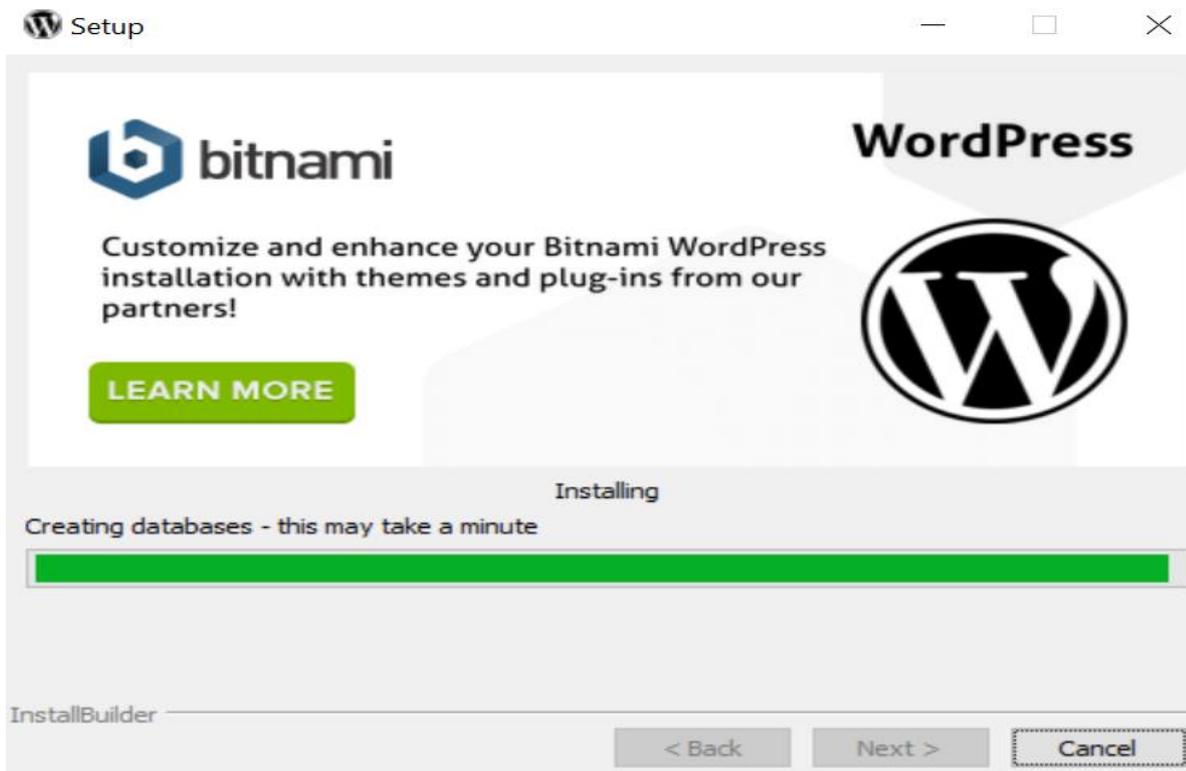


FIGURE 3 Installation page

The installation page is illustrated in (FIGURE 3). After installation was completed, clicking ‘Finish’ button completed the installation process of WordPress. Finally, Wordpress was installed on the computer and the welcome page appeared. WordPress was then all setup and ready to use. WordPress was then installed on the computer. To access the site, one must click the access the WordPress and they will be taken to the website. The website looked like as shown in FIGURE 4. It was the default page created by WordPress.

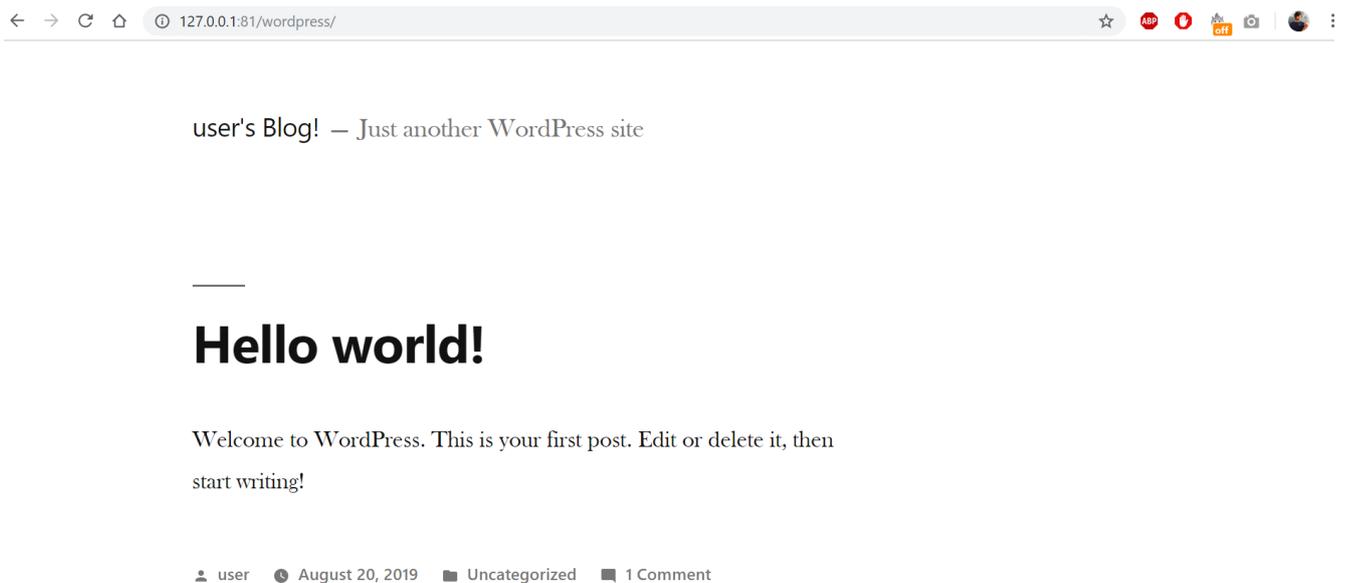


FIGURE 4 Default WordPress Page

FIGURE 4 shows the default WordPress webpage. However, in order to access the admin section, “admin” must be added to the root directory. For an instance, <http://127.0.0.1:81/wordpress/wp-admin/> and will be redirected to the login page of the WordPress. Entering the login ID/ User ID and Password that was entered during the installation process in FIGURE 2, one can login to the WordPress. The screenshot of WordPress login page is shown in FIGURE 5.

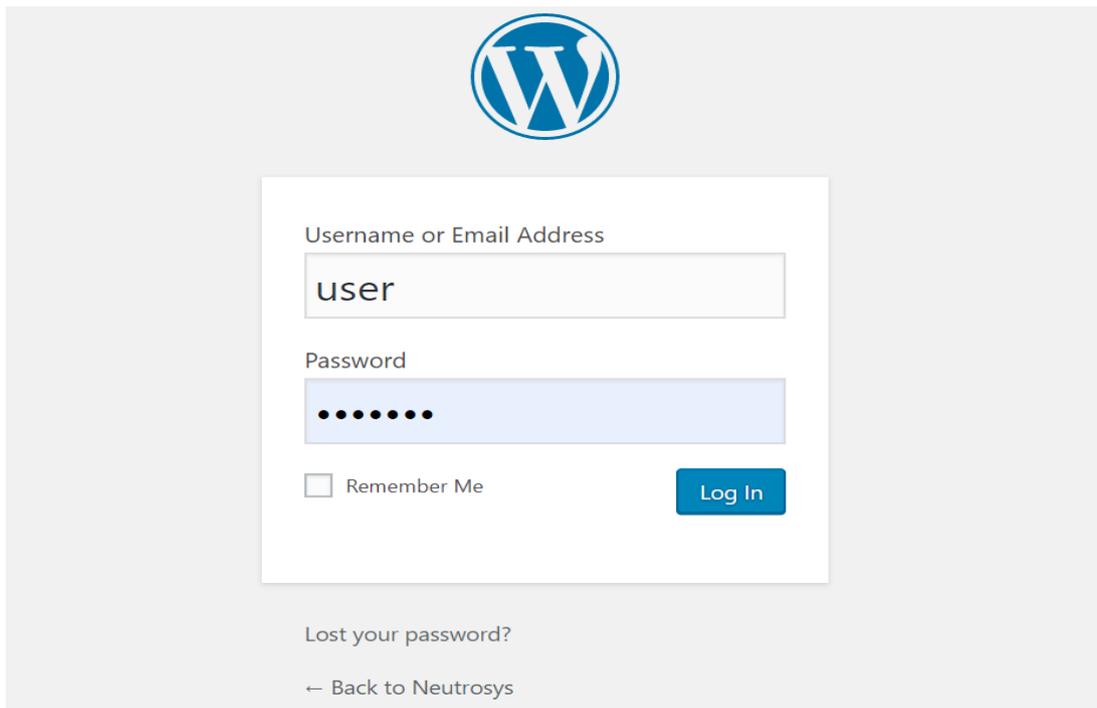


FIGURE 5 Login Page of WordPress

3.3.6 Features of WordPress

WordPress is a freely distributed, fast, light and free content management system with very sensible setting and features. WordPress is an open source software that comes with several features. WordPress offers simplicity to the beginner as well as the complexity required for the professional developers, which makes WordPress flexible and easy at the same time. The features of WordPress 7.2.2, which was used for this thesis project are explained below. (WordPress 2019.)

WordPress has simplified user management system. Multiple users can manage the website at the same time as a contributor, author, editor or an administrator. This feature increases the number of contributors to the website without any interference. WordPress provides several SEO tools which makes the website Search Engine Optimization (SEO) friendly which is one of the greatest features of WordPress.

(WordPress 2019.)

WordPress is very flexible as it allows the user to create any type of website such as a professional portfolio, personal website, business website, news website, networking sites and woo-commerce website. There are thousands of themes for every type of website which can be extended by plugins or even their own code. Not only it is flexible but also it is very easy to manage the contents, make drafts and

even schedule the post. Moreover, WordPress supports more than 70 languages which makes it the most for any content management systems. (WordPress 2019.)

WordPress can be installed within minutes, it is very easy to download, install and upgrade. Not only the installation process but also creating a website in WordPress is very easy. Anybody can create a website without a single line of code. Also, it can be extended using several plugins. Page builder feature of WordPress allows the user to create the website with a drop-down function. (WordPress 2019.)

