Technologically Organized

by

Henry Davis & Mor Diop

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Henry Davis _____ 04/12/2021

Henry Davis — Date

Mor Diop _____ 04/12/2021

Mor Diop — Date

_____ 04/26/2021

Ryan Moore, Faculty Advisor — Date

University of Cincinnati
College of
Education, Criminal Justice, and Human Services

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TABLE OF CONTENTS

LIST OF FIGURES & TABLES

1. ABSTRACT

Technologically Organized is an effort to help a small business develop an internet presence. Websites are the most effective business and marketing channel for small business around the US and are the second most successful at bringing in business behind Social Media(visualobjects.com). Without a website and general infrastructure to support them, small businesses are at a severe disadvantage to larger corporations and services. Simply Organized is a service committed to providing organization services at a reasonable cost to individuals, families, and businesses alike. They are looking to expand their brand by leveraging a website to promote themselves and provide customers with information about their business. Our team will assist them by creating a website, implementing a Customer Relationship Management Application (CRM), and securing and upgrading their home network to provide them with a platform for growth. We will also place a heavy focus on training business users to maintain the products we provide to ensure effectiveness of the solution for the future. This project will culminate into a valuable asset for Simply Organized and will positively impact revenue and help the service succeed in their market space.

2. INTRODUCTION

1.1 Introduction

Managing a business and staying in the present in terms of technology can be difficult for individuals, let alone small businesses. Implementing new technology can lead to headaches in terms of backwards compatibility, learning curve, and much more. Some small businesses do not know where to start, or simply do not have the funds to build an effective technology platform. These issues are prevalent, and an inexpensive solution is needed. Technologically Organized partnered with a small business, Simply Organized, who were struggling with their technology presence, to build a robust, multifaceted solution to serve their needs at a reasonable price. This includes consulting for, implementation of, and training in the use of different technologies that will combine and become a platform for success for a small business.

1.2 Problem

In today's world, 90% of consumers use the internet to find a local business yearly, with 33% looking every day(BrightLocal.com). Thus, not having an online presence can be severely detrimental to potential business growth. Simply Organized is a small business based out of Cleveland, OH. The focus of the business is to provide organization solutions at a reasonable cost for homes and businesses for individuals and groups alike. The challenge for the business is that they are currently operating by "word of mouth" and have no internet presence. When approaching prospective customers, the first point of contact is often a question asking for a website URL to find out more information. Thus, their customer base is limited to those the

employees encounter, and countless prospective customers are alienated by this business approach.

1.3 Solution

Today, business can be won or lost based upon a healthy internet presence. Technologically Organized is a business-oriented project designed to bring Simply Organized into modern business practices. Where the organization is currently operating by word of mouth, we wish to provide an online platform to encourage growth and consistency within operations. This project will provide a central website for users to access information about the company, schedule appointments, and contact the owner directly. The project will provide the owner with a platform to better manage customers and promote services provided by the business using a dynamic calendar and customer relationship management software integrated with a database. Technologically Organized will also provide the business with a reworked network infrastructure and security assessment to ensure business uptime and continuity going forward.

1.4 Project Goals

The main goals for Technologically Organized are to provide a virtual presence with easy management for Simply Organized. Our goals include creating a website, upgrading the businesses home-office network, implementing a Customer Relationship Management Application (CRM), and provide Simply Organized with end-user training videos. The end user training videos will play a huge role in the future of the service as it will provide employees visual support for updating and maintaining implemented technologies moving forward.

1.5 Overview

Throughout this final report, there will be information on how the project was completed. The report includes in-depth processes and includes the following sections: design objectives, methodology, budget, timeline, problems encountered, and future recommendations.

3. DISCUSSION

2.1 Project Concept

The concept for *Technologically Organized* rose from a story overheard from the owner of Simply Organized, Michelle Davis, in which potential customers were driven away due to the lack of a website to display services and information surrounding the business. Our team created this project to address this issue while also providing solutions to enhance other facets of work operations for employees. We proposed that a website, a database integrated with CRM software, and a network upgrade with included security infrastructure assessments would provide Simply Organized with a platform for growth in a challenging field. Training and instructional videos has also been provided to ensure the solution remains sustainable for the foreseeable future. Our improvements provide centralization for business operations and provide the company with resources to continue growing in the future.

2.2 Design Objectives

The goal for Technologically organized is to provide Simply Organized with resources to grow through a robust website platform, configured database to house customer information, and a network and security upgrade to ensure business continuity. The design objectives for Technologically Organized were originally unclear. The team debated whether to build the website from scratch through a hard-coded solution or use a preconfigured platform that utilized template-based web design to ease management. After having conversations with the business owner and our project advisor, we decided that it was best to use a preconfigured platform as the

business owner has nearly no experience with web development technology, and thus would be unable to customize the webpage otherwise.

We then decided to create the website using WordPress, a template-based web development platform. The team planned to create a website, complete with structured website pages and requested functionality to meet the businesses' needs. We will be using Zoho-CRM as a CRM solution and integrating it with the website. The team performed an initial security assessment using OpenVAS and scheduled periodic network scans to mitigate any future threats. The network assessment has been performed using the NetSpot network survey application. The network upgrades performed utilize TP-Link access points and switches, as well as a NetGate PFSense firewall.

Some initial goals that had to abandoned include building a database from scratch and implementing a payment interface on website. After having several conversations with the owner of Simply Organized, and with the help of our advisor, it was decided that, rather than having end users manage a custom database, implementing an existing Customer Relationship Management software is more suitable. This is due to the business not having much data to leverage the solution with besides customer contacts and payment invoices. Regarding the integration of the payment interface to the website, the solution was abandoned as the business owner wished to have full control over payments to Simply Organized and when they occur. Allowing users to pay at their own discretion could cause a lapse in documentation from an invoicing perspective.

2.3 Methodology and Technical Approach

Website

Prior to this project Simply Organized did not have a website, which hindered their ability to grow and obtain customers outside of word-of-mouth marketing. The focuses of the website are to effectively divulge information surrounding business services, facts about business operations, and how to get in contact with employees. Also, ease of management and maintenance for the business owner is a focal point, as the team wishes to have this solution remain effective for years to come. Using a web development platform like WordPress allows us to achieve this goal. WordPress was used as a solution to reduce maintenance workload on employees, as they had no prior web development experience. WordPress provides an easy user experience while not sacrificing essential functionality.

The website is compatible with desktops, tablets, and mobile devices. It contains images and examples representative of the quality work that Simply Organized is responsible for and serves as a home for customers to retrieve information about the business. The website includes the following pages: A homepage, which contains a website overview and general descriptions of business operations, an About Us page, which contains background information about the owner and the purpose of the business, a Services page, which contains the type of services the business offer in more details, and a Contact Us page where users can reach out to the business. This website will provide Simply Organized with a platform to market themselves, and a platform for potential customers to learn about the business.

Customer Relationship Management Application

Before the partnership *Simply Organized* had no dedicated place to manage their customer data. With the Zoho-CRM we implemented, employees of *Simply Organized* can keep

all their customer contacts in one place. The Zoho-CRM is highly friendly. It contains many modules such as Leads, Contacts, an invoices app and many more. The CRM is integrated with the website, so all contact submissions made from the website goes straight to the Leads module of the CRM. From there the business can keep in contact with users and potentially convert them into customers going forward. *Simply Organized* has also been given a platform to leverage invoicing capabilities through the CRM. Payments were previously managed using only loose documentation in computer file systems. This application gives the business a more structured approach to billing and management of outstanding charges.

Network Infrastructure Upgrade

As aforementioned, *Simply Organized* operates in a home-office network setting, with many different devices entering and leaving the network regularly. Their current network infrastructure is hindered by dated access points, poor performance caused by heavy network load, and poor placement of network hardware causing signal to be blocked. Technologically Organized set out to address this issue to maintain business continuity and ensure a positive user experience for employees and others. The team composed a plan consisting of a survey of the network using NetSpot to determine where network hardware needs to be placed, composing a network structure diagram to guide router configurations and implementation details, and finally replacing dated hardware and making previously defined changes. These changes came together to greatly improve the performance of the home-office network.

Security Assessment and Hardening

One of the goals of Technologically Organized was to remediate any existing security vulnerabilities within *Simply Organized's* operating home network space. Thus, prior to implementing network hardware, the team planned a network security assessment to find potential holes in the current network architecture. This would give us a platform to address any discovered issues during the network hardware implementation phase of the project. Following in depth research into enterprise grade vulnerability scanners, it was decided that using OpenVAS, an open-source vulnerability scanner provided by Greenbone Networks (openvas.org), would be the most effective solution for the project due to its robust capabilities and price-point. To remediate the vulnerabilities found by the scans, Technologically Organized made changes to configurations of network hardware, as well as implementing a NetGate PFSense firewall to maintain security and monitor network traffic. These solutions secured Simply Organized's network, and ensured that they will maintain their security posture going forward.

End-User Training/Videos

Simply Organized has little to no experience with the technologies we are implementing. Our team decided, along with initial in-person training, to put together educational training videos to assist the user in maintaining our product moving forward. These tutorials focus heavily on website page creation and use of the CRM software, as that is where business users will spend much of their time and effort, but will include basic tutorials for management of all implemented systems. By following these tutorials, users will be able do the following:

<u>Using WordPress</u>

- Add information to existing website pages
- Create website pages

- Delete website pages
- Add new plugins, and navigate the WordPress plugin shop
- Manage their WordPress Subscription
- Update Plugins and Apps

Using ZOHO CRM Software

- Add and delete contacts
- Create an invoice
- Follow up on leads

Managing Network Hardware

- Log in to and update network devices
- Find network device information and change passwords

2.4 User Profile

***Table 1**: **User profile**, Table 1shows the user profiles*

Application: WordPress, Zoho CRM Database Solution
Potential Users: There are two kinds of users that will be interacting with the systems we are implementing for Technologically Organized. The first includes users responsible for managing implemented systems. The second are customers who will be accessing the website looking for information regarding Simply Organized and their business operations.
Software and Interface Experience: The goal of the project is to create instruction videos to guide a user with no prior experience in any of the aforementioned tools so they can become self-sustaining as an online business. Minimal experience operating computer applications such as a web browser are expected. Consumers accessing the website are expected to have experience in surfing the internet and using website-based payment interfaces. They are expected to understand navigational concepts of websites.

