



# SISDAC Worldwide Website & Network

March 18, 2016

Team 3G - Naomi Afereti,  
Gaby Aranda, Sue Park

[www.sisdac.org](http://www.sisdac.org)

# Table of Contents

I.	About Team 3G.....	3-6
II.	Project Overview.....	7-12
	a. Client Background.....	7
	b. Project background and description....	7
	c. Project Scope.....	7, 8
	d. Requirements.....	8, 9
	e. Project timeline.....	9-11
	f. Methodology.....	11, 12
III.	SISDAC Website.....	13-19
	a. WordPress.....	13, 14
	b. ShareFaith Hosting - Control Panel..	14-19
IV.	Prototypes .....	20-29
	a. Website Design-One.....	20, 21
	b. Website Design-Two.....	22, 23
	c. Network.....	23-26
	d. Contract.....	26-29
V.	Client Meeting.....	30, 31
VI.	Change Management .....	32, 33
	a. Client Requirements.....	32
	b. New Project Timeline.....	32
	c. New Requirements.....	33
VII.	Final Product .....	34-57
	a. Website.....	34-36
	b. Subdomain.....	37, 38
	c. Email.....	38, 39
	d. LMS.....	40-44
	e. Cloud Computing.....	44-49
	f. AWS.....	49-57
VIII.	Team Reflection .....	58
IX.	References .....	59

## About Team 3G

---

Team 3G stands for 3- Girls. Our group consist of Naomi Afereti, Gabriela Aranda, and Sue Park. We are all seniors at the University of Washington –Tacoma majoring in Information Technology. Our group came together because of our similar interest of web development, network, and security. For our senior project, we believed that our team was very unique and stood out from the rest. In a field dominated by men, 3G came together to implement a website and network design.

### **Naomi Afereti**



My name is Naomi Afereti. I am a senior attending the University of Washington Tacoma graduating with a Bachelor's of Science in Information Technology. I chose to major and study in this field because I really wanted to learn how to fix computers. From there I learned so much and wanted to expand my knowledge in the I.T. field even more.

My interest in technology started in 2005 when I was 14 years old. In that year, my church had implemented the uses of laptop, projector and basically the uses of PowerPoint for our services. I wanted to be the “tech girl” in my church, and so I became just that. As our laptops and projectors started messing up, I wanted to fix them. I ended up

attending Highline College and earning my AAS degree in Network Specialist. My advisor at Highline told me more about the I.T. program at UW-Tacoma. I did not think much about applying to the program, but I did and got in. I wrote about how church helped me to realize my passion for computers and how I would love to give back to my church if given the chance.

In the program I learned so much more than I ever thought about technology, one was working in technical teams. From there I wanted to work on more projects that allowed me to play the role of a project manager. For my senior project, I was able to do just that and to work on a project that gave back to my church.

I am a member of the Samoan Independent Seventh-Day Adventist Church, also known as SISDAC. I was asked to take over our church website (which was fairly new). I decided this would be a great senior project to work on. From there, I gather two other groups to start working on this project.

What I expected to learn was more of the business management side of information technology. Since I was the main lesion for our group and the client, I felt most comfortable taking on that role. What I did not realize was the documentation part of business management side. I was constantly writing up reports and contrasts. Together with that, researching the best technology that fit our client took a lot of time. I found myself scheduling appointments/ video chats with different personas in various countries in order to give the client what they asked for.

During the purpose of our senior project, I actually experience my first change management. I aspect I was taught in my first year of the program. I knew I would experience it when I entered into the field as a career, but never did I believe it'll happen while I was still a student. This project taught me a lot and gave me hands on experience that I know will help me as I pursue a career in the I.T. field.

I truly enjoyed working with Sue Park and Gaby Aranda on this project. I believe that each of us learned so much and even experienced parts of this project which we wish to pursue as future careers. As a group we divided the work evenly. I was in charge of the client side as well as assisting Sue with the Web Development aspect of our client's website. Gaby was in-charge of a potential network design that our client could implement in the future using Cloud services.

Our group met twice every week for about 2-4 hours each meeting. During those times we would reflect on what was done, what needed to be done, and then worked as a team to accomplish our goals. Every meeting we made sure to keep each other updated on what was happening and assist when help was needed. Communication was key for our group which we proudly accomplished. We communicated through phone, text, and emails to make sure we knew what was happening. Each group member was in-charge of becoming a project manager for their respected week and succeed at that task. I was very pleased and thankful to be working with such great ladies.

## Gabriela Aranda



My name is Gabriela Aranda. I am a senior at University of Washington Tacoma graduating from the Information Technology program. I chose to be in this program because I have always loved working with computers and learning the new technology as well as security.

I saw a TED talk few years ago about how hackers can hack into anything such as transportations, heart monitors and other daily devices that people don't think about ever getting compromised. Information security is what I hoped to do in this field. I want to be able to protect people and their information from intruders who try to do harm and take out the feeling of being secured from people and organizations. Learning about authentications, the types of malware, the many methods of a malicious attack, real life scenarios of organizations being targeted and how they handled it, risk analysis and identifying vulnerabilities then figuring out the best way to mitigate them are a few things I hope to apply my skills into when I enter my career.