4 WORDPRESS ADMINISTRATION BASICS

The WordPress Administration holds the key functionality of WordPress. WordPress is consisted of two areas: back end and front end. Front end is where the user can see when he/she visits the website. Front end can be accessed by anyone if the website is published online. There are a few actions that can be performed from the frontend by users such as commenting and sharing, if the website allows. Whereas, backend is an administration site and it only can be accessed by logging in. WP backend can be accessed by adding /admin, for an example: www.example.com/admin. WordPress backend is also known as WordPress dashboard. The backend allows the user/ admin to manage the content, customize and design the site. (Skrba 2019.)

4.1 WordPress Dashboard

WordPress dashboard or admin panel can be accessed by adding /wp-admin to the site domain name. For an instance, <http://127.0.0.1:81/wordpress/wp-admin/>. By entering username and password created during the installation in the WP login window, one can get access to the WP dashboard. The WP dashboard is divided into three sections: WordPress Toolbar is located at the top, the WordPress Admin Menu on left and the Admin panel in the middle of the page.

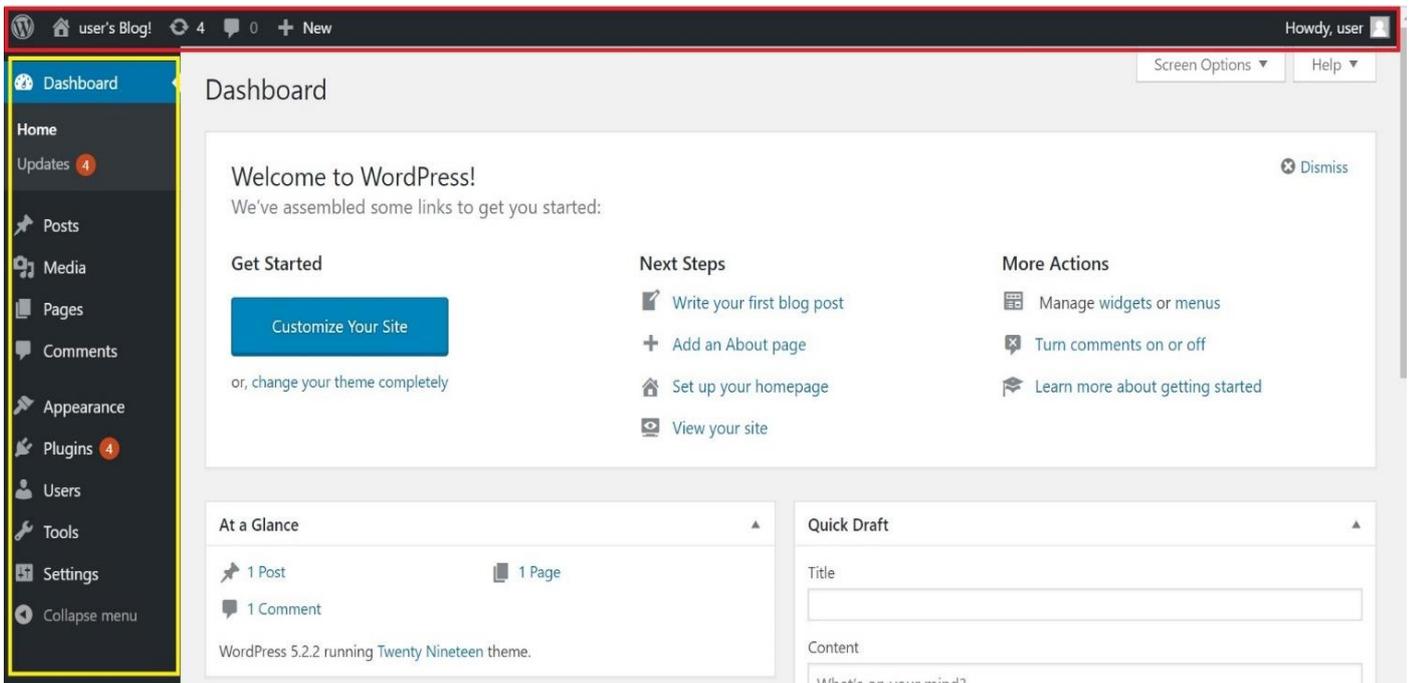


FIGURE 6 WordPress Dashboard

4.1.1 Toolbar

The WP toolbar is full-width horizontal bar at the top of the screen. It is also sometimes known as admin bar. This horizontal bar is usually visible to the users in both backend and frontend once logged into the WordPress. It changes and adjusts its options depending on which page the user is working on. WP toolbar has a WP logo on the left corner and the shortcuts to different sections of WP administration screens such as, 'New User', 'New Page', 'New Post', 'Edit My Profile', 'Log out' etc. When viewed from the front-end administration screen, the toolbar adds few more shortcuts to the different sections such as, Dashboard, Themes, Widgets, Menus etc. The WordPress toolbar can be extended with plugins. Highlighted area with red color in FIGURE 6 shows the WordPress Toolbar when viewed from back-end. (Ohklyn 2018.)

4.1.2 Admin Menu

WP Admin menu is located on the left-hand side of the dashboard. Yellow highlighted section on FIGURE 7 on the left is an Admin menu. It is separated into three main sections: The dashboard section, the content Management section and the site administration section. The dashboard section gives easy access to the dashboard area. It also shows the new updates for WordPress, themes and plugins. The Content Management section is the section where one can create and manage pages, posts, media and comments. The site administration section is the section where one can design the appearance of the website, create and manage menus, header and widgets. Managing users, selecting and editing theme, managing plugins, setting up the permalinks and other security setting are managed from this section. (Ohklyn 2018.)

4.1.3 Admin Panel

The WordPress Admin Panel or admin area is a workplace where all the tasks are done. Admin area is in the middle of the screen where one can write, manage, edit and delete the post. This area adjusts and shows depending on what is selected in the Admin menu. Admin Panel is the place in a default screen with widgets like quick draft, news and events can be seen. In the FIGURE 6, the middle area is a WP admin panel which provides the quick overview of the details of the WordPress. (Kinsta 2019.)

4.2 WordPress Extension

Extensions or add-ons are the software components that are used to add the certain functionality and features in the computer software. Adding extensions on WordPress adds other features on top of its default features. Extensions installed in WordPress helps to extend the functionality of the website. WordPress is great, and the most loved Content Management Systems because of its customization feature. There are thousands of themes and plugins available for WordPress.. WordPress website can be extended by adding number of extensions such as plugins, themes and templates. (Twinword 2019.)

4.2.1 Plugins

WordPress Plugins are small software programs that can be added to the website to add new features and extend the core functionality of the site. WP Plugins are written in PHP programming language. They do not function on their own, they need host program like WordPress to function. WordPress without plugins would not be as favourable as it is with plugins. There are more than 48,000 free plugins in the WordPress. One can download and install them manually from other third-party companies too. Plugins can be installed, activated, uninstalled or deleted from the admin panel if logged in as administrator. The best plugins in WordPress are WPForms, Yeast SEO, All in one SEO Pack, Tool cache, MetaSlider and Woo commerce. It is advisable to keep the plugins updated for the best result. (Sabin-Wilson 2010.)

4.2.2 Templates

WordPress Template is the layout of the single page which determines how the specific page looks in the website. They are the layouts used within a WordPress theme. A theme is a collection of templates. Often there is confusion between templates and themes. A theme is a layout of the whole website whereas a template is a design of a single page. A template cannot be installed or used alone, in order to use template, there needs to be the WP theme. With the help of WP page editor or Page builder, template can be applied to the individual pages and sections. Templates can be downloaded from the third-party clients like 'tyler.com' and added manually to the website. Templates can be added by clicking Templates followed by 'Add New' under the Admin menu in the dashboard. Anybody with good knowledge of HTML, CSS and PHP language can design their own template. (Biglione 2017.)

5 WEBSITE DEVELOPMENT PROCESS

The website development is a very lengthy process which requires a series of tasks, resources and materials. The detailed plan helps to create websites within a given time and budget. In order to make a website development process easier, a good project plan is required. It is carried out on different phases one step at a time. Defining the goals and objectives of the website, grouping the content list, creating a design, wireframe, navigation structure, implementing the design practically and finally publishing are the different phases of the website development process. Carrying out each phase respectively one after another prevents chaos and helps to run the development process smoothly. (Dummies 2017.)

5.1 Website Requirements

Website requirements tells not only the functions and capabilities that the website must have but also what it allows the user to do. Before defining the requirements, one needs to specify the stakeholders. There are several types of requirements that come together during the process. Business requirements, Functional requirements and User requirements are the categories of website requirements. Business requirements in the website are the objectives that the clients are intending to solve problem with. Functional requirements specify what is required for the development of the website and how the website should work. Similarly, user requirements in the website development specify the user expectations and how they will interact with website. Website requirements tell what the website should include and how they allow the user to use the site. (Usability 2019.)

5.2 Design

After gathering the requirements, next step in a website development is determining what type of design to be implemented in the website. It is the most important step in a website development process. Designing in website development is like making a blueprint for the website. Planning a site structure and designing the navigation structure comes under the initial phase of the design. The final and the most important phase is creating a wireframe and a layout of the website, which shows the skeletal structure or prototype of the website, for which the clients have been waiting for. Designing is the most important and unmissable part in not only website development process but also any software engineering process. (Stout 2016)

5.3 Implementation

Implementation is a process of putting a plan into effect. All the steps that were described above are executed to build the website and make it ready to publish. This part involves all the practical work done such as creating webpages, posts, placing the contents and creating a navigation bar based on its design. Different technologies such as HTML, CSS, JavaScript, PHP and databases can be used according to the need of the website. Also, this part involves testing the website. Testing the website is done time to time during the implementation process. (Kyrnin 2018.)

5.4 Publishing

Publishing is the process of posting the content on the internet. When the website is completed, tested and approved by the clients, web publishing is done. It is also known as online publishing. Publishing is the final part of the process. In this part all the files, content and databases are uploaded to the web server via internet. In order to publish the website online, a publisher requires an internet connection, a domain name and a web server to host. Website published on internet can be accessed by global visitors. (Technopedia 2019.)