Experience with Similar Applications: Service owners may have limited prior experience with template-based website builders such as Wix or Squarespace and social media platforms such as Facebook and Instagram. Consumers will have prior experience viewing websites created using template-based website builders.
Task Experience: None. Educational videos provided by the project leads will guide users in becoming self-sustaining in production of website content and management of implemented systems. Consumers are expected to have experience with navigation of webpages and payment interfaces, as well as experience in professional communications with a service they wish to utilize.
Frequency of Use: Once the website is created, the user will alter it as they see fit. Adding content will be at the discretion of those managing the website. The database, network and security services will be deployed in a manner in which there is little required maintenance for them to continue functional operation, but users can refer to team-provided documentation to assist them where necessary. Consumers will regularly use the website for access to a host of information. Potential uses include determination of whether they wish to use Simply Organized as a service, to view employee availability, to pay them for services, and to view testimonials once business has concluded.
Key Interface Design Requirements that the Profile Suggests: • Modern user interface that is appealing to potential customers • Template-based website application that eases development load on content creator • Organized database for easily accessible information • Network security setup that is easily maintained and updated • Integrated services for enhanced customer experience

Table 1-User profile

2.5 Use Case Diagram

Figure 1: Use Case Diagram *The following diagram, Figure 3, demonstrates the use case for Technologically Organized. The diagram shows all possible users with corresponding tasks.*

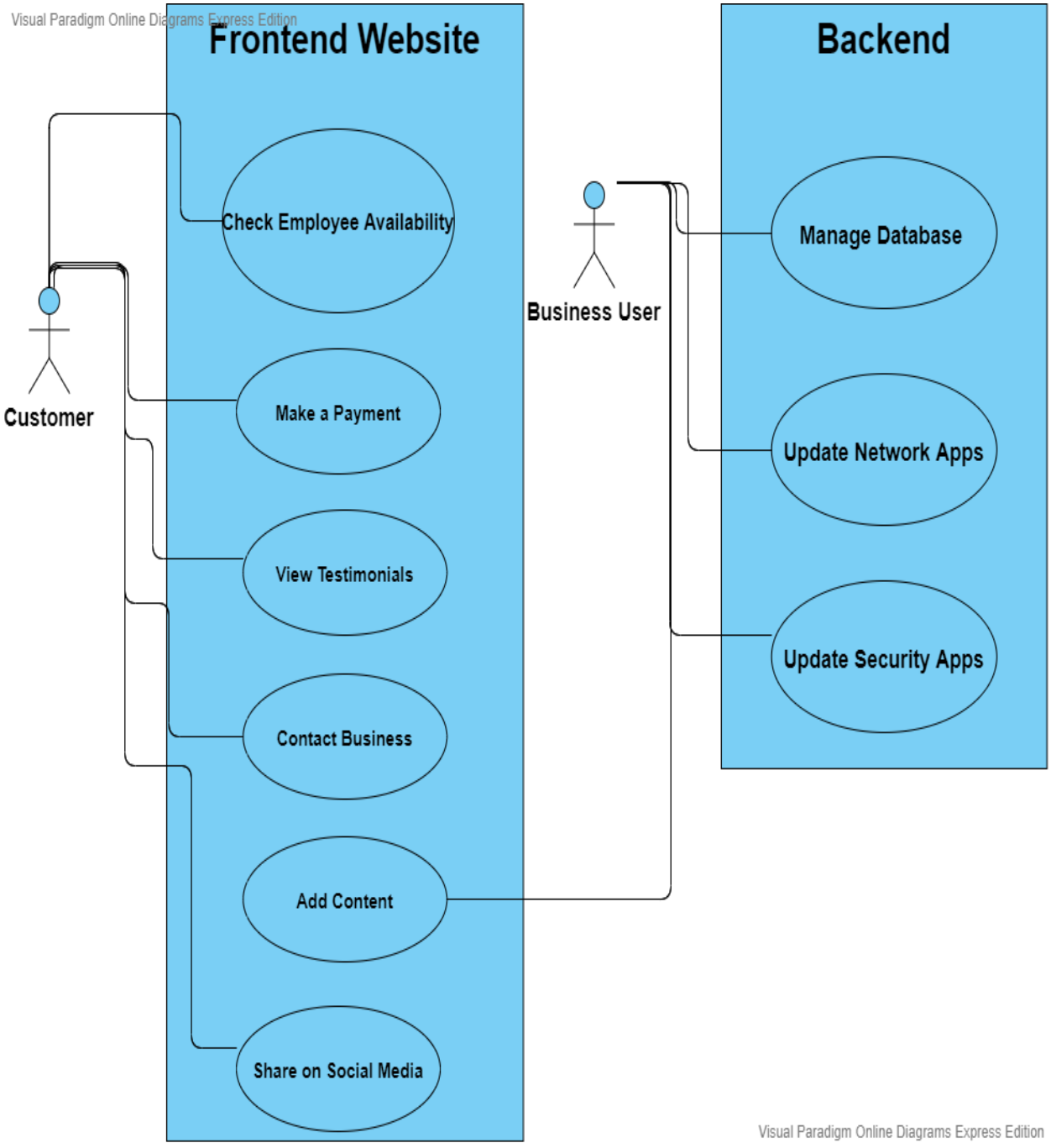


Figure 1 - Use Case Diagram

2.6 Technical Architecture

Website

The architecture of our website was built from Wordpress.com. WordPress was chosen because our client does not have much experience with technology, and thus assurance was needed that they will be able to manage the website after the completion of the project. The home page was built using a WordPress plugin called Elementor. Elementor provided drag and drop page builder functionality along with great looking design to make the home page of the website look both beautiful and functional. For the about us and services pages of the website, plugins were not used as it was not necessary for the functionalities we were looking for. We did, however utilize stock photos to help showcase the business.

On the contact us page the business required 2 things: a calendar and a contact form. The calendar is a google calendar that was embedded on the page, and its purpose is to have the business availability on there so visitors can have an idea of when they will be able to schedule an appointment. The contact form is a web form that was created in the ZOHO CRM, and then embedded within the page. The form was created in ZOHO so to integrate it directly within the site rather than using another third-party app, and thus, all website submissions can go straight to the CRM. Visuals of the finished website are displayed below:

Figure 2: *Figure 2 is the screenshot of the Home page which Contains an overview and general descriptions of business operations*

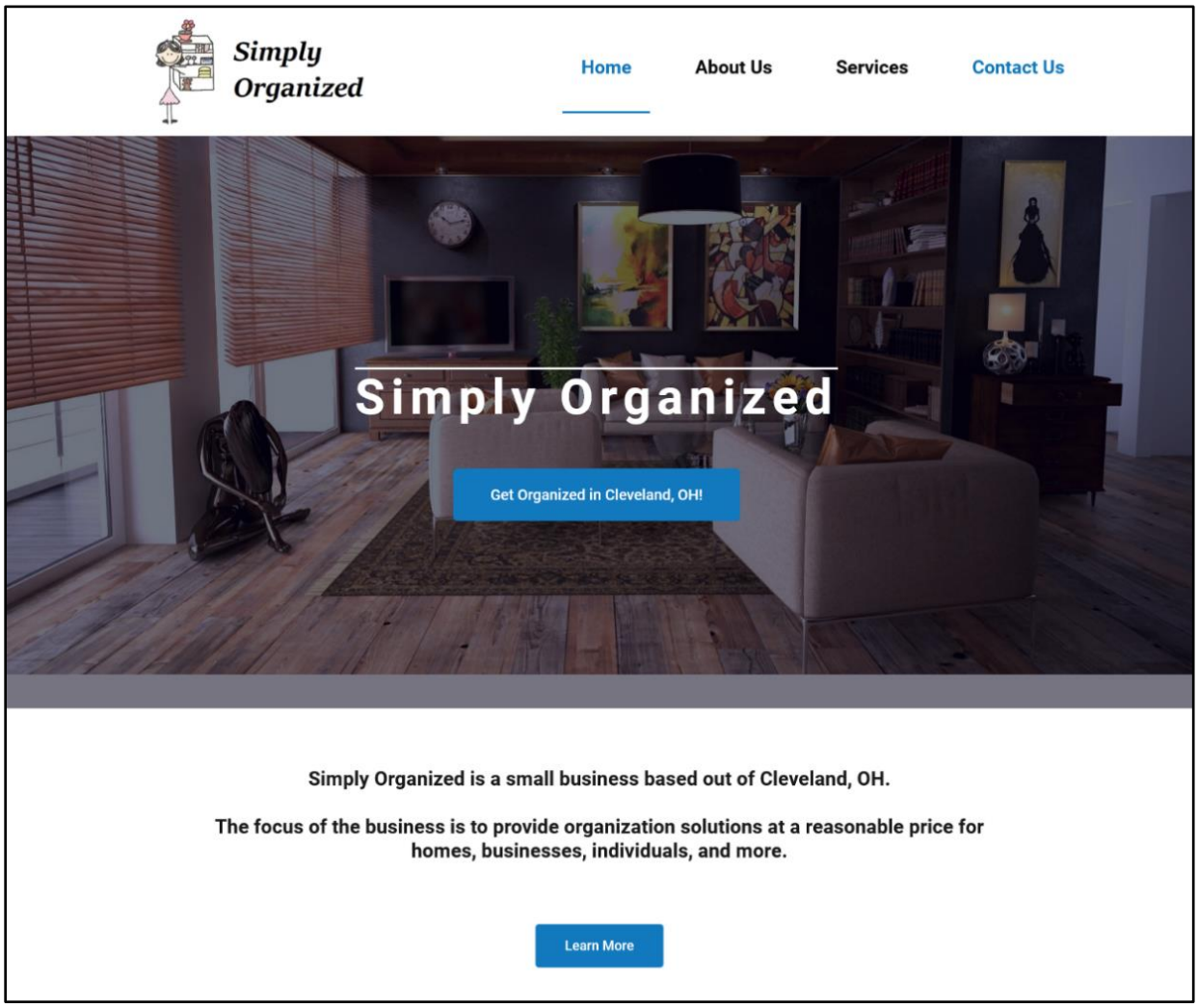


Figure 2 - Home Page

***Figure 3**: Figure 3 is the About-us page which Contains background information about the owner and the purpose of the business*