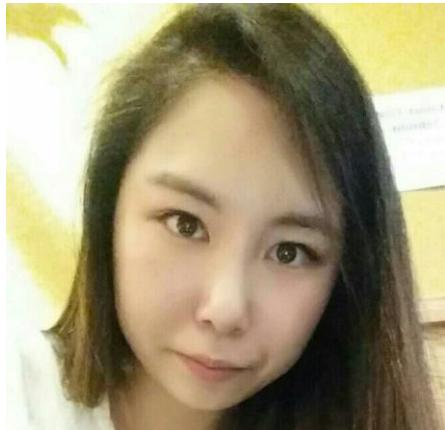
Going into this project I was hoping to gain experience and learn more about network and security. Originally, my focus was on the security of the SISDAC website and conducting tests for vulnerabilities and adding in security features to the site. This was hard at first because their website is hosted by Share Faith. If I were to do any tests, I could interfere and disrupt Share Faith's system which is not the plan nor a good idea. I emailed them regarding their security and what they do to protect websites from intrusions.

They replied back with a vague response and I searched their website too about the security they provide, and there too was a small vague paragraph about how they handled it.

When the client did the change management about half way through, they were very interested in the network and possibly applying cloud computing to their organization and ministry. That became my focus for the rest of the project and learning about the different cloud service providers and what they each offer. I choose AWS Amazon because they had a 12-month Free Tier trial and it allowed me to get a hands on experience about its potential. While I was still limited in what resources I could use, I was able to get enough in to show the client that their website can be hosted here. The other goals were to set up an email server through AWS and hopefully migrate the Learning Management System they chose to also run under AWS.

I was very lucky to have an amazing group to work on this project with. My team members, Naomi Afereti and Sue Park, were always on time and on top of their part of the project. We had scheduled meetings twice a week, and we all showed up for every single one of those meetings which I think made it easier to not fall behind in the project or to have scope creep. We always were communicating through cell phones, emails and Canvas to inform the other members of any issues that may have happened. We each got to work on a skill that we wanted to have a good experience with in this project which was beneficial for us and kept it interesting, but also fun.

## Sue Park



My name is Sue Park. I am a senior at University of Washington Tacoma, and major in Information Technology. I met the one of IT professor during senior year in high school, and he lead me to get in UWT IT program because I want to study next to him.

I became interested in Information Technology and Web Development in junior high school when I took a computer class. We were given a textbook to last us the school year, and it was so interesting that I completed it in three months. That became my basis on what I wanted to study when I went to university. Since I

became a sophomore in university, I started to work at the small IT Company, and learn about web development and design. I like to design website and develop from my technical skills. That was all about my interest in computer area.

The end of last quarter, I talked to Naomi for senior project idea together and she told me that she has an amazing project to do. Her church, Samoan Independent Seventh-Day Adventist Church (SISDAC) wants to build the dynamic website. The project was pretty much about designing and developing website for her church, manage the content, and advance security and network for their website content because this website wasn't only for one of church, it was for organization of Samoan church in various countries. I and Nomi decided to develop the website using client-side script languages because it develop the

dynamic website. We didn't have very detail information about project at that moment because we didn't contact our clients for this project yet.

I expected to learn and improve my web development skills using client-side script languages such as HTML5, CSS3, JavaScript, PHP, and jQuery from this project. I started to build website from these script languages, but clients suddenly wants lots of revised and new suggestions from us in the half way. In their words, they wants to keep manage their website content after we done. If we use script languages to build the website then they will get a hard time to manage their website, so we decided to use a content management system tool, WordPress. After we moved to WordPress, everything working easily and looks more professional than previous because we basically set up the theme and focus to manage their church information. That's what I did for senior project. I did way different work than my expectation, but I learn how to interact and communicate to clients in real situation of web development.

I was very enjoyed and happy to work with these ladies, Naomi Afereti and Gabriela Aranda. We separated each role during first group meeting, and they responsibly did their own part until project is over. My part was about the web development, Naomi was about managing clients, and work on the other part when I or Gaby need a help, and Gaby mainly work on the network and security for website. All of us always participated group meeting two times per week, and contact to each other when we needed using Canvas message, email, and text. They were brilliant and friendly people so this was valuable and awesome memory to me from this group project.

# Project Overview

---

## Client Background

Our clients are the Samoan Independent Seventh-Day Adventist Church. They are located in five (5) different countries being: New Zealand (Headquarters), Samoa, American Samoa, Australia, and the United States of America. They are their own standalone denomination working to expand in the world of technology.

## Project Background and Description

Our group will be working with the Samoan Independent Seventh-Day Adventist Church (also known as SISDAC) denomination in order to build efficacy to their website as well as giving their website multiple functions. SISDAC will also like an overview of how and what a network is and the cost and benefits of having one.

This project came about because one of our group members is a member of this denomination. Because church had helped her realize that she wanted to major in Information Technology, she believed giving back and displaying her IT skills was the best opportunity to give back.

Those involved in this project would be our group members: Naomi Afereti, Gaby Aranda, and Sue Park, as well as or clients: SISDAC.

## Project Scope

There are two main parts that SISDAC Leaders would like for us to accomplish.