6 WEBSITE FOR NEUTROSYS

The commissioner of this thesis project was Neutrosys Inc. The project was to build a responsive website for Neutrosys Inc. Neutrosys Inc. is a Texas based IT staffing and sourcing company. Several meetings were conducted before starting the project. During the meetings, the commissioner provided their requirements and expectations regarding the website. They stated how the website should look like. Few reference websites were given for the guidelines and ideas. Some of the reference websites were www.bcforward.com, www.solvingitsolution.com, and www.randstand.com. The commissioner was very clear with their requirements. One of the distinctive requirements from the commissioner was the colour combination; the whole website should have the same colour as the Neutrosys logo. Neutrosys logo consists of different shades of sky blue with green underlining and a saffron dot. It was agreed that the website should have a Career page where the company can post job vacancies and consultants can send their resume through the website. Also, the website would have five pages; Home, About, Services, Career and Contact.

6.1 User Requirements

The User Requirements Specification in website development specifies what the user/commissioner expects their website to be able to do. User Requirements documents helps any software engineer or website developer to visualize the project beforehand and helps to choose the tools and technologies for the creation of the website. When dealing with user requirements, there are few elements such as value, adoptability, usability and desirability. Questions such as how useful the website is going to be, Will the website be easy to adopt for the new users should be answered before planning a website. (Guo 2012.)

After several meetings with the representatives of the commissioner 'Neutrosys Inc', several requirements were gathered. Some of them are; website should be responsive; it should be able to resize and re-arrange the content to fit any kind of device. The website should have a job-board where the user is able to post job vacancies and apply via the front end. With this the commissioner was trying to solve the problem that occurred in their previous website during the job listing. The website should be SEO friendly to make people engage more in the website. Website should be very easy to navigate and should include contents that are easy to understand. The website should be made very simple to use yet very durable. Website should be able to run for years without server lagging and crashing. The website should have five webpages; Home page, About page, Services page, Career page and Contact page. The website

should have a very simple colour grading for the Navigation bar, blue color for the font with white background. Also, the website should be created using WordPress, so that it would be easier to maintain for the commissioner.

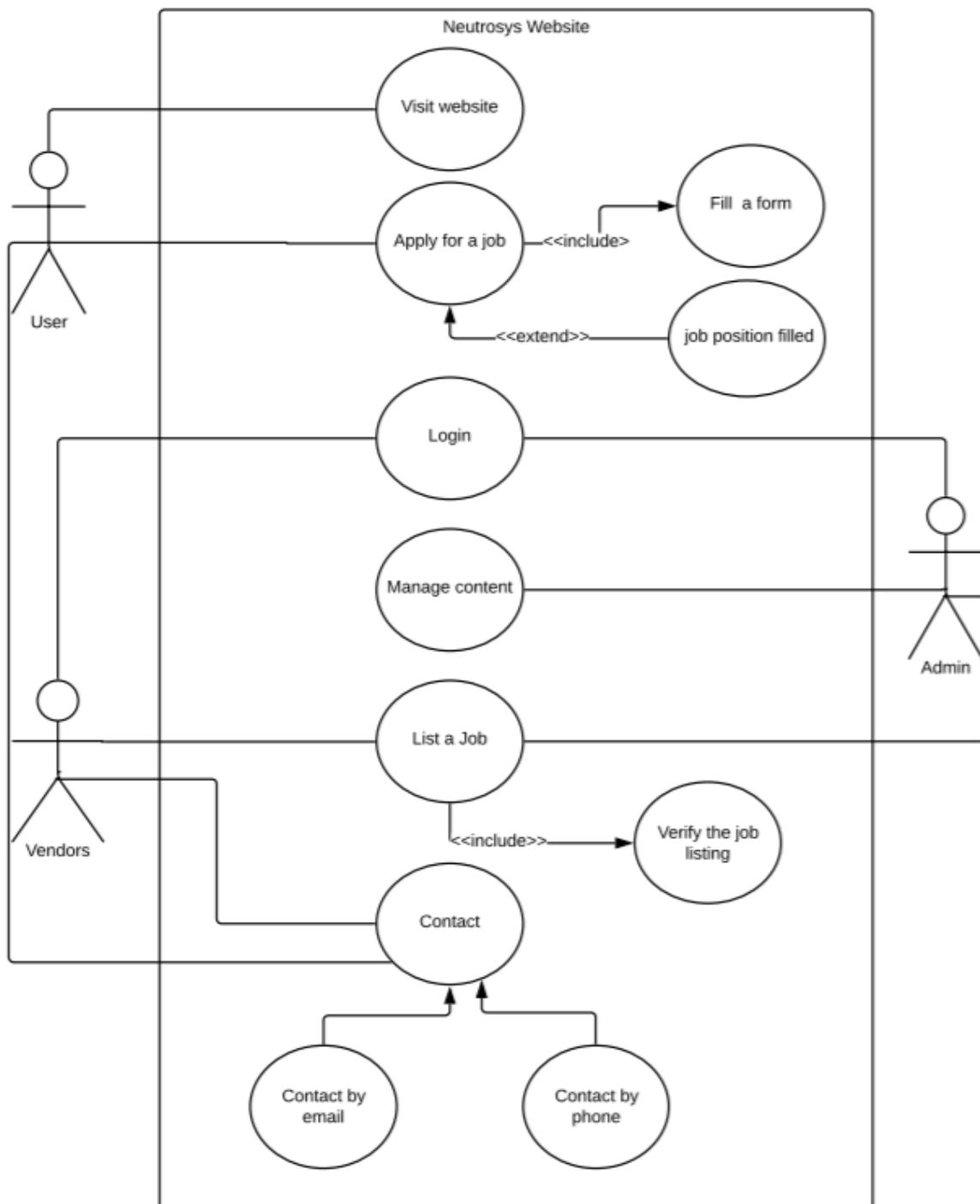


FIGURE 7 Use Case

Figure 7 is the use case diagram which shows how the system/ website will be accessed by the users, vendors and admin. The Use case for the user is described in the table below.

Use case name	Job Apply
Actor(s)	User
Preconditions	The system is in the idle state. User must be on the website. Job apply form is shown on the screen.
Brief Description	This use case allows the user to apply for a job from the job listing within the website. The user clicks 'Apply for a job' button. If the job is available, the system displays the form. To apply for a job, all user must fill out the form.
Post-conditions	The system will show the 'Thank you' message

Table 1. Job apply use case description

6.2 Design

Designing was one of the most important and difficult parts of this project. After gathering the requirements and grouping the contents, the next step was to determine what type of design to be implemented in the website. Planning a site structure, designing navigation and creating a wireframe of the website are done in this part of the thesis. Designing was the most important and unmissable part of the project because the structure of the website was made according to its design.

6.2.1 Website Structure

A website is a collection of well-structured webpages. Building a website is a lengthy process and requires large amount of resources. So, a proper and detailed site plan is necessary. Planning an outline of the site's structure before starting to build the pages is essential because an outline of the website's structure serves as a blueprint of the website. After gathering all the requirements from the client, the next step was to create the structure of the website- the linked arrangement of the pages from Home Page. Taking into account all the requirements and given references, a website structure was created. FIGURE 8 illustrates the site structure for webpages of the Neutrosys website. (Shelly 2012.)

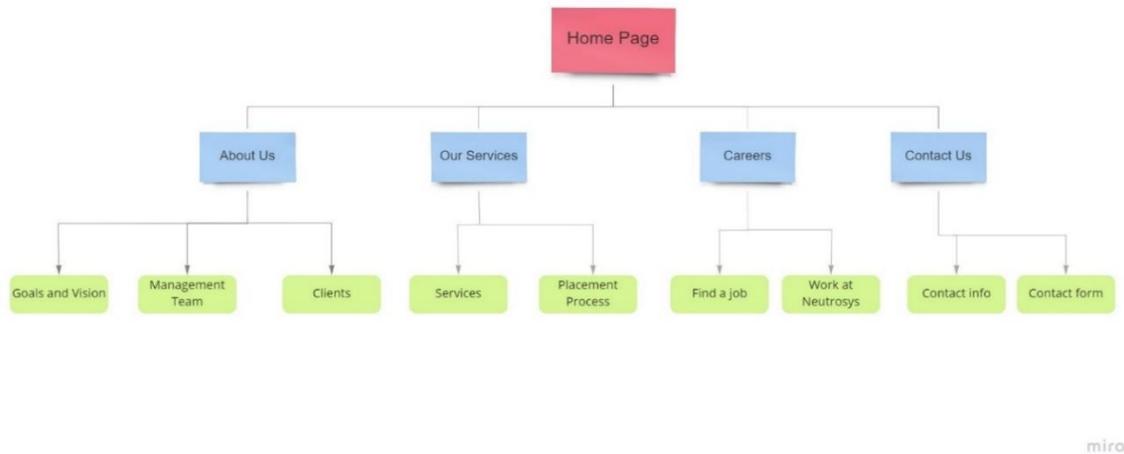


FIGURE 8 Website Structure

6.2.2 Wireframe Of The Website

A website wireframe is a simple layout that specifies the size and placement of the elements on the page. Wireframes are usually made simple, without using any colour, logo, content or any specific designs yet include all important information. Wireframes are usually made after the site map or flowchart and before actually designing a website. Wireframing is very important part in website development process as it serves as blueprint or sketch of the website. Building a website without creating a wireframe is like building a house without a blueprint. Wireframes can save time and money in any project. With wireframing, the whole development process can be run smoothly as the developer has clear idea what they are building. Also, the wireframing and prototyping in an early stage of development makes it easier to interact with the clients and show them what they are getting. (Hass 2011.)

The easiest way to create a wireframe is with a pen, pencil and paper. Several tools can be used to make wireframe such as FlairBuilder, Axure for PC, SmartDraw, OmniGraffle and Microsoft Visio. FIGURE 9 shows a simple, clean and hand drawn wireframe sketch using Google Drive integrated diagramming application called **draw.io**. A good wireframe can be used as a guideline for the developer and the designer. (Pazos 2018.)