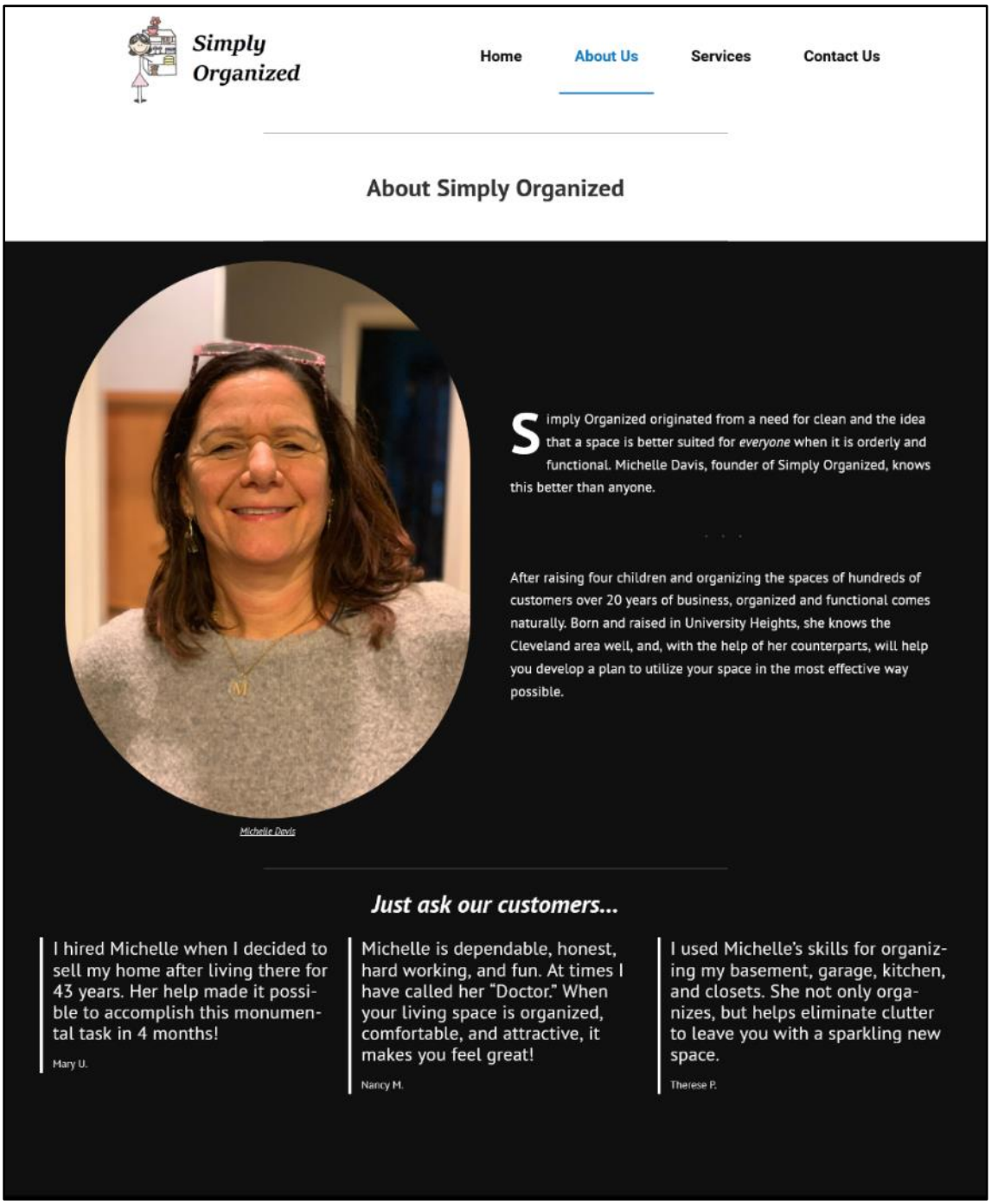


Figure 3 - About Us Page

Figure 4: *Figure 4 is the Services page which Contains the type of services the business offer in more details*

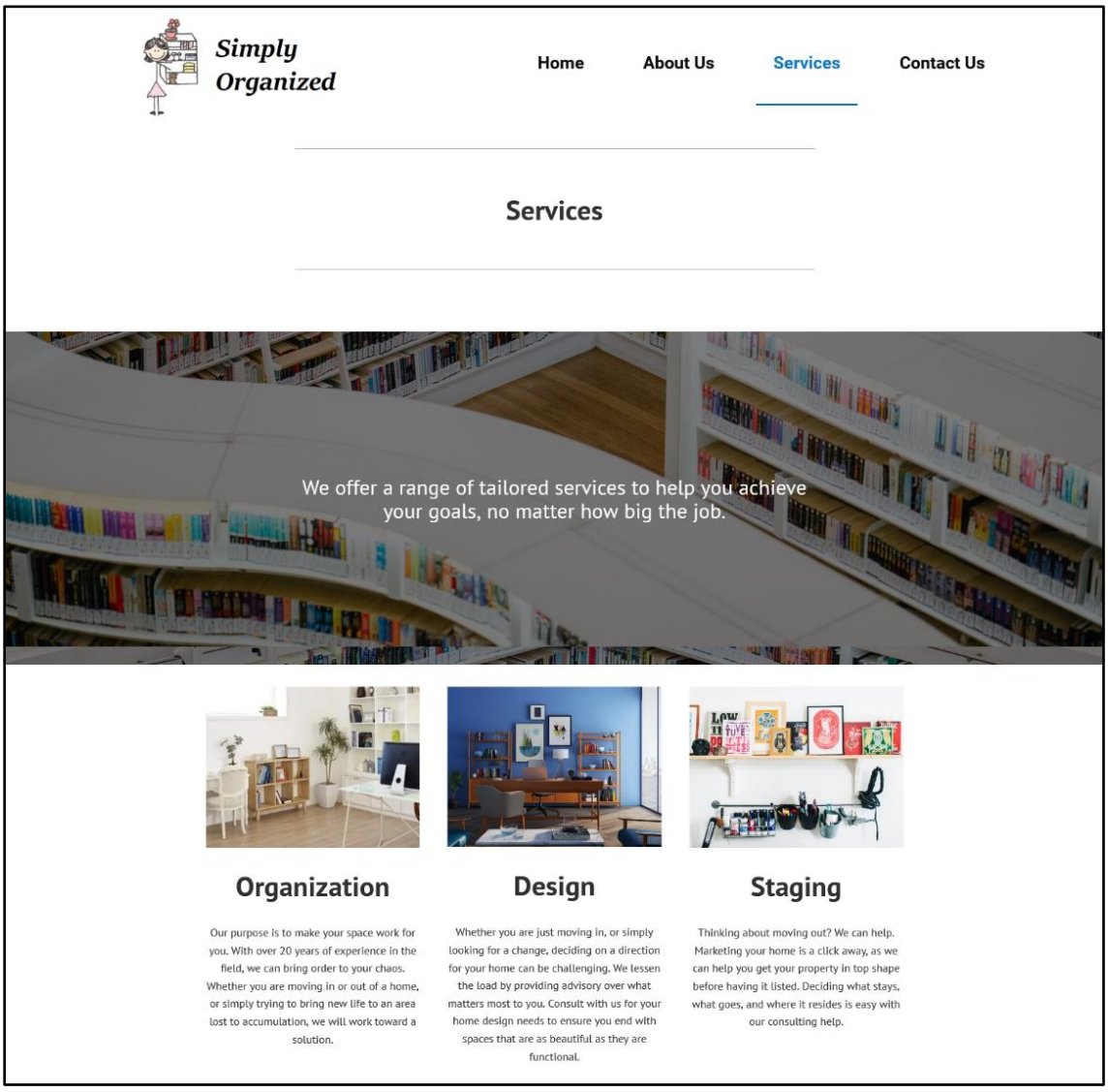


Figure 4 - Services Page

Figure 5: *Figure 5 is the Contact-us page which Contains a contact us form and a calendar that allow users to see employee availability*