- 1) www.sisdac.org website
  - Sharing the Gospel through the website. Making sure that SISDAC can preach the gospel online.
  - E-commerce aspect for income.
  - Being recognized as an Established Organization with a more sophisticated website design and look.
  - User accounts and Subdomains for different countries and their divisions.
- 2) Options for building a Network for the Headquarter building in New Zealand
  - Servers – physical or cloud
  - Routers – what are they used for?
  - Databases – What are they used for? What type is best?
  - How will having a network benefit SISDAC?
  - Prices, cost

With the limited time our group has, it does not seem that all of our clients' request can be met. What seems to be manageable in this early stage would be the following:

- 1) www.sisdac.org website
  - Being recognized as an Established Organization with a more sophisticated website design and look.
  - Subdomains for different countries and their divisions.
- 2) Options for building a Network for the Headquarters building in New Zealand
  - How will having a network benefit SISDAC?
  - Prices and cost

What is questionable at this point that could “possibly” be done (if time permits us and with further research) are the following:

- 1) www.sisdac.org website
  - Sharing the Gospel through the website. Making sure that SISDAC can preach the gospel online.
    - *One way our group can address this is by making the site “maintainable.” By making a GUI interface for our clients to make changes will help SISDAC share the gospel on their site.*
  - E-commerce aspect for income.
    - *One solution is by creating a database that allows transaction or setting up a PayPal account to handle such transaction.*
  - User accounts
    - *Solutions could be looking at the current hosting deals SISDAC has with ShareFaith. If ShareFaith has a subscription option that allows plenty of user accounts (eg. Emails) to be hosted, we could present this to our client to possibly pay more.*

What does not seem doable in our scope are the following:

- 2) Options for building a Network for the Headquarter building in New Zealand
  - Servers – physical or cloud
  - Routers – what are they used for?
  - Databases – What are they used for? What type is best?

The results of what can be done will give our client a better website then what they have now, and also having more functions then the current site itself.

If we’re able to address the possible list, then our client will have a complete multi-functional website.

## **Requirements**

For our project, we believe that there should be three (3) main requirements: functional, technical, and usability. Below, we breakdown how each requirement is needed for our project.

### **Functional Requirements**

Primary:

- Visitors should be able to navigate easily when visiting the site.
- The content should be easy to understand.
- No broken links – Every page should be able to access each other.

Secondary:

- Interactive with other visitors/ members.

## **Technical Requirements**

Primary:

- Understanding ShareFaith options for hosting/ what can ShareFaith hosting do and can't do?
- Cross-browser/ platform support (IE, Firefox, Chrome, Safari –PC and Mac)
- Understanding ShareFaith's security aspects.
  - Application
  - Website

Secondary:

- Network security aspects.
- Mobile friendly.

## **Usability Requirements**

Primary:

- The website will fully function in major browsers.

Secondary:

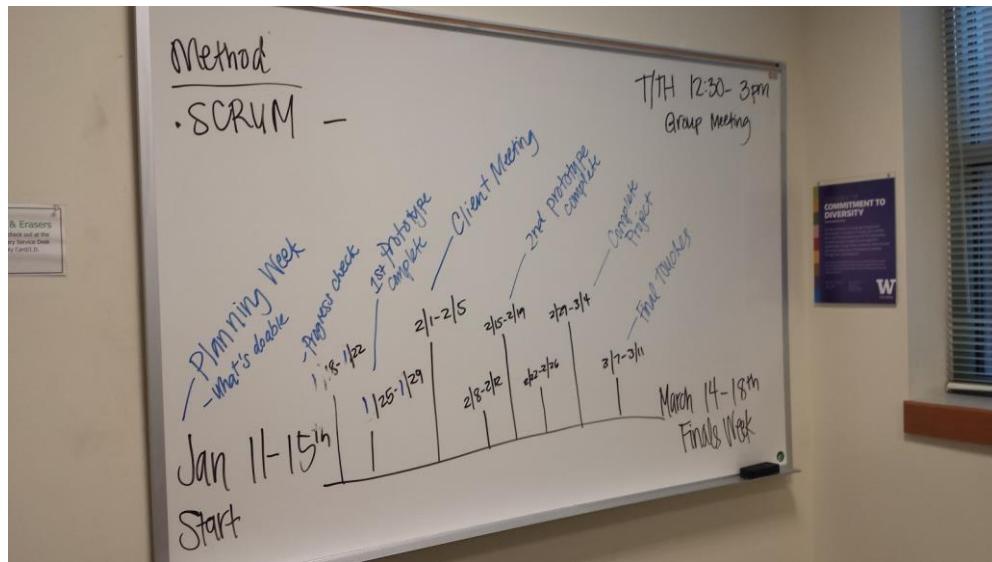
- Mobile browsers.

## **Project Timeline**

The timeframe given for our project began on the first day of Winter Quarter, January 4<sup>th</sup>, 2016 and will be ending the last day of the quarter, March 18<sup>th</sup>, 2016.

Unfortunately, our group was not formed until the end of the January 4<sup>th</sup> week. Because of that, we spent one week planning our project. We decided as a group that the best way to utilize the time we had was to divide them into weeks. (Figure 1.1)

With our timeline defined, we believed that having mandatory meetings biweekly was needed in order for our team to continue to work in harmony. Group meetings were held every Tuesdays and Thursdays at UW-Tacoma's library. Naomi was in-charge of reserving rooms in order for our group to work on our project.



**Figure 1.1: Timeframe of Project**

**Week 1:** Jan 10<sup>th</sup>- Jan 16<sup>th</sup>, 2016

This week was dedicated to planning and researching. We divided our work into three areas: documentation and client efforts were given to Naomi, web design and development was given to Sue (with the help of Naomi if needed), and network research and design was given to Gaby.