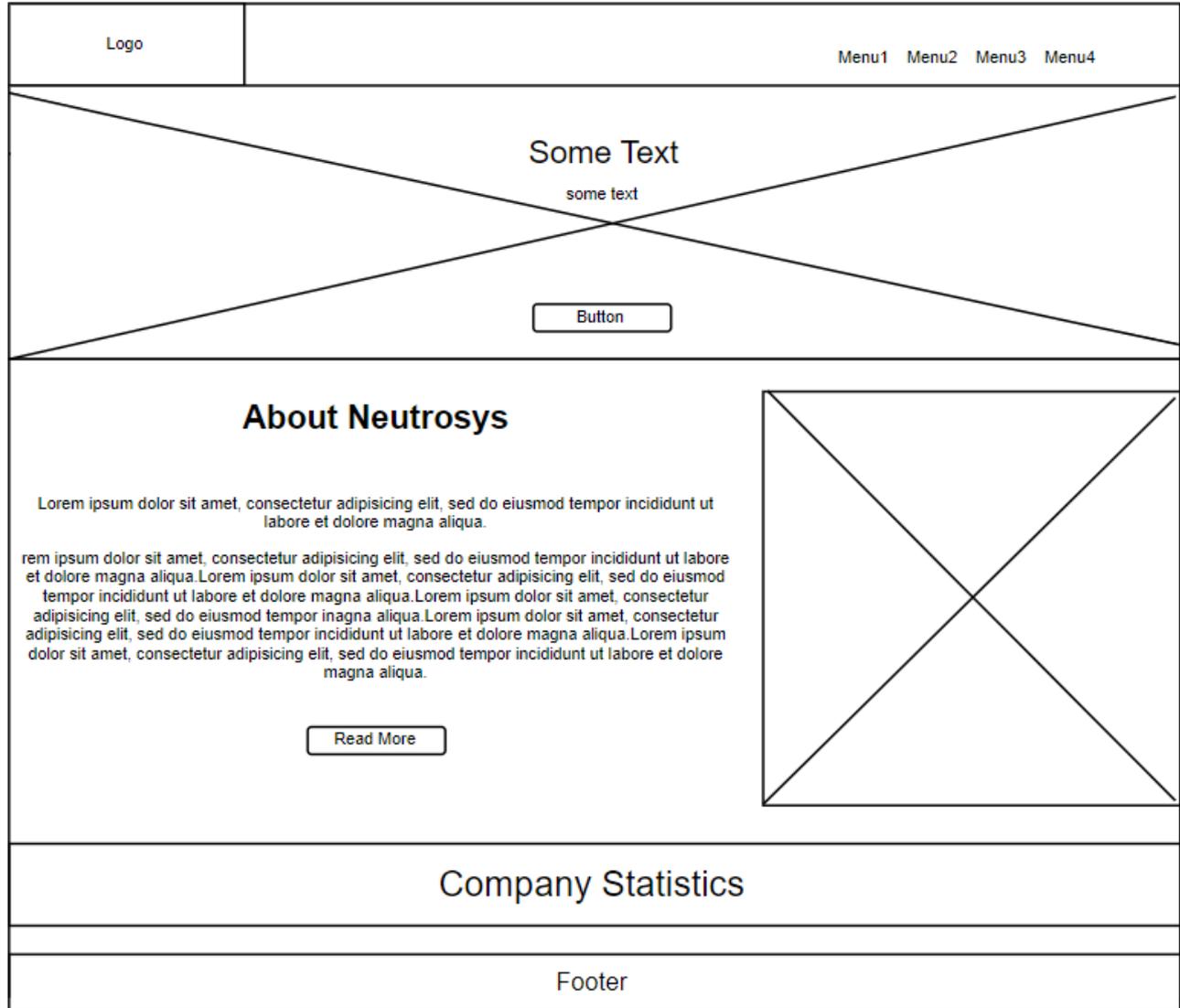


FIGURE 9 Wireframe of Neutrosys Website

Homepage of the website has five sections, a navigation Section, an image section, a content section, Statistics section and finally a footer section. Navigation bar is at the top of the website where there are menus that navigate to other pages, which are followed by section where there is image/ video with text on it, and then the Introduction section with image, the company stats section and finally the footer section where there are social media icons for contact.

6.2.3 Website Navigation

The website navigation is a top priority for any website because it helps the user to find content in the website. A navigation menu should always be simple and intuitive. The navigation menu can be placed vertically on the left side or horizontally at the top of the page. For this website, the navigation menu is designed horizontally in the header section (FIGURE 9). Horizontal navigation was used over the left-hand navigation because it allows full use of the page width. Using horizontal navigation saved more space in the content area, which allowed the author to use larger text, wider images, and interesting content on the website. As shown in FIGURE 10 below, following menus were created in the Navigation bar as per the commissioner's requirement: Home, About Us, Services, Careers, Contact Us. In addition to these menus there are two dropdown sub-menus inside the Careers' tab; Open Jobs and Work at Neutrosys



FIGURE 10 Horizontal Navigation for the website

6.3 Implementation

After designing the site structure, website wireframe and navigation structure, the development of the website was carried out. In this part all the designs and plans were executed to build the website and the real practical work was performed. First, a few things were taken care of, such as deleting the unwanted settings, plugins and widgets. With installation, WordPress comes with a few default settings and plugins. Default unwanted plugins and extensions were deleted. Having more plugins installed in a website will slower the website, or even crash the website because each plugin will add its heavy file like PHP, JavaScript to the website. So, inactivating and deleting unwanted plugins is a must while building a website in WordPress. After that, setting up the permalink was done. A permalink is the permanent URL for any given page or a post on the site. The default permalink of WordPress looked like <http://neutrosys.com/?p=123> which was ugly and unprofessional. Such links do not look attractive and shareable. So, to make the website more SEO friendly, permalinks should be changed to be short and simple. For

instance, the permalink was changed to <https://neutrosys.com/post-name>. Below, the author describes the webpages created for the website. (WordPress 2019.)

6.3.1 Home

A Home Page is the main web page of the website. It is a front door of the website. One of the first works when building a website is to create a Front page/ Home page. After the theme was selected, home page was to be built. As the commissioner required the website to be clean and simple, the homepage was designed that way. Homepage of the website has a header with the logo and the navigation menu which is followed by a full-width background video clip of people working at the office with very low opacity with a caption, “We follow Success” on it. Below that, there is a short description of the company with image on the right followed by the statistics of the company and finally footer with menu and social media icons. Color in the website was chosen very cautiously. Menu color was made blue with light blue for hover effect and green text underlined hover effect. When hovered on the menu, green underline effect appears. Navigation menu has the color combination similar to the color combination of Neutrosys Logo. The background color for the website was chosen white and text color was made dark grey. The commissioner wanted the home page to be clean, tidy and simple because a clean interface helps to maintain user’s maximum focus on. Such websites with a tidy interface are very alluring. FIGURE 11 shows the tidy interface design of the Homepage for the Neutrosys website.

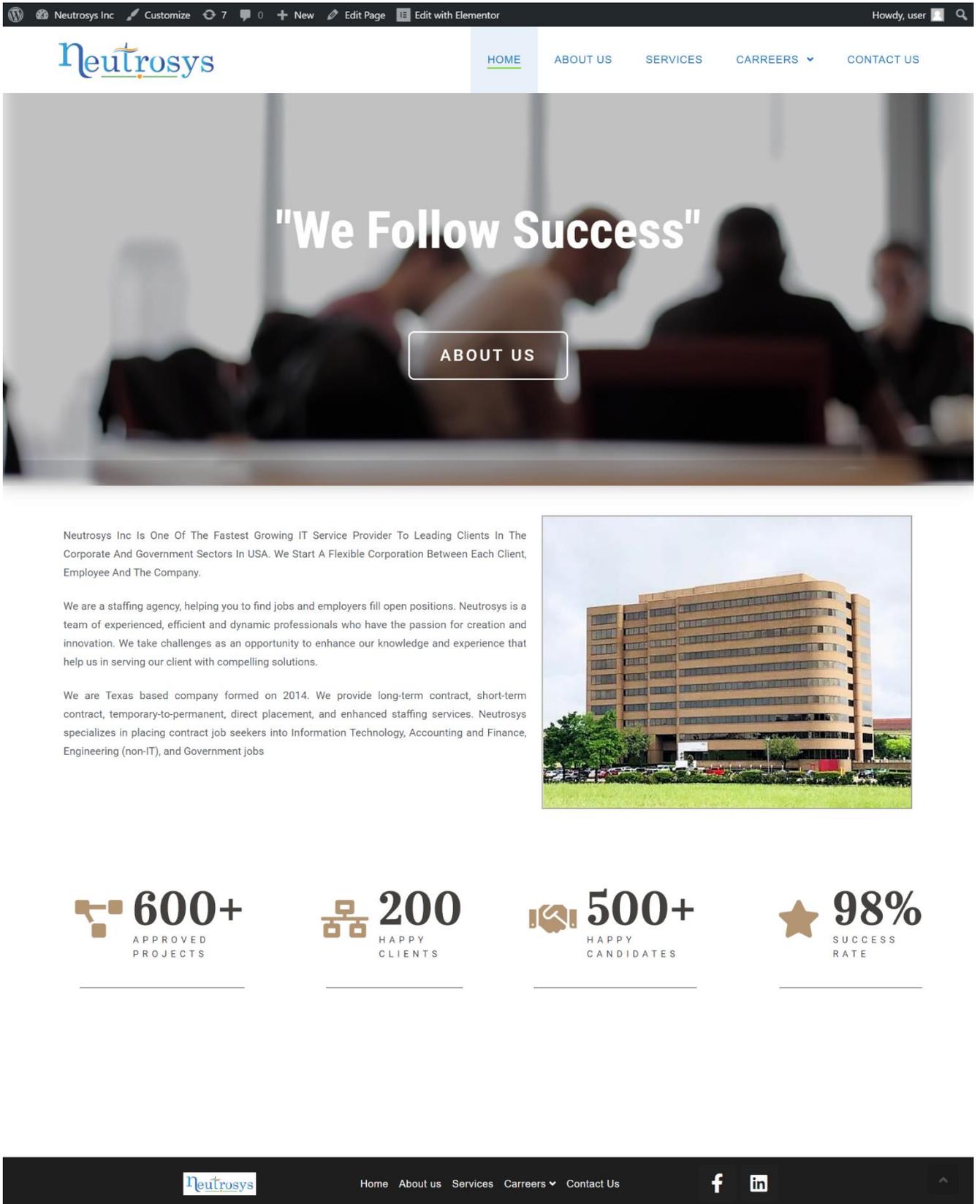


FIGURE 11 Homepage of Neutrosys' website

6.3.2 About Us

‘About us’ page is a webpage where user/visitor learns about the company and what it does. This section of the website gives information about the company, company’s goals and values, and team members devoted for the company as well as clients and vendors of the company. Template for this page was taken from ‘www.tyler.com’. In the beginning of the page, brief introduction of the company was written in a solid dark blue background with white text. It is followed by a combination of images and text which explains what the company does, why one should choose Neutrosys and company’s goals and vision with headlines ‘What We Do’, ‘Why Us’ and ‘Our Goals and Vision’. Below that, there is a section where important members of the company are shown followed by ‘Our Clients’ section where the logo of the several clients are shown in a slideshow. Blue color was used for headlines as in the home page. Screenshot of About Us page are shown in FIGURE 12 and FIGURE 13.