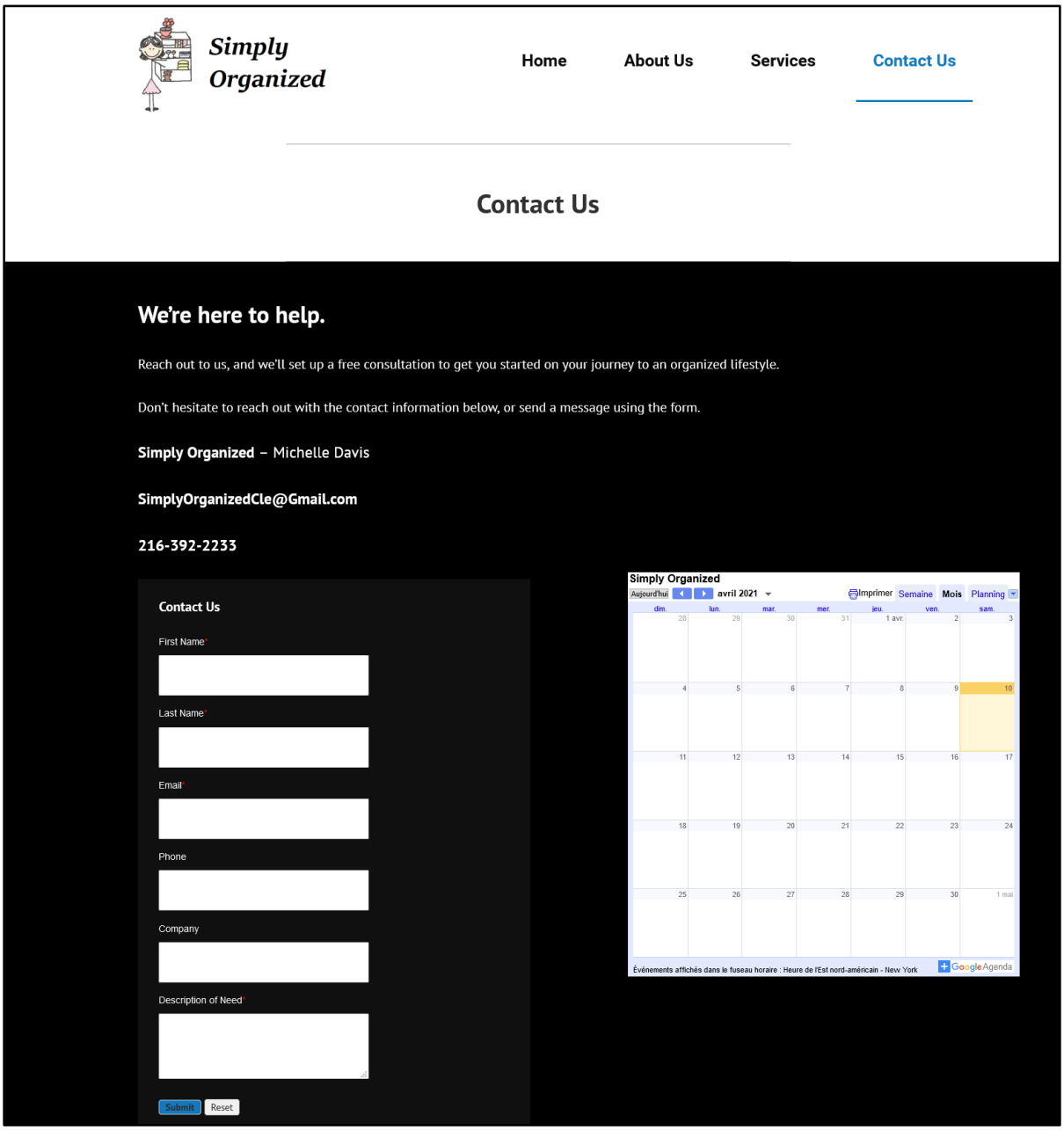


Figure 5 - Contact Us Page

Customer Relationship Management Database

Like the website, the CRM was built with simplicity and functionality in mind. The user base in focus had never used a database of this type, so it was important to choose a solution that was both effective and easy to use. Technologically Organized chose ZOHO CRM, a web-hosted Customer Relationship Management service, as it met all criteria necessary for the business and offered a smooth user experience. The CRM is displayed in Figure 6 below:

Figure 6: *Figure 6 shows the Home Dashboard of the CRM, displaying open tasks, activities, and more, while providing navigation to other tabs*

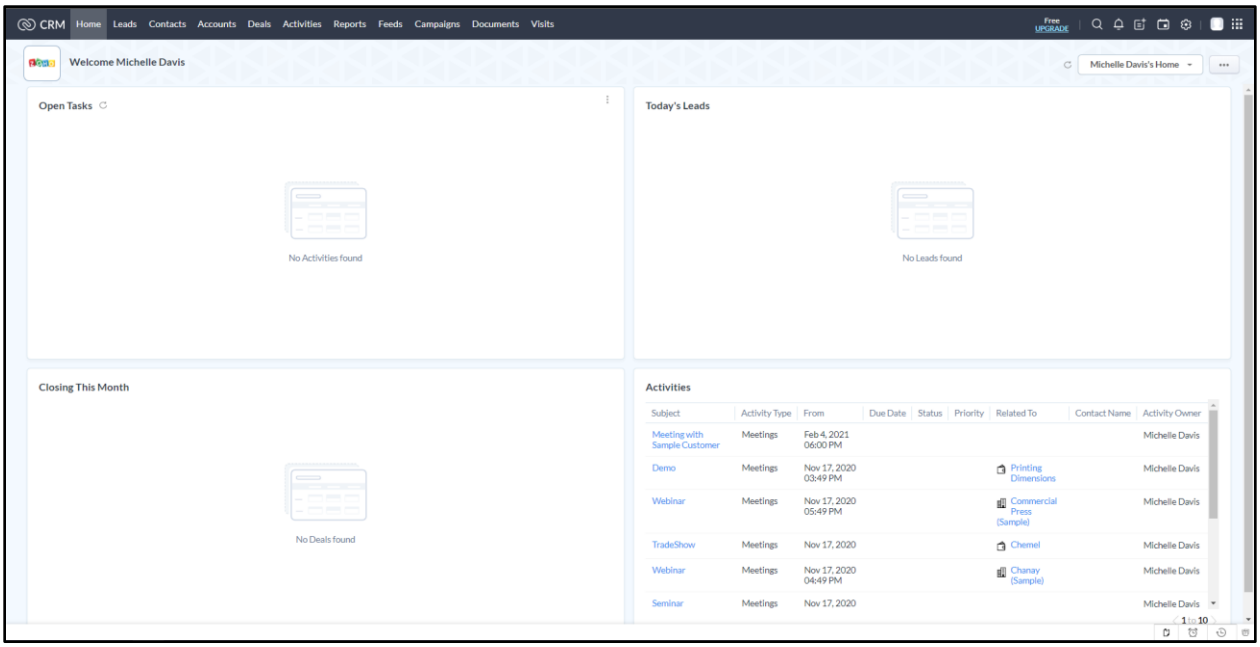


Figure 6 - CRM Dashboard

The CRM hosts customer contact information, leads for new customers received through the website, a central place to manage business activities, and more. Customer data is only available via role assignment to employees so to keep data secure. Employees can reach out to leads directly via the CRM, or pull their information out and manage communications via e-mail

or cell. This is important, as the business often struggled with effectively communicating with new customers prior to this implementation. Along with this communication ability, users can link activities such as meetings, calls, and more with customers to ensure all tasks are documented and noted. Finally, Technologically Organized utilized the ZOHO invoicing app, which allows users to directly invoice customers via a web interface that links directly with their PayPal business account. This gives Simply Organized a method by which they can formally request and track invoices from their customers, which they struggled with prior to the partnership. The invoicing solution is shown below:

Figure 7: *Figure 7 shows the Zoho Invoice App, where Simply Organized can invoice their customers directly*

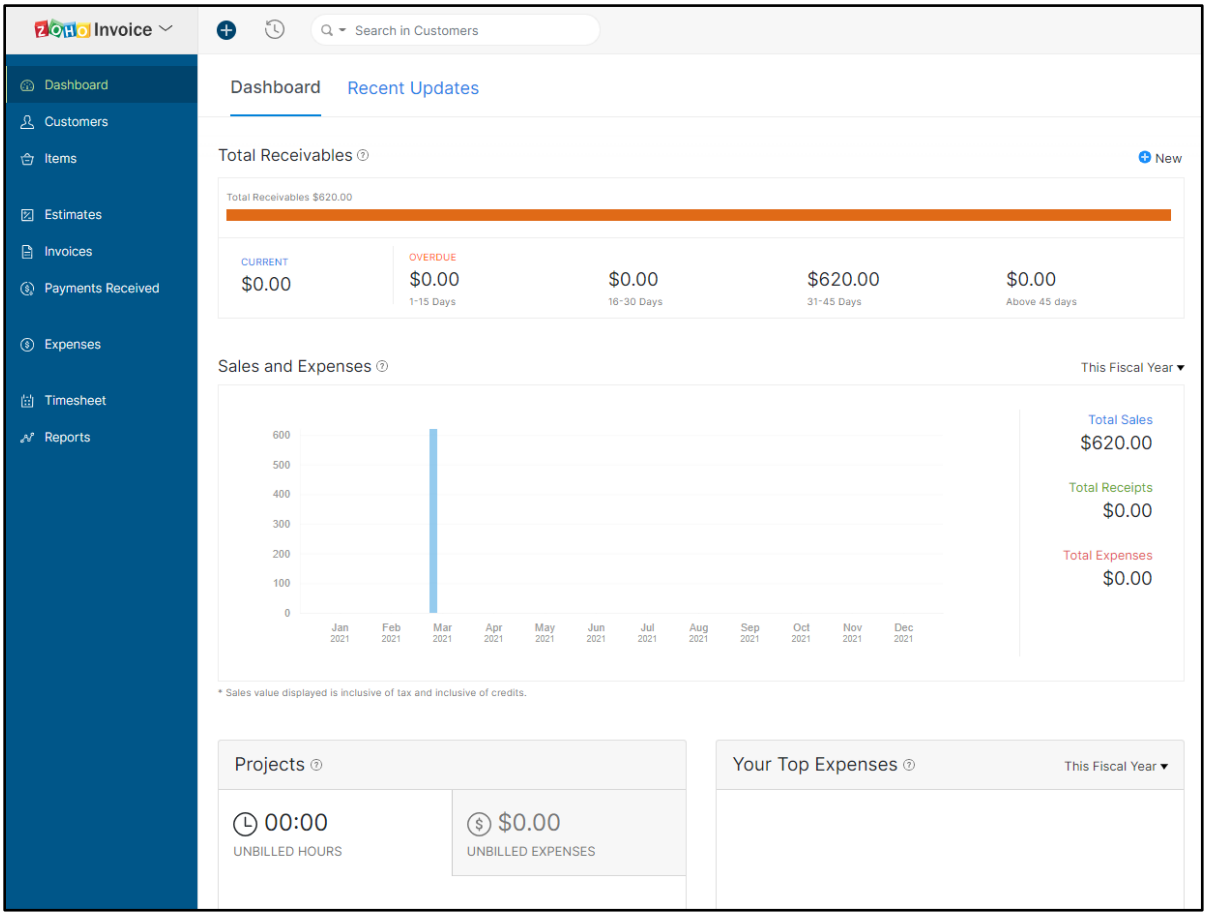


Figure 7 - ZOHO Invoice App

Network Infrastructure Upgrade

Simply Organized required a network overhaul in order to achieve effective and consistent connectivity in their office spaces. To achieve this goal, we used a tool called NetSpot to assess the network, and then new hardware to address issues we found. NetSpot is a software tool for wireless network assessment, scanning, and surveys, analyzing Wi-Fi coverage and performance (NetSpotApp.com). During use, it allows the team to diagnose holes in the network through live reporting of network strength in different areas of drawn floor plans. Upon surveying the second and third floor home-office spaces using this tool, poor network performance was shown throughout the area, even with virtually no network activity outside of the scanner. See Figures 8 and 9 Below:

Figure 8 & 9: Second + Third Floor Network Survey *The following diagrams, Figures 1 and 2, show the signal strength of the network prior to upgrade on the Second and Third Office Floors*