**Week 2:** Jan 17<sup>th</sup>-Jan 23<sup>rd</sup>, 2016

This week was our first progress check-in. On Tuesday when our group met, we went over what each person had done. From there we saw what was going to be done and brought to our meeting on Thursday.

When our meeting on Thursday was in session, we went over what was needed to be done for our next week's meeting. By doing this, we made sure that we kept to our schedule to complete each leg of our project.

**Week 3:** Jan 24<sup>th</sup>-Jan 30<sup>th</sup>, 2016

Our first prototype was due this week. Our prototypes consisted of a client contract, wireframes and a HTML file prototype of our website design, as well as a documentation of a physical server compared to a cloud server. All prototypes were to be completed and emailed to Naomi by Friday, January 29<sup>th</sup>.

**Week 4:** Jan 31<sup>st</sup>- Feb 6<sup>th</sup>, 2016

Naomi was driving down to Portland, OR to meet with our clients (SISDAC Leaders) who were flying in from both New Zealand and Australia the weekend of January 29<sup>th</sup>-February 2<sup>nd</sup>. From there she was to present the prototypes.

### **Week 5:** Feb 7<sup>th</sup>-Feb 13<sup>th</sup>, 2016

This week was left as a work week. Depending on how the client meeting went, we kept this week as an “in-progress” week. During this time we continue to work on network designs and website designs.

### **Week 6:** Feb 14<sup>th</sup>- Feb 20<sup>th</sup>, 2016

Our second prototype was due this week on Friday, the 19<sup>th</sup>. Here we also planned to have a skype meeting with our clients in New Zealand. By doing so, we could continue to communicate with our clients and present our progress thus far.

### **Week 7:** Feb 21<sup>st</sup>- Feb 27<sup>th</sup>, 2016

Another week dedicated to our “in-progress” efforts. We will still meet on Tuesday and Thursday to check-in, reflect, and plan for what was done and still needed to be done.

We planned to have the main page of the website completed. Have created “template” layouts for the client to work with completed, as well as a documentation research about creating a network (WAN) for all SISDAC locations. Our due date was set for March 4<sup>th</sup>.

### **Week 8:** Feb 28<sup>th</sup>- Mar 5<sup>th</sup>, 2016

We planned to have everything completed this week in order to leave room for any layaways or complications that we occur.

### **Week 9:** Mar 6<sup>th</sup>- Mar 12<sup>th</sup>, 2016

This week was for last minute/ final touches of our project. This was also our week to prepare for presentations. We also planned to have a skype video chat with our client from New Zealand

### **Week 10:** Mar 13<sup>th</sup>- Mar 18<sup>th</sup>, 2016

This was final week. We had plan to work on final touches and our final report.

## **Methodology**

The methodology our group chose to use for our project was SCRUM. This methodology best described how we, as a group, liked to work.

Scrum involved the following points:

- Initial appointment of a project manager called the "scrum master."

- Definition and prioritization of tasks to be done.
- Planning sessions for each task.
- Daily meetings among teams.
- Identification and evaluation of potential project risks and process pitfalls.
- Execution of projects in brief, high-intensity, frequent work sessions.
- Reviews of progress and evaluations of completed projects.
- Openness to constructive criticism and ideas for improvement.

As a group, we believed that each aspect of Scrum worked perfectly for us. Our senior project would be successful because we would be to hit each point during the quarter.

# SISDAC Website

## WordPress

SISDAC had a startup website created using WordPress and hosted using ShareFaith (a Christian website hosting service). Their website was made using the theme/ templates provided by ShareFaith (Figure 2.1 and 2.2).

The functionality of the website did not seem to make sense. The website had unnecessary images and content that did not seem to fit what the client really wanted. Compared to other Christian websites, SISDAC did not have a good looking website let alone, did it seem as if it was a church website.