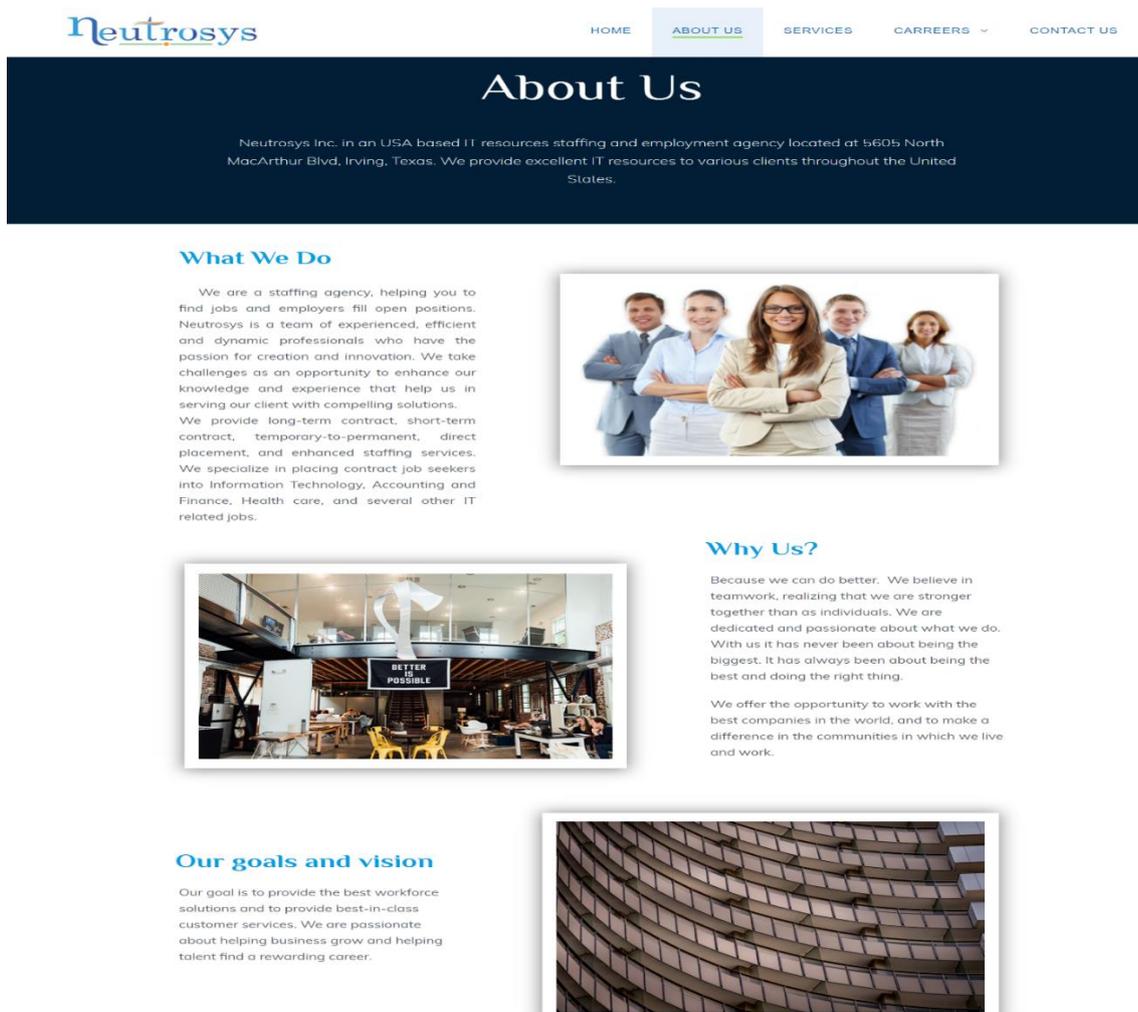


FIGURE 12 About Us page of Neutrosys website part 1

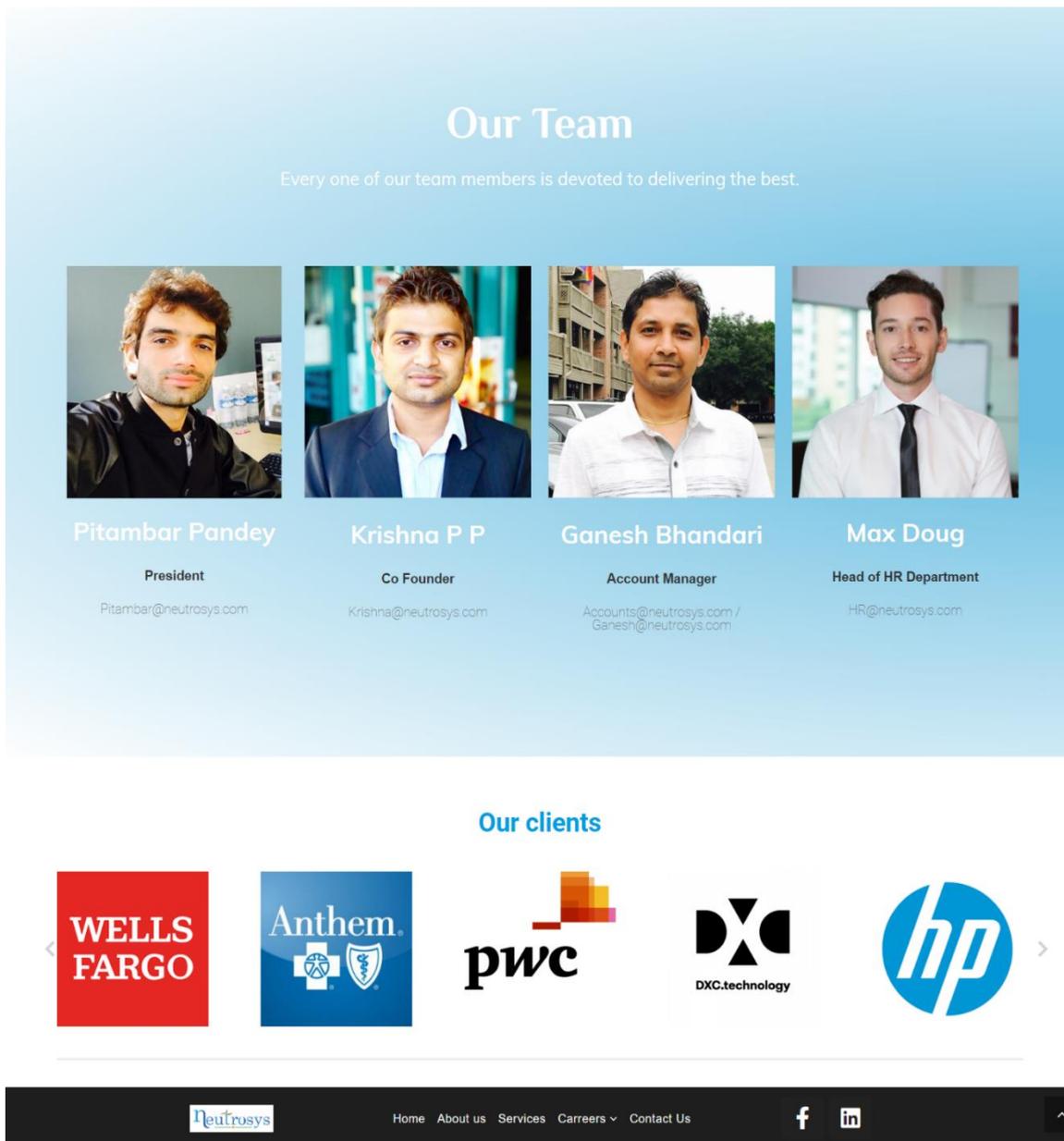


FIGURE 13 About Us page part 2

6.3.3 Services

The service page is one of the most important and critical webpages in the website. The service page not only shows what the company offers but it also reveals why it is different from any other company. The service page is all about what the company does, what are the services provided and how. It should not overlook any of the services. Service page should be eye-catching. The services page for the website was designed carefully. A brief description of what the company offers, is written in the upper part of the page. It is followed by a visual description of the services that are provided by Neutrosys. Below that the 'Practice Areas' are shown, which demonstrates the services offered by the company in different

sectors such as banking, insurance, real estate, automation etc. Finally, the staffing process is described with text and images. That way the service page was designed to provide clear information to the visitor about the services. Services page is shown in FIGURE 14 below. (Austin 2017.)



FIGURE 14 Services page

6.3.4 Careers

Commissioner required this website to have a job board section in the website where the employers should be able to post job vacancy requirements for the position as well as a visitor/employee should be able see the job listing and apply for the job or send a resume. The career menu has two sub menu options; Open Jobs and Work at Neutrosys. When clicked or hovered over the Career menu, it shows the dropdown options as shown in FIGURE 15. Job search page acts as a Job board. Career page was designed to be simple and tidy with just two buttons which navigates to two different pages. Screenshot of career webpage is shown in FIGURE 15.