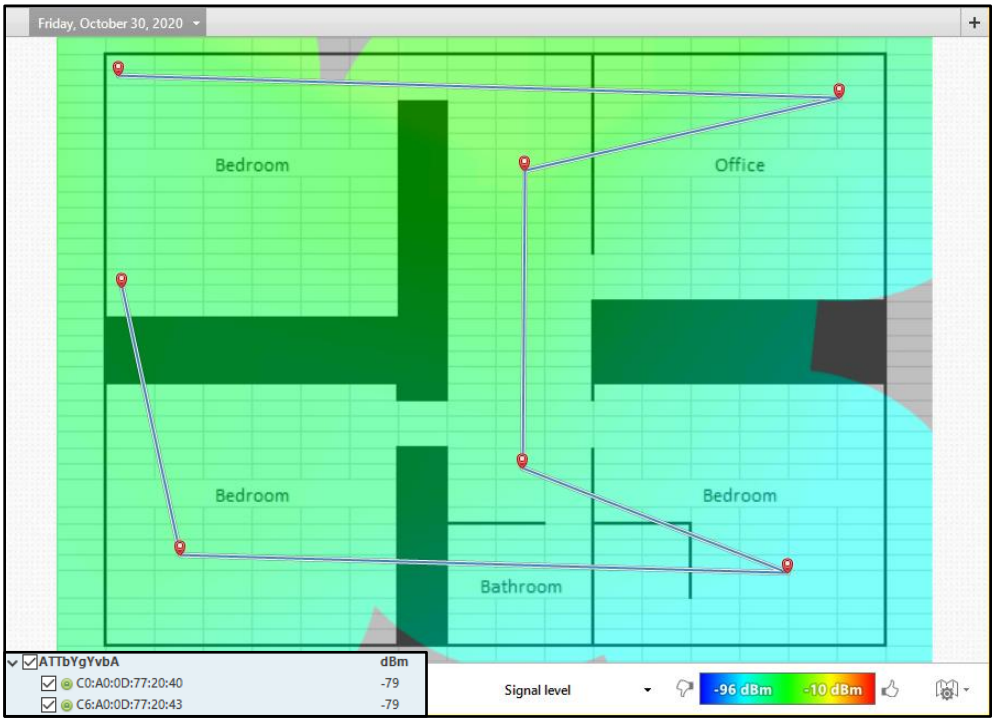


Figure 8: Second Floor Network Survey

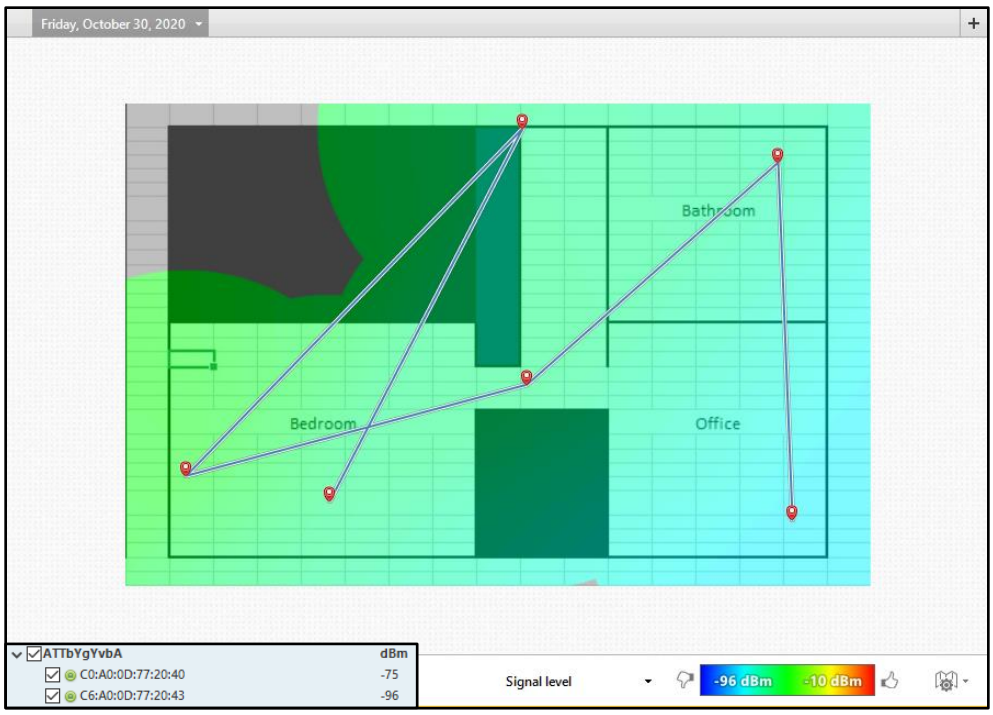


Figure 9: Third Floor Network Survey

These diagrams show weak network strength of between 75 and 96 DBM(decibels by milliwatt) in both office spaces, and moderate strength in other areas of the home. To fix the previously described issues, the plan below was devised:

Figure 10: Technologically Organized Home-Office Network Topology *The following diagram, Figure 10, shows the network topology implemented to remediate signal and downtime issues in the Home-Office network utilized by Simply Organized*

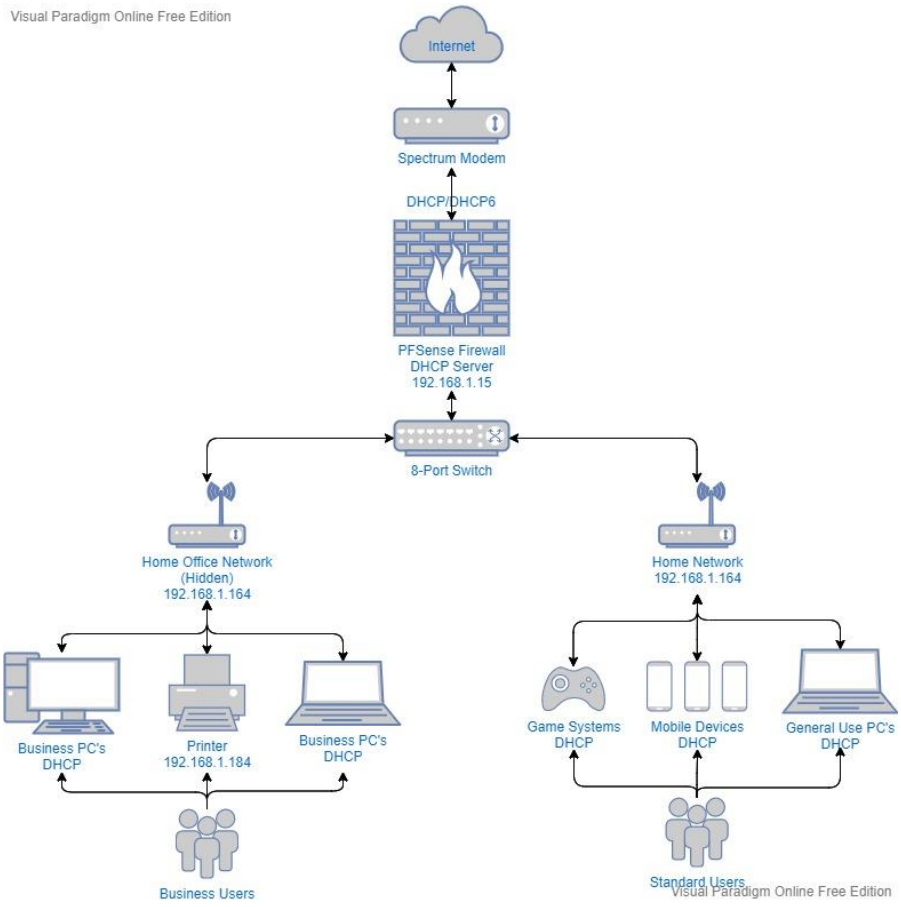


Figure 10: Home-Office Network Topology

To address poor network signal and consistent downtime in the office spaces employees utilized, new network hardware was purchased, implemented, and configured in this topology to fit the business' needs. At the head of the network, a PFSense firewall was implemented to manage inbound and outbound traffic, as well as providing network services such as NAT and DHCP. All network activity is monitored by the device. Configuration and tuning of the firewall will be discussed in further detail in the Security Hardening section of the report. Behind the

firewall sits a switch which was implemented to provide more ethernet ports for access points and internet-using devices to connect through.

The switch links both the “Home Network” and “Home Office Network” access points to the firewall. The TP-Link devices and are configured to simply relay packets from the firewall to internet connecting devices or vice versa, and the access points serve connection to two separate networks. The “Home Office” network is intended exclusively for Simply Organized business activity and connects to business-delegated devices and printers. The “Home” network is intended for all other devices that request connection in the home network space. This design was implemented to separate types of devices to two separate networks so to ensure network bandwidth is acceptable and business operations are not slowed by business-external devices.

Following the implementation of the new hardware and configurations, NetSpot was utilized again to test signal in the areas of concern displayed in Figures 1 and 2. The results are displayed in Figures 11 and 12:

Figure 11 & 12: *The following diagrams, Figures 4 and 5, show the signal strength of the network following the upgrade to network hardware on the Second and Third Office Floors*