Figure 2.1: SISDAC Home Page

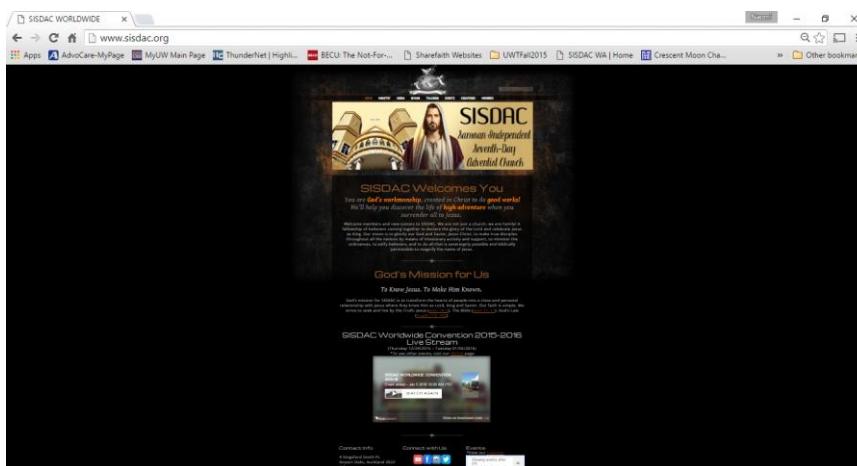
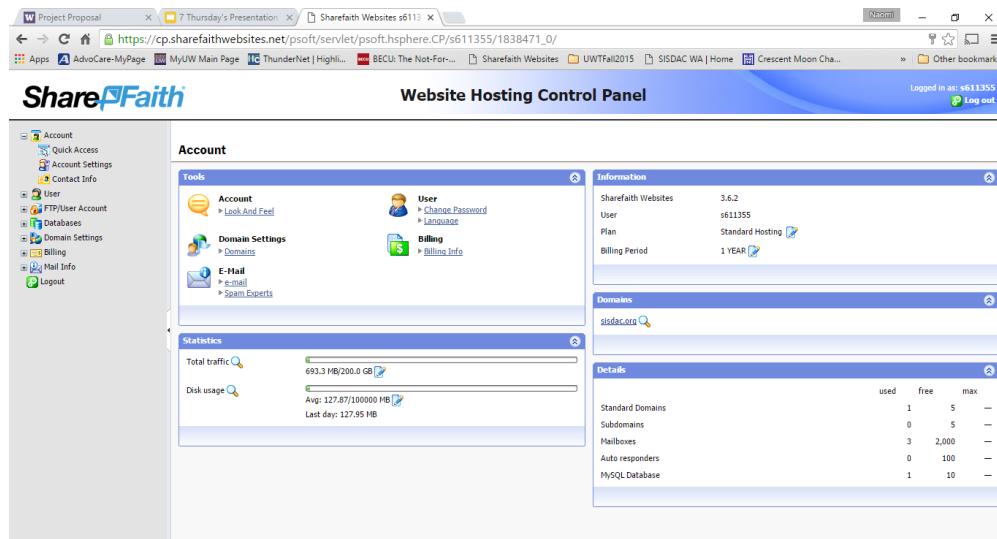


Figure 2.2: SISDAC Home Page zoomed out

When first contacted about redesigning SISDAC's website, the clients wanted a full dynamic website. One that had many functions such as having users login, emailing associated with the website, and an e-commerce aspect.

## ShareFaith Hosting – Control Panel

With their monthly subscription, SISDAC was given a Control Panel (Figure 2.3) in order to create sub-domains, email hosting, as well as MySQL databases and other I.T. protocols. SISDAC had given us permission to work with the Control Panel to achieve our goals in our senior project.



The screenshot shows the ShareFaith Hosting Control Panel dashboard. At the top, there is a header bar with the title "Website Hosting Control Panel". Below the header, there is a navigation menu on the left side with categories like Account, Tools, Statistics, and Details. The main area contains several sections: "Account" (with sub-options for User, Domain Settings, E-Mail, and Billing), "Information" (listing the version as 3.6.2, the user ID as 6611355, the plan as Standard Hosting, and the billing period as 1 YEAR), "Domains" (listing "sisdac.com"), and "Details" (showing resource usage statistics for Standard Domains, Subdomains, Mailboxes, Auto responders, and MySQL Database). The overall interface is a standard web-based control panel with a light blue and white color scheme.

Figure 2.3: ShareFaith Control Panel Dashboard

Because ShareFaith only had theme/ template options as a design, SISDAC was limited on what it was they looked for in a website design. ShareFaith Control Panel had a FTP (Figure 2.4 and 2.5) option that allowed us, 3G, to create a website design and incorporate client side scripting languages for SISDAC. By doing so, SISDAC was able to put in their inputs and have a website catered to their needs and wants, in terms of design.