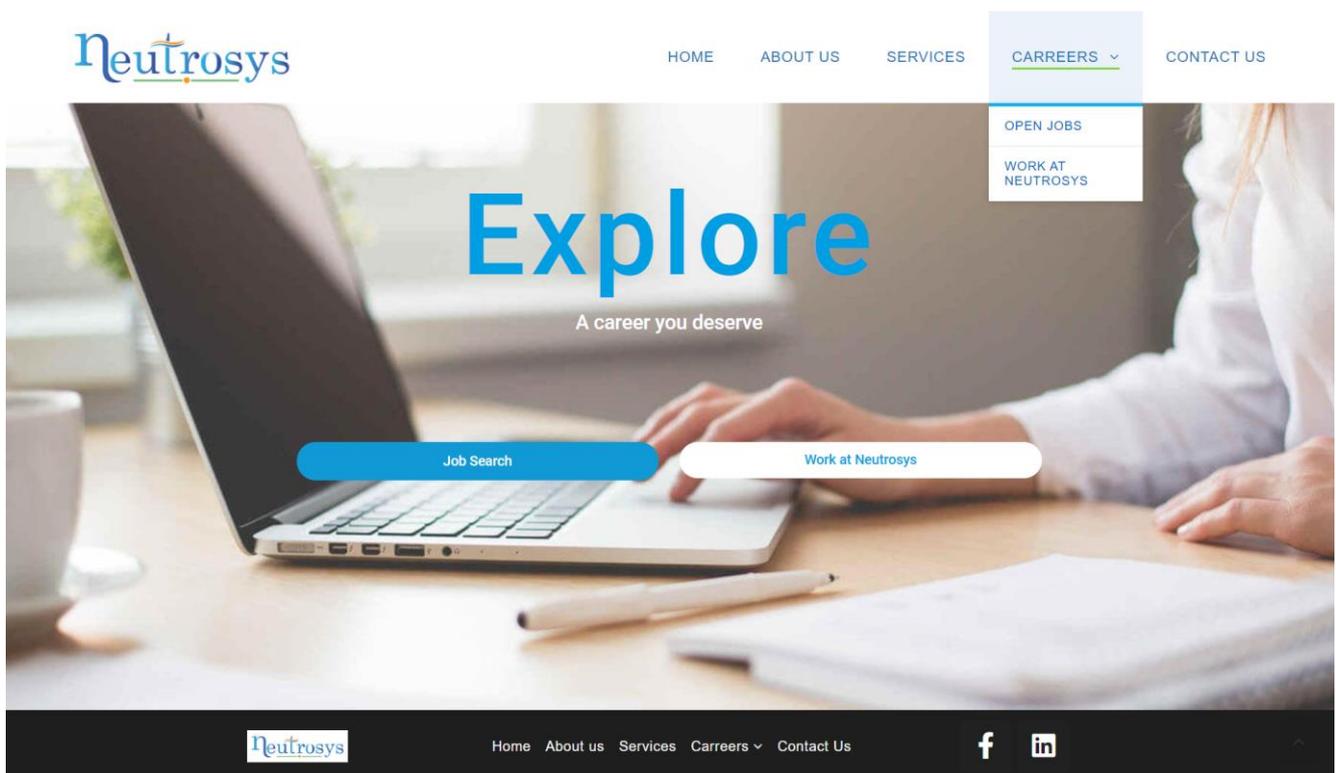
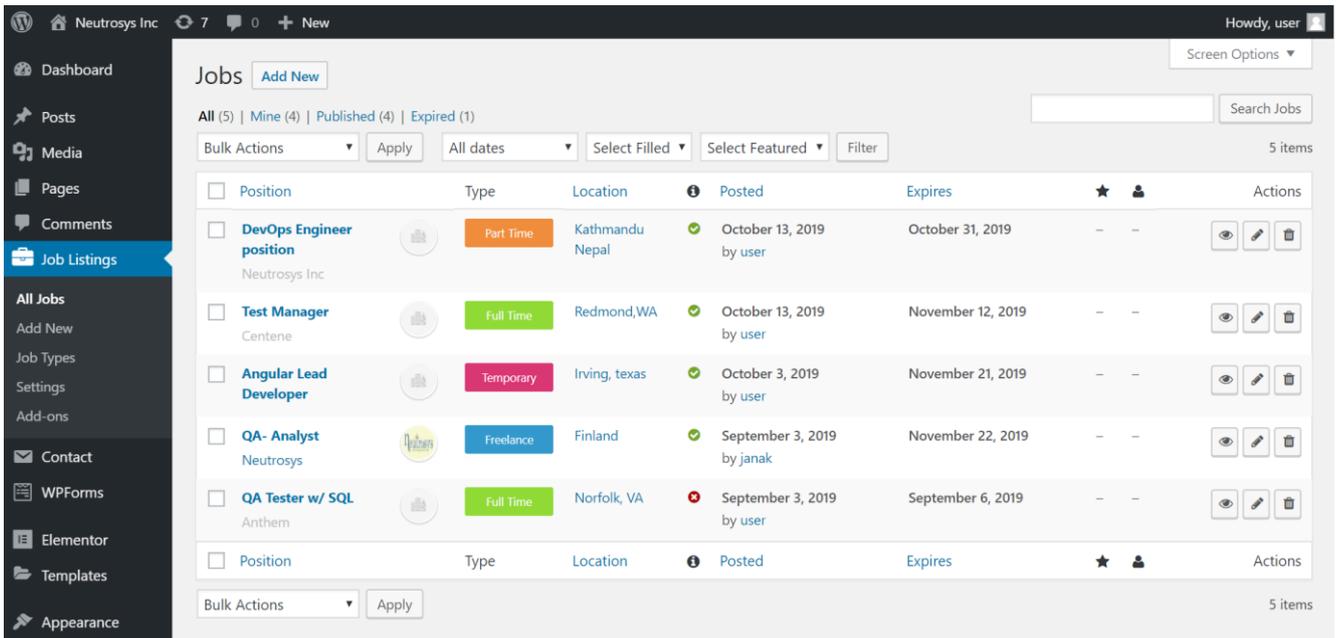


FIGURE 15 Career Page of Neutrosys Website

The career page has two sub buttons, 'Job Search' and 'Work at Neutrosys'. The 'Job Search' button navigates a user to the job board page. The Job search page was created to list all the jobs where one can easily surf available jobs and apply for the job. This section of the website was designed in such a way which allows employers to post jobs via front-end. The form requires employer to input job details, the location and type of job before submitting. Once the job list is submitted and approved by the admin, the job list is shown in the website. And admin can add new jobs, edit, hide, delete and publish via back-

end. Back-end view of the job board is shown in FIGURE 16 below. WP- Job Manager plugin was used to create the job board in this section.

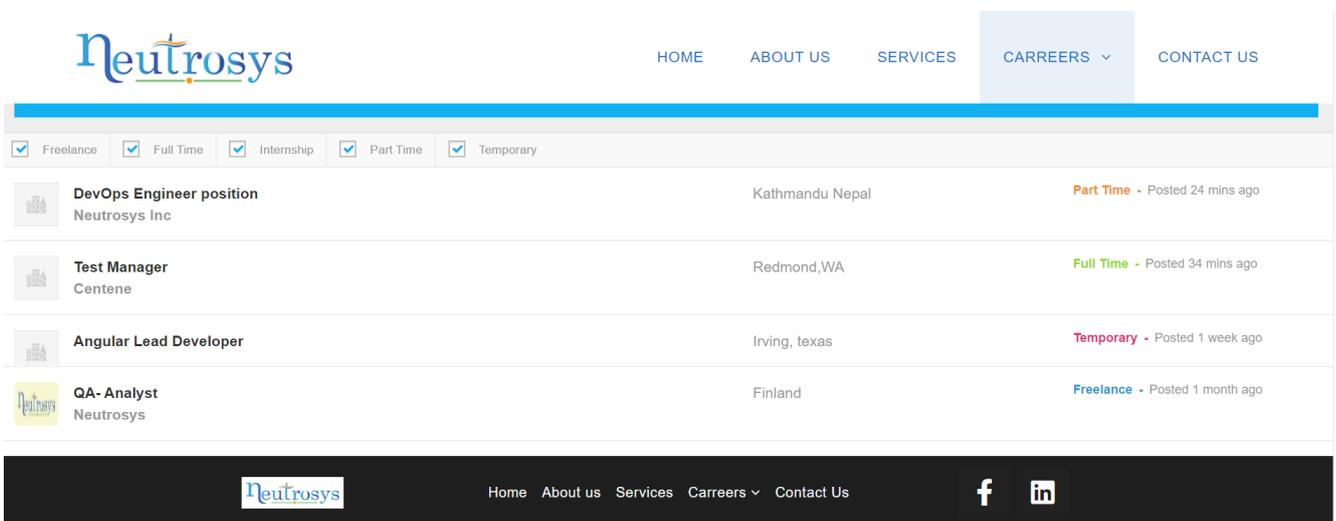


The screenshot shows the WordPress back-end interface for the Job Manager plugin. The left sidebar contains navigation menus for Dashboard, Posts, Media, Pages, Comments, Job Listings (highlighted), All Jobs, Add New, Job Types, Settings, Add-ons, Contact, WPForms, Elementor, Templates, and Appearance. The main content area displays a table of job listings with columns for Position, Type, Location, Posted, Expires, and Actions. The table contains five entries:

Position	Type	Location	Posted	Expires	Actions
DevOps Engineer position Neutrosys Inc	Part Time	Kathmandu Nepal	October 13, 2019 by user	October 31, 2019	[Eye] [Pencil] [Trash]
Test Manager Centene	Full Time	Redmond, WA	October 13, 2019 by user	November 12, 2019	[Eye] [Pencil] [Trash]
Angular Lead Developer	Temporary	Irving, texas	October 3, 2019 by user	November 21, 2019	[Eye] [Pencil] [Trash]
QA- Analyst Neutrosys	Freelance	Finland	September 3, 2019 by janak	November 22, 2019	[Eye] [Pencil] [Trash]
QA Tester w/ SQL Anthem	Full Time	Norfolk, VA	September 3, 2019 by user	September 6, 2019	[Eye] [Pencil] [Trash]

FIGURE 16 Job Listing- Back-end view

FIGURE 15 shows the back-end view of job listing. This can only be accessed by the admin or authorized users. A new Job can be added by clicking ‘Add New’ button. Any listed job can be edited, published or deleted easily from here. Expired jobs can be hidden from website but still shown in back-end until deleted manually. Once added and published from the back-end, the Job list is shown in the website where visitors be able to see the jobs and detailed information. FIGURE 17 shows the front-end view of the job listing in the website.