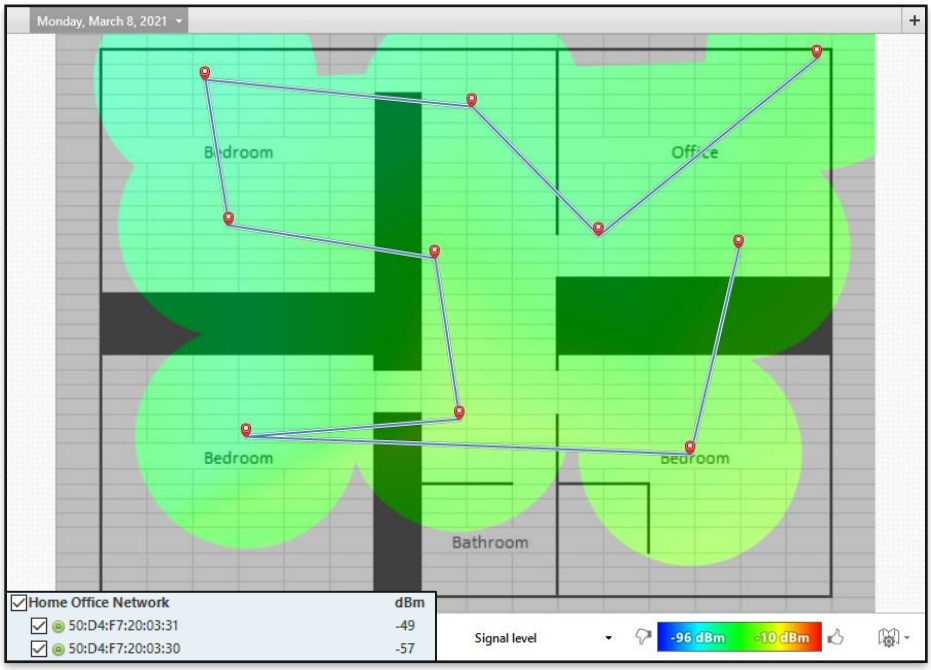


Figure 11 - Second Floor Post-Upgrade Network Survey

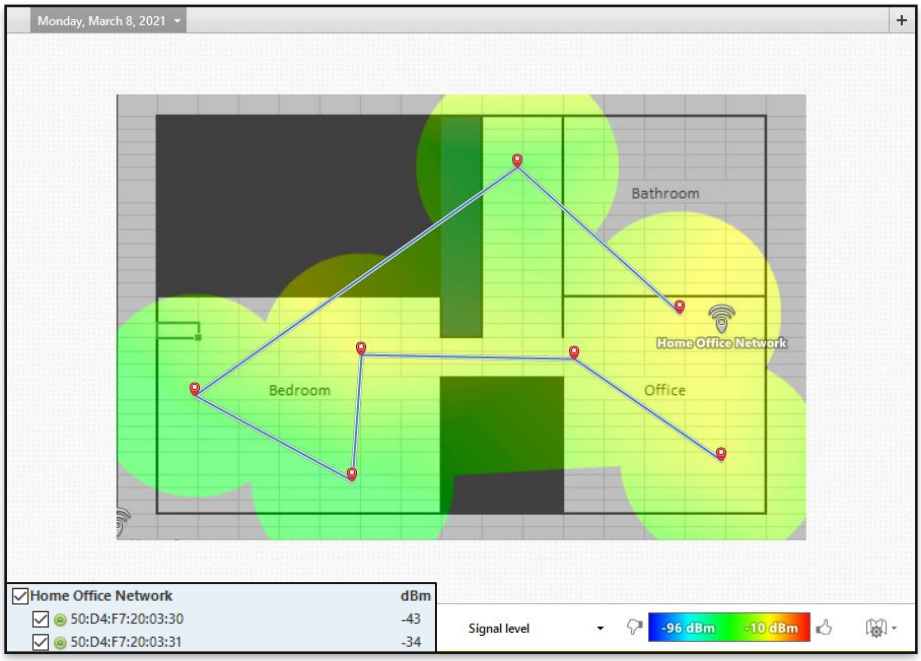


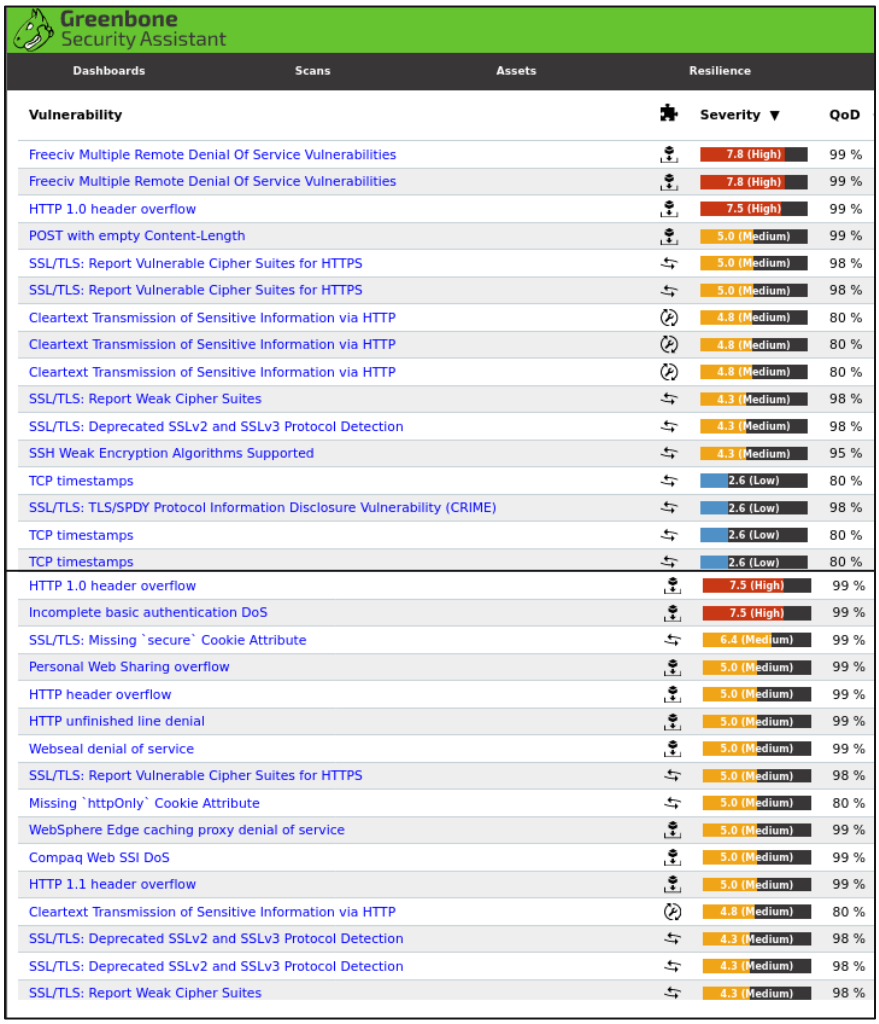
Figure 12 - Third Floor Post-Upgrade Network Survey

The survey shows drastic changes in connection strength for both office areas, shown in the -40 DBm or more improvements for both MAC addresses, and hence the bright yellow or green signal color rather than blue or deep green. The goal to improve signal connectivity has been achieved, and the provided hardware and network implementation will continue to provide consistent service to Simply Organized where it is most in need.

Security Assessment/Hardening

Technologically Organized also strived to improve Simply Organized's security posture alongside the implemented network infrastructure upgrade. This required using knowledge of existing tools to scan the network, discover vulnerabilities, and address them by changing configurations and filtering traffic. To achieve this goal, the team first used NMAP, another open-source tool focused in network management, to discover devices residing on the pre-upgrade network, and gather IP addresses to query with the vulnerability scanner. Following configuration, OpenVAS was used to utilize Greenbone Networks' vast database of common vulnerabilities to query against the hardware found on the scanned network. Expected results of vulnerability scans were dated operating systems on user hardware, open ports that are unnecessary for recreational or business use, and potential lack of WPA2 Data encryption travelling to and from access points. The results of the scans are as follows:

Figure 13: OpenVAS Scan Results *The following diagram lists vulnerabilities discovered on hardware utilizing or providing Simply Organized Network services*



Vulnerability	Severity ▼	QoD
Freeciv Multiple Remote Denial Of Service Vulnerabilities	7.8 (High)	99 %
Freeciv Multiple Remote Denial Of Service Vulnerabilities	7.8 (High)	99 %
HTTP 1.0 header overflow	7.5 (High)	99 %
POST with empty Content-Length	5.0 (Medium)	99 %
SSL/TLS: Report Vulnerable Cipher Suites for HTTPS	5.0 (Medium)	98 %
SSL/TLS: Report Vulnerable Cipher Suites for HTTPS	5.0 (Medium)	98 %
Cleartext Transmission of Sensitive Information via HTTP	4.8 (Medium)	80 %
Cleartext Transmission of Sensitive Information via HTTP	4.8 (Medium)	80 %
Cleartext Transmission of Sensitive Information via HTTP	4.8 (Medium)	80 %
SSL/TLS: Report Weak Cipher Suites	4.3 (Medium)	98 %
SSL/TLS: Deprecated SSLv2 and SSLv3 Protocol Detection	4.3 (Medium)	98 %
SSH Weak Encryption Algorithms Supported	4.3 (Medium)	95 %
TCP timestamps	2.6 (Low)	80 %
SSL/TLS: TLS/SPDY Protocol Information Disclosure Vulnerability (CRIME)	2.6 (Low)	98 %
TCP timestamps	2.6 (Low)	80 %
TCP timestamps	2.6 (Low)	80 %
HTTP 1.0 header overflow	7.5 (High)	99 %
Incomplete basic authentication DoS	7.5 (High)	99 %
SSL/TLS: Missing `secure` Cookie Attribute	6.4 (Medium)	99 %
Personal Web Sharing overflow	5.0 (Medium)	99 %
HTTP header overflow	5.0 (Medium)	99 %
HTTP unfinished line denial	5.0 (Medium)	99 %
Webseal denial of service	5.0 (Medium)	99 %
SSL/TLS: Report Vulnerable Cipher Suites for HTTPS	5.0 (Medium)	98 %
Missing `httpOnly` Cookie Attribute	5.0 (Medium)	80 %
WebSphere Edge caching proxy denial of service	5.0 (Medium)	99 %
Compaq Web SSI DoS	5.0 (Medium)	99 %
HTTP 1.1 header overflow	5.0 (Medium)	99 %
Cleartext Transmission of Sensitive Information via HTTP	4.8 (Medium)	80 %
SSL/TLS: Deprecated SSLv2 and SSLv3 Protocol Detection	4.3 (Medium)	98 %
SSL/TLS: Deprecated SSLv2 and SSLv3 Protocol Detection	4.3 (Medium)	98 %
SSL/TLS: Report Weak Cipher Suites	4.3 (Medium)	98 %

Figure 13 - OpenVAS Vulnerability Scan Results

The scans showed many vulnerabilities in hardware on the network, most notably some high severity vulnerabilities regarding authentication and denial of service. Technologically Organized sought to remediate these issues through configuration of implemented network devices.

As previously discussed, a PFSense firewall was purchased to provide passive protection from exploitation of these issues via the external internet. The firewall was placed between the

internet modem and the network access points. This allows the device to monitor and filter inbound and outbound traffic, while also providing basic network services such as DHCP and NAT. This device ensures that no unwanted access to any critical business infrastructure can be attained from an external network without explicit authentication, and also ensures no vulnerable interfaces can be accessed or exploited. This firewall serves as the first layer of security implemented to protect Simply Organized.