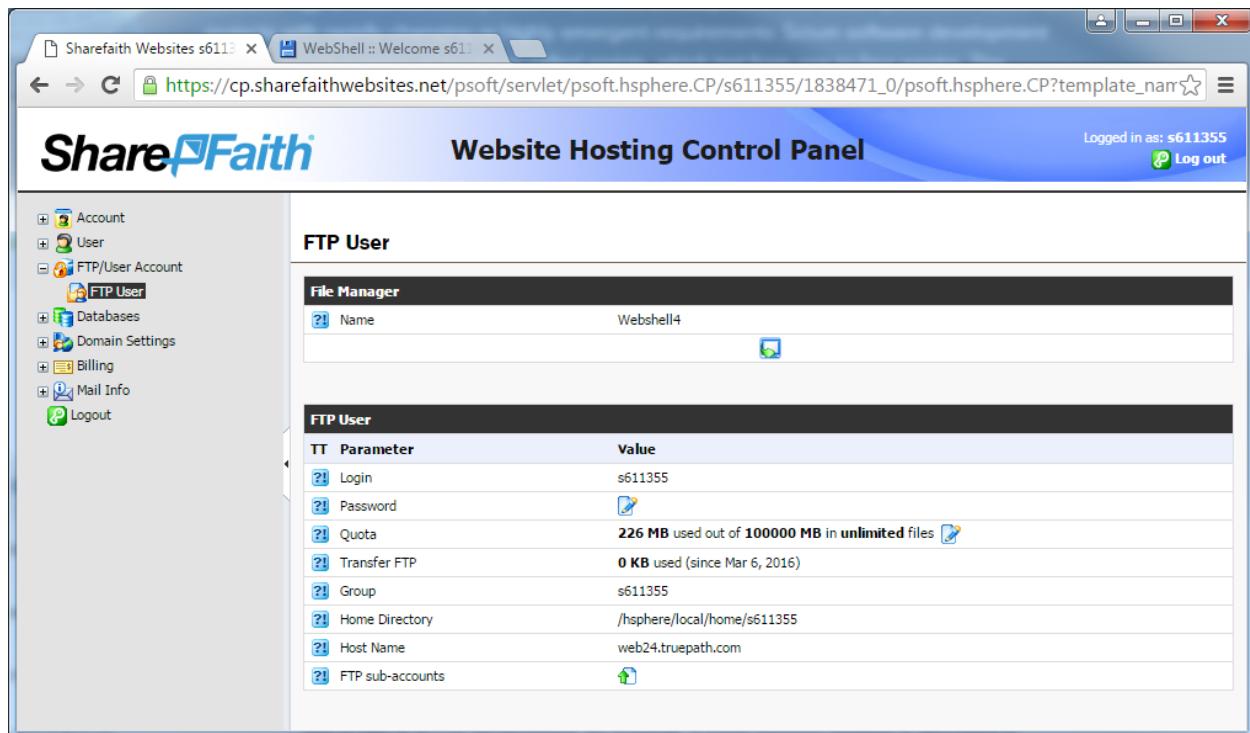


Figure 2.4: ShareFaith FTP User Login

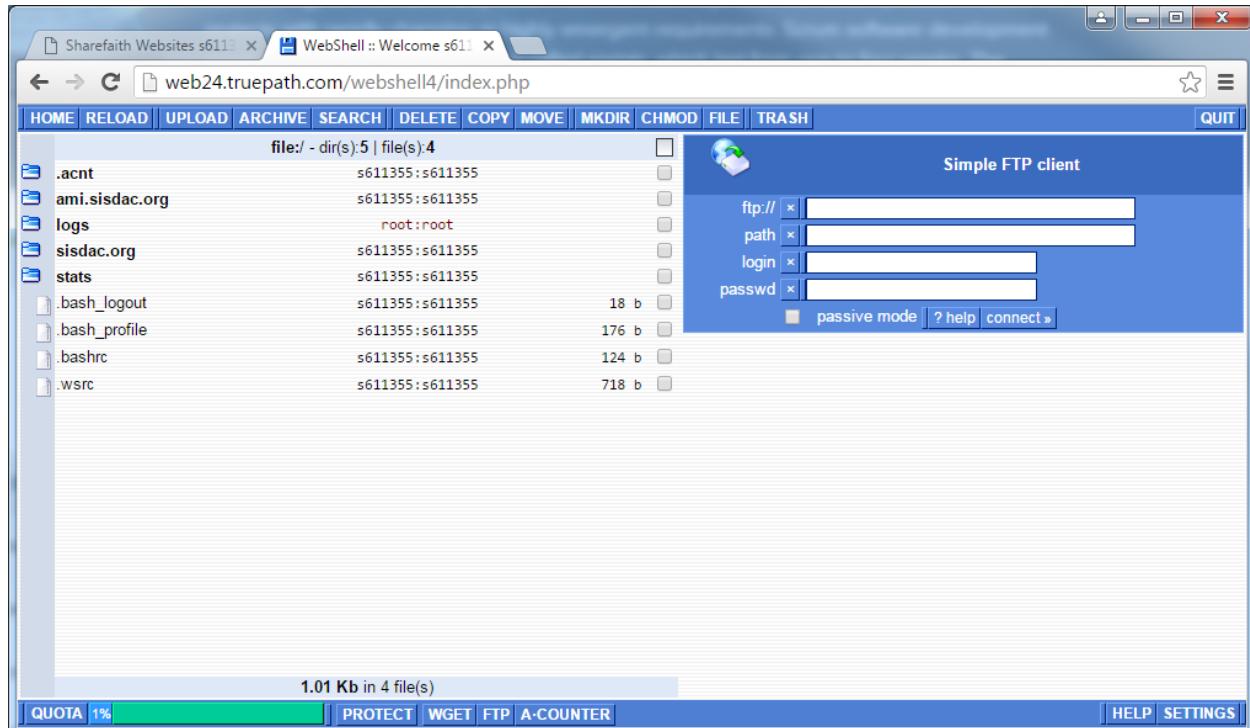


Figure 2.5: ShareFaith FTP User Dashboard

SISDAC also wanted to create user accounts and email accounts. ShareFaith Control Panel also included the options for MySQL Databases (Figure 2.6 and 2.7) that we believed we could use for the user accounts. By having a database, we could have users login to the website. Emailing was also an option ShareFaith had for SISDAC to be hosted (Figure 2.8) and by going to mail.sisdac.org, SISDAC members with email username@sisdac.org email addresses were able to check their emails (Figure 2.9).

The screenshot shows the ShareFaith Website Hosting Control Panel. The left sidebar has a tree view with 'Account', 'User', 'FTP/User Account', 'Databases' (selected), 'MySQL DBs' (selected), 'MySQL DB Wizard' (selected), 'Domain Settings', 'Billing', 'Mail Info', and 'Logout'. The main content area is titled 'Manage MySQL Databases' and contains a sub-section 'MySQL databases'. It says 'Here you can create MySQL databases. You should know that users may operate on database only if they have corresponding privileges on database.' Below this is a table:

Host Name	Port number	Database name	Database description	Controls
mysql8.truepath.com (207.158.10.33)	3306	s611355_sf_wp	SF_Wordpress	
		s611355_ami_sis6	ami.sisdac.org	

Figure 2.6: ShareFaith Manage MySQL Databases

The screenshot shows the ShareFaith Website Hosting Control Panel. The left sidebar is identical to Figure 2.6. The main content area is titled 'MySQL DB Wizard' and has a sub-section 'MySQL Management'. It shows a table with one row for 'MySQL' and a note 'MySQL resource is used by users'. Below this is 'The MySQL Database Creation Wizard Step 1'. It says 'The first step of the MySQL database creation wizard allows you to create a database. In the Name of database field enter the name of the database you are creating. This name will be used later when you connect to the database from any database client or tool. The Database description field allows you to provide a short description of the database. This description is used only in the control panel to remind you of the purpose of this database.' There are input fields for 'Name of database' (containing 's611355') and 'Database description' (empty), and a 'Next' button.