The screenshot shows the front-end view of the Neutrosys website's job search page. The header features the Neutrosys logo and navigation links: HOME, ABOUT US, SERVICES, CARREERS (highlighted), and CONTACT US. Below the header, there are filter checkboxes for job types: Freelance, Full Time, Internship, Part Time, and Temporary. The main content area displays a list of job listings with columns for Position, Location, and Job Type. The table contains four entries:

Position	Location	Job Type
DevOps Engineer position Neutrosys Inc	Kathmandu Nepal	Part Time - Posted 24 mins ago
Test Manager Centene	Redmond, WA	Full Time - Posted 34 mins ago
Angular Lead Developer	Irving, texas	Temporary - Posted 1 week ago
QA- Analyst Neutrosys	Finland	Freelance - Posted 1 month ago

The footer includes the Neutrosys logo, navigation links (Home, About us, Services, Carreers, Contact Us), and social media icons for Facebook and LinkedIn.

FIGURE 17 Job Search Page- Front End view

Work at Neutrosys page was created for those who want to build a career at Neutrosys Inc as a recruiter, manager, marketing officer or consultant. Neutrosys is growing and has recently opened another branch in Kathmandu, Nepal and in Delhi, India. A user can send the resume to apply for the position at the company. Company has several departments working together such as account, HR, marketing and payroll department which requires employees for positions; junior to senior. 'Send Resume button' was added in the page if anyone wants to apply for the position.

6.3.5 Contact Us

The Contact page in a website is a webpage where all the information about the company's contact details such as addresses, phone numbers, emails and faxes can be found. It often contains a contact form where the visitor can require the information by filling the form and got contacted by the representative of the company. Contact page is one of the most visited pages in the website as it is filled with contact information to start a conversation with respective customer or clients. So, the contact page for this website was made very inviting and informative. 'Contact Us' page in the website has been divided into three sections; starts with a large Google map at the top of the page, where the user can scroll and zoom-in or zoom-out to see the exact location of the company office. Below that, the contact form is placed and contact info such as address, email and phone number are placed on the left to the contact form. And at the end of the page, social media icons such as Facebook, Twitter and LinkedIn are placed so that the visitor can visit the company's page in social media for the latest update and get connected for future. Contact Form 7 was used to a create form in this page. The full screenshot of the contact page is shown in FIGURE 18 below.

Neutrosys HOME ABOUT US SERVICES CAREERS CONTACT US

View larger map

DFW International Airport

Hackberry Creek Country Club

1431 Greenway Drive

LAS COLINAS

President George Bush Turnpike

Irving Convention Center at Las Colinas

Luna Vista Golf Course

Gas Monkey Garage

North Lake College

Map data ©2019 Terms of Use

Contact Us

[Home](#) 1431 Greenway Drive, Irving, Texas 75038

[Phone](#) (214) 382-6161

[Email](#) Info@neutrosys.com

Your Name (required)

Your Email (required)

Subject

Your Message

SEND

Stay Connected

[Facebook](#) [LinkedIn](#) [Twitter](#)

Neutrosys Home About us Services Careers Contact Us [Facebook](#) [LinkedIn](#)

FIGURE 18 Contact page of the website

6.4 Publishing the website

Publishing the website was the last and final phase of this project. Once the website was reviewed and accepted by the client, it was published online. In order to publish any website online, one has to buy the domain name and choose the host. A domain name is a unique address on the internet and also known as the website address or web address. For instance, the domain name for Neutrosys is neutrosys.com. The domain name can be purchased from a web hosting company like GoDaddy, HostGater, Hostinger and Domain.com. The host is like a non-stop running computer somewhere, which allows the site to be accessible 24/7 throughout the year. Neutrosys already had a domain name(www.neutrosys.com) and the host. The website was published and can be visited at www.neutrosys.com.

This website was initially built in local server, and after the completion of website, it was transferred to live server with the help of All-in-one WP migration plugin. The plugin was downloaded and activated on both servers, the local host and live server. WordPress files, database, images and content files were exported from the local host in a single zip file. Later it was imported to the live server with the help of All-in-one WP migration.

7 THEMES AND PLUGINS

A few WordPress plugins and themes were used in Neutrosys website to extend the feature and make the user experience better. Ocean WP theme was chosen for the Website. Similarly, Plugins such as Contact form7, Elementor page builder, All-in-one WP migration and WP job manager were used to meet the requirements and enhance the user experience. Extensions and plugins used in the website are described below in detail.

7.1 Website Theme

The next step was to choose a theme for the website. A theme in the WordPress is a collection of templates and stylesheets used for the appearance of the website. There are thousands of free themes available in WordPress depository for any type of website. Each theme comes with different features, layout and design and they can be modified by adding plugins. Theme can be added or changed from the WordPress Dashboard under Appearance >> Themes >> Add Themes. (WP beginner, 2019). For this project, simple and responsive theme named **OceanWP** was used. OceanWP is the multipurpose expandable theme which is perfect for creating any kind of website such as portfolio, woo-commerce, and business website.

7.2 Website Plugins

WordPress plugins are the software that can be added to the website to add new features and extend the functionality of the site. Plugins are written in PHP. There are more than 48,000 free plugins in WordPress depository alone. Not only this, but also there are thousands of individual developers and companies who sell premium plugins. Most popular WordPress plugins are Contact form 7, Yoast SEO, Akismet, Google XML Site maps and WP Mail SMTP. Most of these popular plugins come with WordPress when installed. As well, every theme when installed, suggests the required plugins. Without those suggested plugins WordPress theme may not work properly. (WordPress.org, 2019.) Similarly, It is required to install necessary plugins such as Elementor, Ocean Extra and WPForms on OceanWP. Along with these plugins, some other plugins were added individually during this project. One can add plugins from WordPress Dashboard under Plugins >> Add New Plugin. Following are the most important plugins used in the website:

7.2.1 Contact Form 7

Contact Form 7 is one of the most popular and most used plugins in WordPress with more than 5 million active users. Also, it is one of the oldest contact forms in WordPress. It allows to create and manage multiple contact forms at once. Contact Form 7 can be used in any page using a Shortcode. FIGURE 19 shows the email set up for the contact form used in the Neutrosys website. (WordPress 2019.)

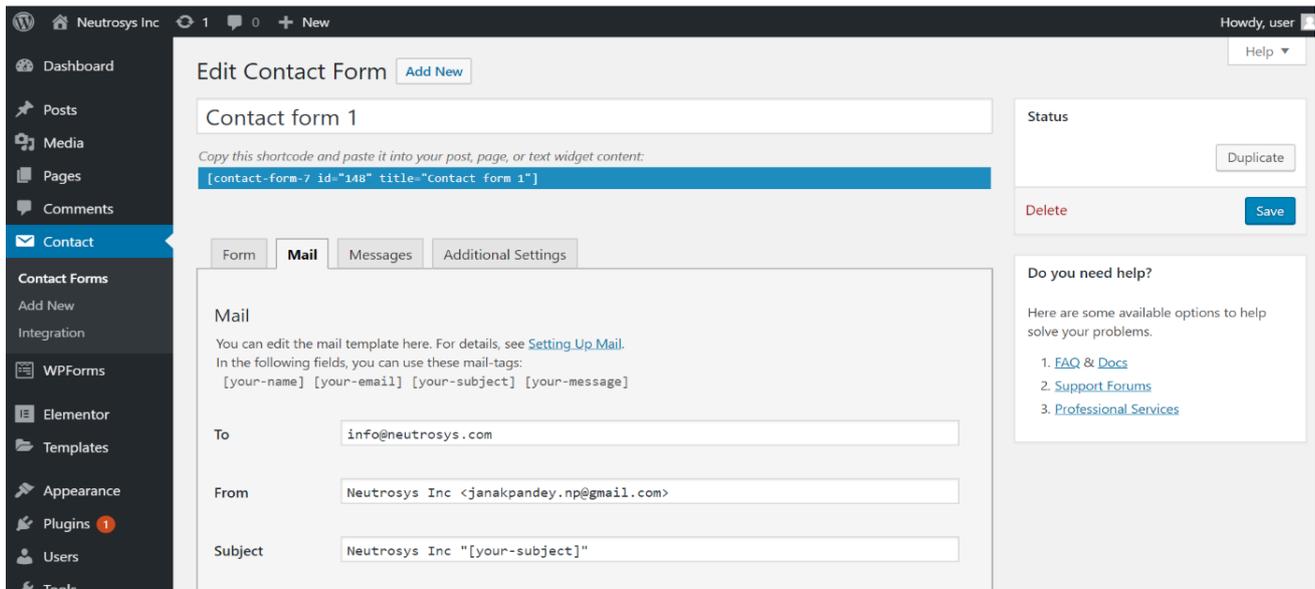


FIGURE 19 Contact form email setup

7.2.2 Elementor Page Builder

Elementor is the most advanced drag and drop page builder. It is one of the most used page builder in WordPress with more than 3 million active users. Elementor page builder has revolutionized the conventional way of building a page with its drag and drop function. Elementor has both free and Pro versions. Elementor Page Builder is extremely user friendly; it allows the user to build the page within minutes. After installing and activating the Elementor plugin, one can start building a page by clicking ‘Edit with Elementor’ after creating a page from the dashboard. Elementor panel appears on the left where one can drag and drop widgets, new sections and columns to the content area. FIGURE 20 shows the Elementor panel. Elementor was commonly used in the development of this project. (WordPress 2019.)