The remainder of the changes made to harden the internal network of Simply Organized came through direct updates to hardware on the network along with targeted upgrades and rules to ensure no vulnerabilities found would pose a threat to the business in the future. The changes made are as follows:

- Blocked all traffic via port 5556 to avoid DOS (as recommended by OpenVAS)
- Restricted inbound TCP/UDP traffic to that initiated by internal IP addresses
- Changed default passwords for both network access and administrative access to network hardware
- Enabled WPA2/WPA3 encryption on all network access points
- Established HTTPS connection between network hardware and business PC’s rather than utilizing deprecated and vulnerable HTTP protocol
- Hid Home Office Network
- Provided users with password management services so no repeat passwords are used
- Disabled UPNP and WPS for network devices

These changes ensure a positive security posture for Simply Organized for the foreseeable future.

2.7 Testing

Overview

This section contains the processes used for testing the Technologically Organized project. Testing is a vital part of ensuring the solutions put in place operate as intended and remain functional. The individuals who should use this section are Website Developers, Project Managers, Team Members, and Testers.

Testing Methodology

We will be hosting both internal and external user acceptance testing for the website to obtain feedback on criteria including but not limited to appearance, functionality, and ease of use. All testing for other solutions will be carried out by team members and project stakeholders. Testing will be carried out over the course of the month of February, with necessary changes being documented and remediated along the way. We chose this approach as we felt it was important to involve ourselves, stakeholders and external users to gain a full understanding of the project suite.

Scope of Testing

The scope of testing is separated into the four major parts of the solution: Website, CRM, Network and Security. Testing is meant to encapsulate all aspects of the solution to ensure they are working as individual parts and with each other where applicable.

Objectives

Testing will cover the objectives defined by project stakeholders at initiation. It is essential that testing determines whether the products we have put in place are able to be maintained going forward, function as intended without bugs, and are easy to use. The website will be tested by a larger group than the rest of the solution due to the external-facing nature of the product. The goal is to have the website gain exposure to the general public, and obtain feedback from external sources upon functionality, appearance, and user-friendliness. The CRM will be tested internally to ensure records can be effectively managed and invoices can be successfully filed. This will be enforced using a set of criteria intended to take testers through defined regular tasks to ensure functionality. Network output will be tested using NetSpot to determine network speeds in crucial areas of the home-office. This assessment was performed at the beginning of the project, and this section will cover progress and improvements made following hardware implementation and configuration. Finally, security solutions will be monitored to ensure they are functioning as intended. The OpenVAS vulnerability scanner will be monitored over weeks to ensure it is providing consistent and accurate results. The NetGate firewall will be lightly penetration tested against existing firewall rules to ensure configurations are adequate for business continuity.

Test Logs and Procedures:

Procedures will be carried out by members of testing, and will be formally documented here upon completion. Each user will be given their own individual test plan and be required to follow these criteria in the cases of the CRM and Website. Security and Network testing will be performed internally.

Table 2: Website Test Results *Number of responses is noted in (parentheses) for each criteria, as there were many external testers involved.*

Task Number	Solution	Task Description	(Y/N)	User Comment	Follow up?	Completed date
1	Website - Home	Does “Get Organized in Cleveland, OH” button lead to services page?	Y(7)	"Yes, it leads to main page to understand the purpose of the website then you can click on services to get to services page"	N/A	04/08/21
2	Website - Home	Does “Learn More” button lead to About Us Page?	Y(6) N(1)	N/A	N/A	04/08/21
3	Website - Home	Do Services tiles lead to services page?	Y(6) N(1)	N/A	N/A	04/08/21
4	Website - Home	Are all images clear and properly formatted?	Y(7)	N/A	N/A	04/08/21
5	Website - Home	Is the webpage flow smooth and user-friendly?	Y(6) N(1)	N/A	N/A	04/08/21
6	Website - Home	Are buttons and nav bar responsive? Do they change when hovered over?	Y(6) N(1)	"But the "contact us" button tweaks a little bit from the right corner to the bottom then switch back up."	Fixed	04/08/21
7	Website - Home	Is Simply Organized logo visible and prominent?	Y(7)	N/A	N/A	04/08/21
8	Website - About	Does clicking Simply Organized Logo bring user to home page?	Y(6) N(1)	N/A	N/A	04/08/21
9	Website - About	Does “Get in touch!” button lead to contact us page?	Y(7)	N/A	N/A	04/08/21
10	Website - About	Are all images clear and properly formatted?	Y(7)	N/A	N/A	04/08/21
11	Website - About	Is the webpage flow smooth and user-friendly?	Y(6) N(1)	N/A	N/A	04/08/21

12	Website - Services	Does “Get in touch!” button lead to contact us page?	Y(6) N(1)	N/A	N/A	04/08/21
13	Website - Services	Are all images clear and properly formatted?	Y(7)	N/A	N/A	04/08/21
14	Website - Services	Is the webpage flow smooth and user-friendly?	Y(6) N(1)	N/A	N/A	04/08/21
15	Website – Contact	Is the Calendar visible and up to date?	Y(6) N(1)	"But I am not sure if it's necessary to have a big calendar just to check today date. If it is for scheduling an appointment then yes."	The calendar is there so visitors can see the availability of the business.	04/08/21
16	Website – Contact	Can users enter and submit information in the “contact us” form?	Y(7)	N/A	N/A	04/08/21
17	Website – Contact	Does the “reset” button on the “Contact Us” form remove all information from the form?	Y(7)	N/A	N/A	04/08/21
18	Website – Contact	Does the form enforce the mandatory fields marked by a red star(*)?	Y(7)	N/A	N/A	04/08/21
19	Website – Contact	Is the webpage flow smooth and user-friendly?	Y(7)	N/A	N/A	04/08/21
20	Website – Nav	Do header and footer navigation links function as intended?	Y(6) N(1)	"LinkedIn Logo is half visible and doesn't lead to anything by clicking on it. "	This is fixed. LinkedIn logo is now visible, and it leads to LinkedIn	04/08/21

Table 2 - Website Test Results

Table 3: CRM Test Results

Task Number	Solution	Task Description	(Y/N)	User Comment	Follow up?	Completed date
1	CRM	Was the user able to receive contact information from	Y			3/14/21

		the webform on the contact us page?				
2	CRM	Was the user able to access the record ingested by the webform?	Y			3/14/21
3	CRM	Was the user able to import leads and contacts?	Y			3/14/21
4	CRM	Was the user able to manually create leads and contacts?	Y			3/14/21
5	CRM	Was the user able to add notes to a lead?	Y			3/14/21
6	CRM	Was the user able to create activities from the lead?	Y			3/14/21
7	CRM	Was the user able to convert a lead to a contact?	Y			3/14/21
8	CRM	Is the user able to find and edit activities from the Activities window?	Y			3/14/21
9	CRM	Do the Zoho CRM and Zoho Invoice tools sync information properly?	Y			3/14/21
10	CRM	Is the user able to create a new invoice for an existing customer?	Y			3/14/21
11	CRM	Can user establish a link between Zoho Invoice and Paypal?	Y			3/14/21

Table 3 - CRM Test Results

Table 4: Network Test Results

Task Number	Solution	Task Description	(Y/N)	User Comment	Follow up?	Completed date
1	Network	Are all network nodes active and providing signal?	Y		N	3/15/21
2	Network	Are LANs configured properly?	Y		N	3/15/21
3	Network	Is PFSense device providing DHCP Leases?	Y		N	3/15/21
4	Network	Is network uptime acceptable?	Y	Network uptime is > 2 weeks	N	3/15/21

Table 4 - Network Test Results

Table 5: Security Test Criteria

Task Number	Solution	Task Description	(Y/N)	User Comment	Follow up?	Completed date
1	Security	Is system up?	Y	Uptime > 3 weeks	N	3/15/21
2	Security	Is DHCP Server active?	Y		N	3/15/21

3	Security	Is firewall filtering traffic based upon implemented rules?	Y	Firewall logs show blocks when queried	N	3/15/21
4	Security	Is firewall filtering traffic from penetration test?	Y	Firewall logs shows repeated blocks on 172.0.0.1(OpenVAS)	N	3/16/21

Table 5 - Security Test Criteria

2.8 Budget

Table 6: Budget ***Below is the final budget for Technologically Organized***

Project Asset Type								**Funding Source (if applicable)**			
Infrastructure		Comments: The team will be providing Simply Organized with a web infrastructure and security services to build their business and promote growth beyond word-of-mouth marketing						Outside Investor	Comments: Simply Organized has provided funding for all purchased resources within the project		
Risk Identification (See Risk Types tab)								**Project Stakeholder(s)**			
	Risk Rating* 1-5 (5 is high)	***Comments***	***Weight***	***Score***				The service this platform is being created for is Simply Organized, and the main stakeholder in the project is Michelle Davis			
Work Effort (days)	1		40%	0.40							
Complexity	3		60%	1.80							
Project Risk Score:				**2.20**							
Estimate of Benefits											
If project will generate revenue, estimate 1 year here:		$ 18,848.42									
Select other benefits the project may bring a customer or user:											
Risk Avoidance		☑									
Improved customer satisfaction		☑									
Increased system availability		☑									
Productivity or process improvement		☑									
Reduced costs		☐									
Estimated Cost Rough Order of Magnitude:											
	Rate Per/Hr	**Work Effort (Hours)**	**1 X Costs**		**Ongoing Annual Rate Per/Hr**	**Ongoing Annual Work Effort (Hours)**	**Ongoing Annual 1 X Support Cost**	**Comments: Support Cost is 0 as we have built a self-sustaining model for the project using training and help videos. Recurring yearly charge of $318 includes website and CRM hosting, domain registration, and site security. 1 time software charge is for netspot tool used to diagnose network holes. 1 time hardware purchase is for Cisco networking firewall and hardware. Tools used for security analysis came at no cost.**			
Labor - IT	20	360	$ 7,200.00		20	0	$ -				
Labor - External	0	0	$ -		0	0	$ -				
Software - External	$39.99	1	$ 39.99		$ 318.00	1	$ 318.00				
Hardware - External	239.99	1	$ 239.99								
Misc.											
TOTAL			$ 7,479.98				$ 318.00				
5-Year ROI Analysis											
Description		**5- Year Expected**	**Conservative (1.5)**								
Total Costs		**$ 9,069.98**	**$ 13,604.97**								
Total Benefit		**$ 94,242.10**	$47,121								
Total Costs/Benefit Differential		**$ 85,172.12**									
Conservative Costs/Benefit Differential											