Figure 2.7: ShareFaith MySQL DB Wizard

The screenshot shows the ShareFaith Website Hosting Control Panel. The main title is "Website Hosting Control Panel". On the left sidebar, there are several menu items: Account, User, FTP/User Account, Databases, Domain Settings, Billing, Mail Info (selected), Mail Manager (highlighted in blue), and SpamExperts Email Filtering. A "Logout" link is also present. The main content area is titled "Mail Manager" and displays "Mail domains" set to "sisdac.org". Under "Mail Service", it shows Incoming POP3 Server (mail.sisdac.org), Outgoing (SMTP) Server (mail.sisdac.org), Login (The e-mail address you use (e.g. user@domain.com)), Change Mailbox Password Link (https://cp.sharefaithwebsites.net:443/psoft/servlet/pssoft.hspHERE.CP?template\_name=email/list2.html), Mail traffic (0 KB used (since Mar 6, 2016)), AntiSpam (preferences applied to mail resources), and AntiVirus (preferences applied to mail resources). Below this is an "E-mail Setup Functions" section with "New E-mail" and "New Mailing List" buttons. A search bar at the top right shows "sisdac.org" and a "Go" button. At the bottom, there is a table listing various email accounts with their properties:

E-mail	Resources included	Properties
accountspayablehq@sisdac.org		0.00 MB of 1500 MB
accountsreceivablehq@sisdac.org		0.00 MB of 1500 MB
adminhq@sisdac.org		0.00 MB of 1500 MB
businesshq@sisdac.org		0.00 MB of 1500 MB
ceohq@sisdac.org		0.00 MB of 1500 MB
educationhq@sisdac.org		0.00 MB of 1500 MB
nafereti@sisdac.org		2.47 MB of 1500 MB   subscriber: nafereti@gmail.com
officemanagerhq@sisdac.org		0.00 MB of 1500 MB
operationshq@sisdac.org		0.00 MB of 1500 MB
postmaster@sisdac.org		10 MB (Unchangeable)

Figure 2.8: ShareFaith Mail Manager



Figure 2.9: ShareFaith Roundcube Webmail Login

Another aspect SISDAC wanted was to create subdomains for their different departments and for each Division of each country. Together, our clients wanted around 20-25 subdomains to be created. ShareFaith only gave them the option for five (5) subdomains with the subscription that they were paying for (Figure 2.10). Still, SISDAC was able to have subdomains created if they wanted.