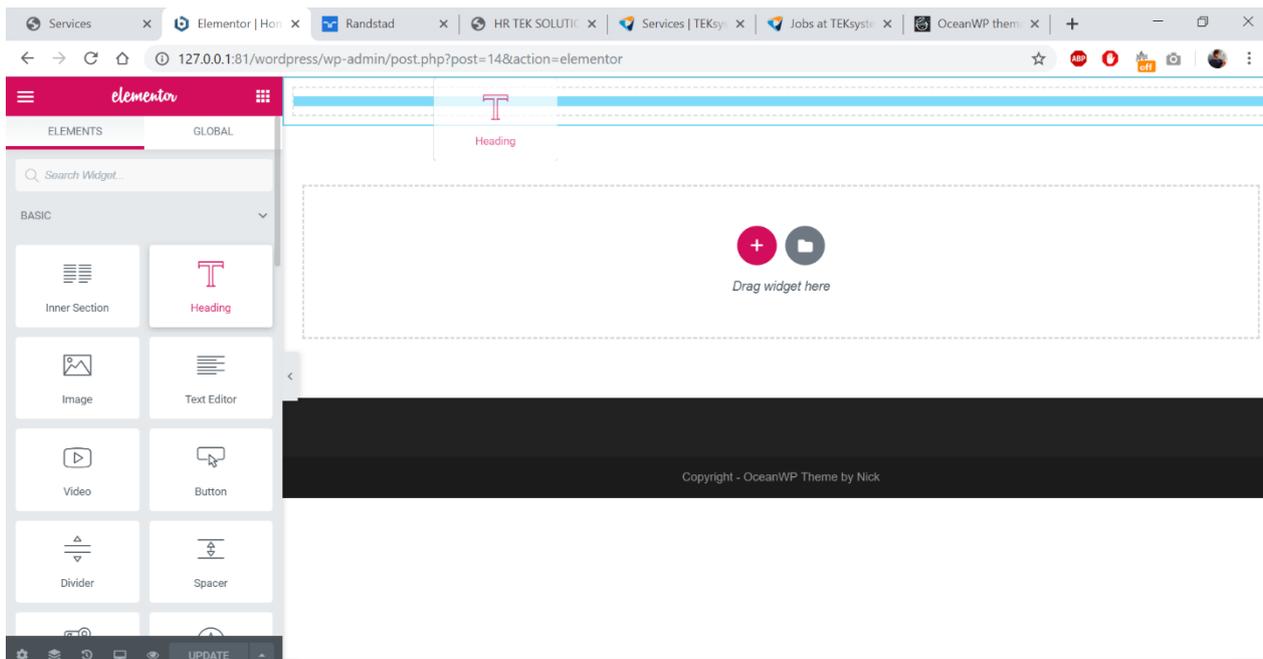


FIGURE 20 Elementor page builder

Also, another great feature of Elementor is that it allows the user to add templates by clicking the ‘+’ add icon. File icon shown in the middle of the admin panel allows to import the templates from the computer or cloud. For this project, templates downloaded from ‘Tyler.com’ were used to build the page. Different templates for different sections of the page were downloaded manually from Tyler.com and added to the website with the help of Elementor page builder.

7.2.3 WP Job Manager

WP Job Manager is a free plugin in the WordPress used for adding Job-Board functionality in the website. It is very easy to setup and can be used in any themes as it is shortcode based. WP Job Manager comes with the several Shortcodes to output jobs in various formats. It has Job-lists, a job submission form and a dashboard where user can edit or delete the job. It even allows frontend submission for the job listing. (Wpjobmanager 2019.)

7.2.4 All-in-One WP Migration

All-in-one WP migration is a free plugin which exports the entire WordPress website including media files, themes, plugins and database. With the help of this plugin website files can be backed up. This website was initially built in a local server, and after the completion of the website, it was transferred to the live server with the help of an All-in-one WP migration plugin. The plugin was downloaded and activated in both servers, Local host and live server, WP files, the database and a content file were exported from a local host in a single zip file, later it was imported to the live server with the help of All-in-one WP migration. (WordPress 2019)

8 EXPECTATIONS AND RESULT

User expects, but the question was, did the website meet their expectations. When the website development project was handed to the author, there were many expectations about the website from the author. The author did the best to provide the final project, a fully functioning responsive-website to the client within a very short time period meeting all the requirements of general professional website. The following points proves that the expectations were met with the final product.

8.1 Simple, Friendly User-interface and Navigation

The website has very simple design because every user expects to be able to navigate the website. Website for Neutrosys was made with the minimum number of images and very simple color selection to make it look professional and tidy. Also, the website is very easy to navigate. The navigation bar is made simple and predictable because complicated and extra unique Navigation bar might be a problem for the users. Especially, for the first-time user it might be very frustrating and annoying. Easy names like 'Home', 'About US', 'Services' and 'Contact Us' were used for the tabs in the navigation menu. Any visitor can find the information such as contact information or services provided easily within seconds.

8.2 A Sense of what company offers

Information in any website should not be vague, it should clearly show what the company has got to offer. An introduction on the Home page clearly shows what Neutrosys offers. 'About Us' page tells about the company in detail, it also shows the goals and value of the company and 'Services' page is dedicated to providing all the detailed information on the services provided by the company.

8.3 Proof of wins

People always love a proven and well-established company when it comes to services. It is known a proven company always attracts the customers. Awards, famous clients and success statistics make the company a winner in the eye of the customer. The website has statistics at the bottom of the Home page and the list of famous clients such as 'Hp', 'Wells Fargo', 'Anthem' at the bottom of 'About Us' page, shows the success story of the company.



FIGURE 21 Company Statistics



FIGURE 22 Clients of the company

8.4 Responsiveness

Responsive web-designs are very likely to attract the customer as mobile users have been increasing rapidly in the last few years. Neutrosys website is a responsive website designed to work properly in any device such as mobile, tablet or laptops. The content of website compresses to fit the screen of the devices. The main distinctive feature of the mobile responsiveness is that when the website is surfed on the mobile device, the regular navigation menu changes to Hamburger Menu and the background video is replaced by the image in the front page. Figure 23 illustrates the mobile responsive design of the homepage and Figure 24 illustrates mobile menu for the website.

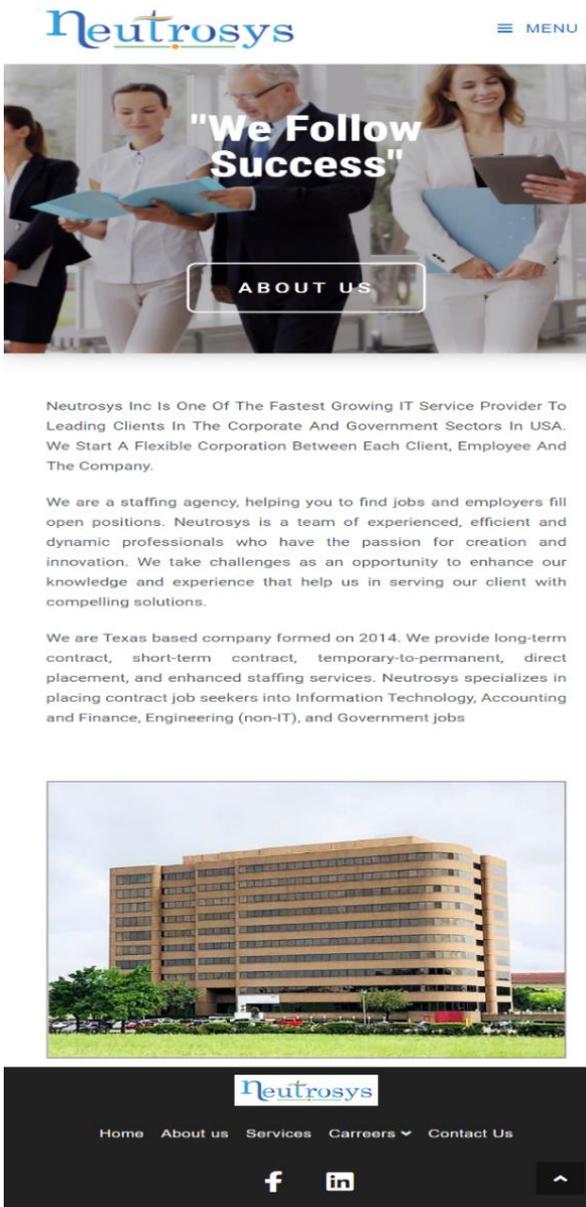


FIGURE 23 Mobile Responsiveness

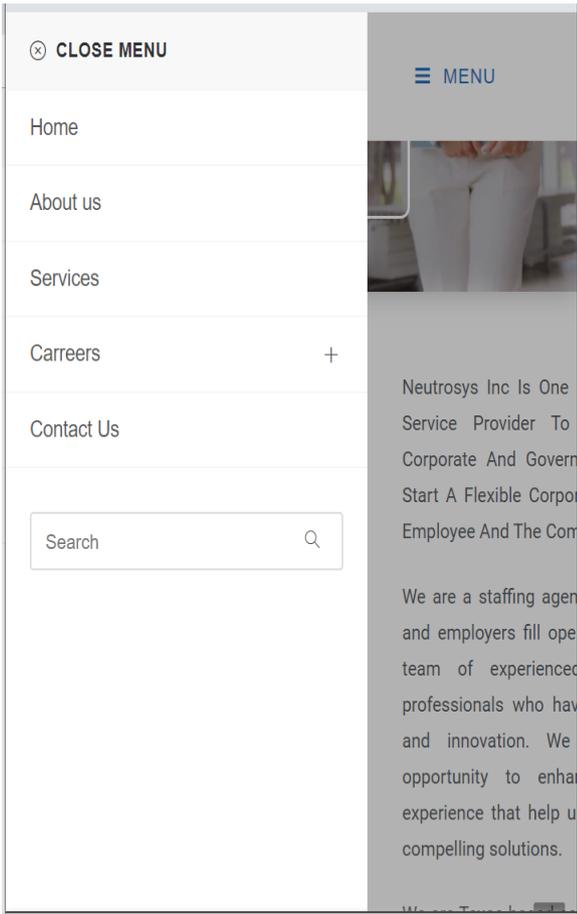


FIGURE 24 Mobile Menu

9 CONCLUSION

With the website design trends changing drastically, it is necessary to keep updated with the latest web trends for the companies like Neutrosys Inc. A good website can promote businesses and attract new customers and clients. Most companies are adopting the latest design like Mobile Responsive design. Companies like Neutrosys could benefit by mobile responsive design as more than 60% of the internet surfing comes from mobile devices. Neutrosys was approached with the idea of having a brand-new website for the company to replace the outdated website.

The aim of this website development project was to create a mobile responsive website for Neutrosys Inc. The website was made mobile responsive which means the website can be surfed via any devices and the content, images and the layout is automatically adjusted according to the size of the screen. This website would help the company to reach to its customer and clients and generate more businesses. The platform used for this website development project was WordPress. Choosing the platform was the first and a very difficult task. After several meetings with the commissioner, WordPress was chosen to be the most suitable because of it allows the commissioner to update their website in the future.

WordPress is an open source content management system with various functionalities such as flexibility, reliability and feasibility features. Creating a website for Neutrosys using WordPress was very effective. However, there were few challenges during the development process such as finding suitable templates for different pages, editing the layout and resizing the contents for mobile responsiveness. Blogs and various tutorials from YouTube were beneficial.

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