Table 6 - Budget

2.9 Project Timeline

Table 7: Project timeline: *The following table, Figure 4, shows the project timeline of Technologically Organized for Fall and Spring semester.*

Task #	Task Description	Duration(Days)	Start Date	End Date	Actual Start	Actual End
0	**Team Formation**	30	6/1/2020	8/21/20	8/21/20	8/21/20
1	**Completion of Contract**	7	8/24/20	10/12/20	8/24/20	10/12/20
1.1	Communicate with business surrounding website needs	1	8/26/20	8/27/20	8/30/20	8/30/20
1.2	Project Abstract Completion	49	8/31/20	10/12/20	10/12/20	10/12/20
2	**Website Development**	45	9/2/20	10/16/20	9/14/20	10/26/20
2.1	Develop Website Blueprint	2	9/3/20	9/5/20	9/14/20	9/16/20
2.2	Collect website content, such as images and testimonials	14	9/5/20	9/19/20	9/16/20	10/23/20
2.3	Register domain	1	9/6/20	9/7/20	9/14/20	9/14/20
2.4	Build site pages	10	9/19/20	9/29/20	9/16/20	10/26/20
3	**CRM Implementation**	45	11/5/20	12/3/20	11/5/20	11/23/20
3.1	Research CRM Solution	3	11/5/20	11/11/20	11/5/20	11/7/20
3.2	Plan Database Integration	7	11/11/20	11/13/20	11/7/20	11/9/20
3.3	Integrate Database	45	11/13/20	11/20/20	11/9/20	11/16/20
3.4	Test Integration	14	11/20/20	11/20/20	11/17/20	11/23/20
4	**Virtual Calendar Setup**	14	11/2/20	11/16/20	11/9/20	11/16/20
4.1	Assess virtual calendar solution	1	11/2/20	11/3/20	11/9/20	11/9/20
4.2	Configure calendar to user determined settings	13	11/3/20	11/16/20	11/9/20	11/16/20
5	**Test WordPress Integrations**	10	11/16/20	12/3/20	11/16/20	12/3/20
5.1	Validate integrations are working/remediate issues	7	11/16/20	12/3/20	11/16/20	12/3/20

6	**Elevator Speech Completion**	14	10/5/20	10/19/20	10/5/20	10/19/20
7	**Use Case Diagram Completion**	14	10/5/20	10/19/20	10/5/20	10/19/20
8	**Publish Website**	14	1/11/21	1/25/21	1/11/21	3/15/21
8.1	Validate website content	3	1/22/21	1/25/21	3/15/21	3/25/21
9	**Draft Report**	30	10/9/20	11/9/20	10/26/20	11/9/20
10	**Final Report Submission**	19	11/9/20	11/30/20	11/9/20	12/7/20
11	Payment Interface Setup	7	1/25/20	2/1/21	11/5/20	1/15/21
11.1	Register Simply Organized with PayPal	3	1/25/21	1/28/21	1/15/21	1/15/21
11.2	Set up CRM Invoice capability	7	11/5/20	11/23/20	11/5/20	11/23/20
11.3	Input Payment Interface Embed in website	7	1/25/20	2/1/20	N/A	N/A
12	**Network Infrastructure Hardening**	31	12/8/20	1/8/21	10/19/20	2/10/21
12.1	Research current and future necessary hardware	3	12/8/20	12/11/20	10/19/20	10/20/20
12.2	Determine dead spots in network	2	12/11/20	12/13/20	10/30/20	10/30/20
12.3	Run Port Scans to determine vulnerable traffic and applications	7	12/8/20	12/15/20	10/30/20	11/13/20
12.4	Perform necessary network changes to remediate issues	28	12/13/20	1/8/21	10/30/20	2/10/21
13	**End User Training**	21	1/25/21	2/8/21	1/25/21	2/8/21

Table 7 - Project Timeline

2.10 Problems Encountered and Analysis of Problems Solved

We have struggled at times to meet with our project stakeholder to either obtain feedback on any progress we made or to discuss other business needs because of schedule conflicts. We solved this problem by continuing work on planned project tasks and following up wherever possible. This left room for significant overhead in terms of what changes would need to be

made, but to stay on schedule, the project had to progress. Eventually we were able to set up meetings with the stakeholder, obtain feedback, and make necessary improvements. We also encountered problems with plugins we were planning to use while building the website. One of the WordPress plugins that the team implemented lacked functionality without purchasing an additional subscription to be able to utilize it effectively. After doing some troubleshooting, we created a workaround in which the plugin would only be used in specific circumstances where the free version could be effectively utilized.

During original implementation of OpenVAS, the team struggled to obtain its intended functionality. When running setup commands, the OpenVAS client would fail in one of two ways: either it would refuse connection to its host site where it pulls configurations and thus fail repeatedly, or throw a PostgreSQL error, stating that clusters needed to be upgraded in order to use the client. This issue persisted through multiple days, as there were minimal troubleshooting resources available on the internet. Team members were unable to discover the root of the host resolution problem and were inexperienced in using PostgreSQL to perform the necessary database upgrades. After days of troubleshooting, the issue was resolved through a fresh installation of the Kali Linux system on which OpenVAS was installed, and team members were able to effectively upgrade database clusters and use the client.

In the latter stages of the network upgrade, there were problems obtaining an external IP for the NetGate Firewall to communicate to the internet and provide service to the internal network. This was a significant problem, as if the firewall was implemented and occurred in a production environment, it could cause significant downtime. After troubleshooting in a test environment, multiple full reboots of the network were discovered to have been required. This includes modem, access points, and firewall. After this discovery, the firewall was implemented

with no issues. Finally, there were instances in which the Contact Us form would become corrupted due to other edits on the page, but this was resolved by simply re-pasting the embed code in the widget.

2.11 Recommendations for Improvement

With more in-person meetings, requirements could have been further discussed, and more functionality could have been provided. More website pages can be added in the future by business discretion. From a network perspective, VLAN's could have been put in place to further segregate network activity, but the task was decidedly our of scope. From a security posture standpoint, recommended next steps would be to open up a VPN tunnel with IPSec enabled to secure authentication to network hardware.

4. CONCLUSION

3.1 Lessons Learned

With this project being the first time for some of us to work with a client to achieve a goal, the group learned of the importance of time management. If individuals do not stick to their schedules, it leaves significant room for error and possibilities for getting behind on other project tasks. We gained valuable experience in working with stakeholders to devise the most effective implementation of technologies to assist their business that are both affordable and easy to maintain. Cost management is an important facet of any business, and this consideration will be useful going forward into our careers.

3.2 Abilities and Skills Developed Throughout Project

Team members have shown an ability to familiarize ourselves with new technologies quickly. Self-education on how to use the technologies we utilized in the project, such as WordPress, OpenVAS, PhpMyAdmin, and NetSpot became an important facet of development of the project. Having this skill is important in the field of IT because new technologies always surface, and professionals must stay up to date and on task. Troubleshooting skills were also developed, as we were forced to remediate issues where they appeared and do so in a timely and effective manner. The team relearned information previously taught to us in our coursework, such as networking skills and database management.

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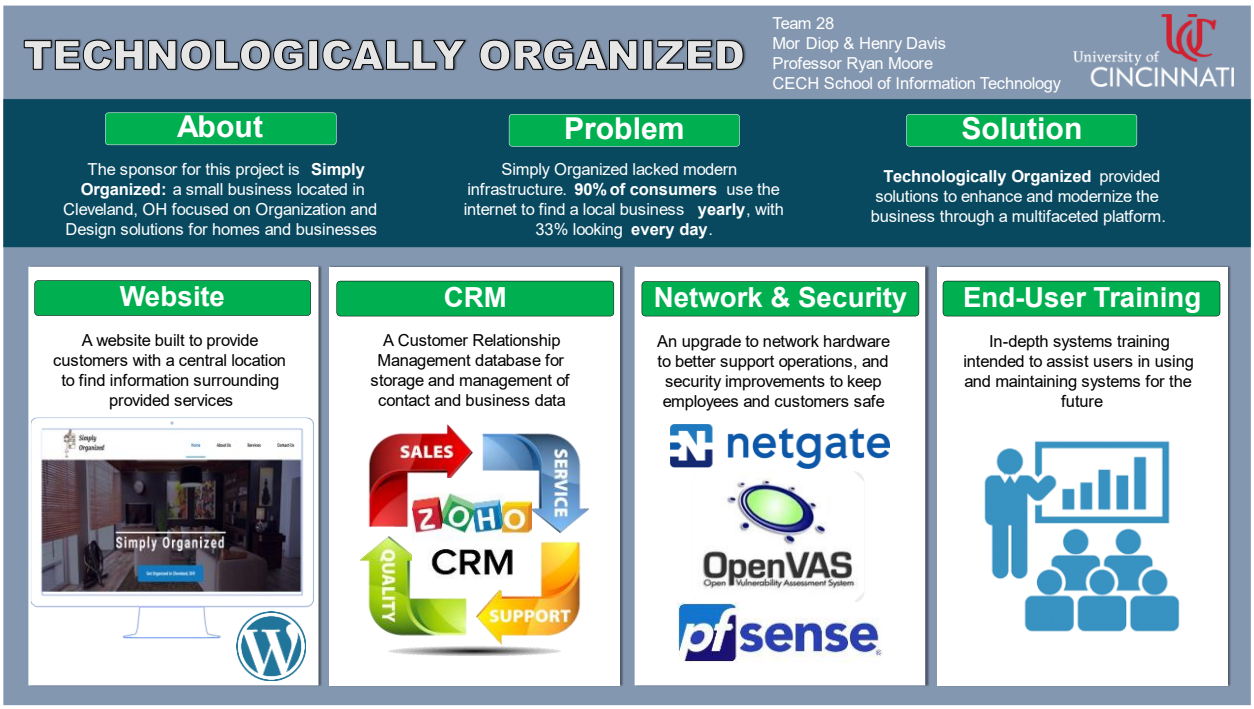
6. APPENDIX

Appendix A: IT-Expo poster *The figure below is our poster that was presented at the IT-Expo 2021. It is an overview of our entire project.*



Appendix A - IT Expo poster