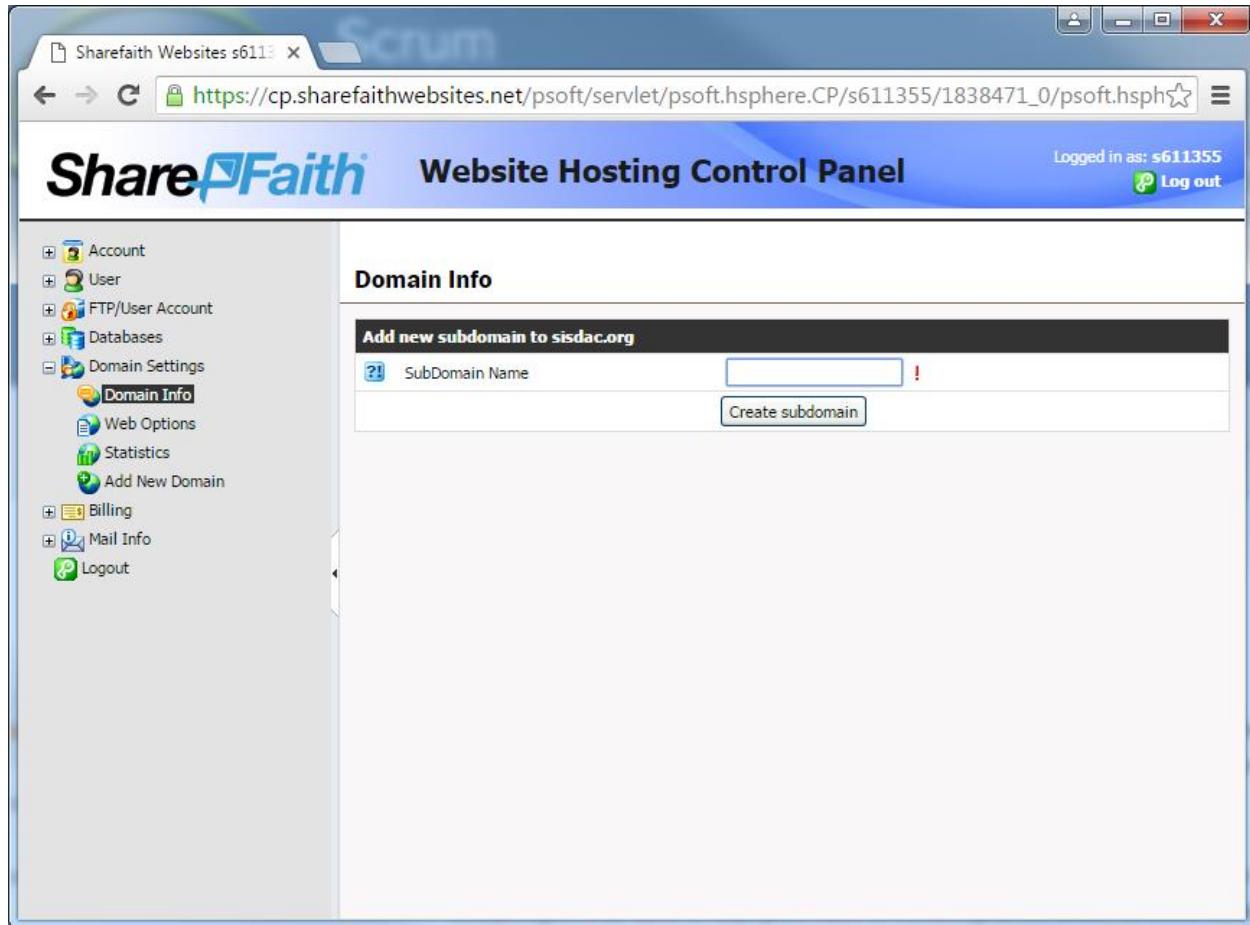


Figure 2.10: ShareFaith Domain Info

Since SISDAC has these functions available to them from ShareFaith, 3G was able to create email addresses right away for them (refer back to figure 2.8). Not only that, we created a subdomain ami.sisdac.org for SISDAC's youth department/ ministry (Figure 2.11).

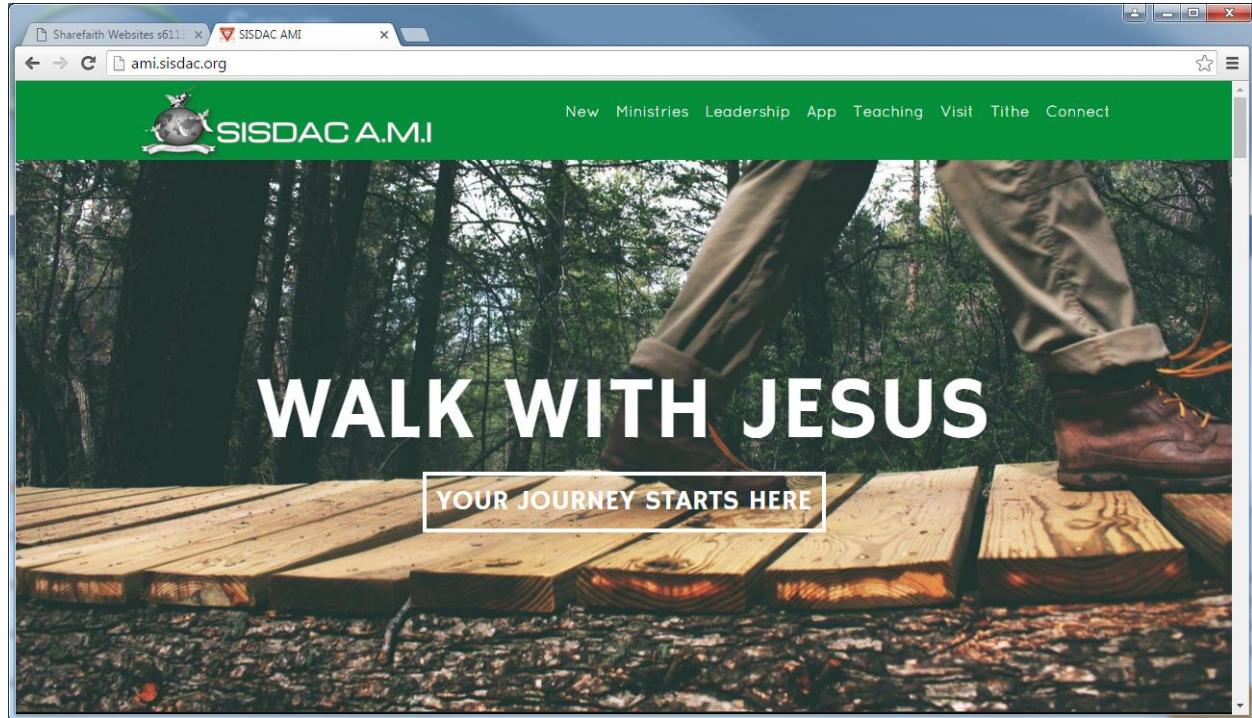


Figure 2.11: Subdomain for SISDAC's Youth Ministry- ami.sisdac.org

# Prototypes

## Website Design - One

The template which SISDAC used for their website was poorly configured. It did not allow SISDAC the option to improve on the functionality of it. In order to do so, we believe that using client-side script languages will give SISDAC what they wanted. 3G members began drawing out rough wireframes of what they believed will give SISDAC the functionality they wanted. After a week of researching a comparing ideas from other church websites, we mapped out a drawing of what would make sense for a church website (Figure 3.1 and 3.2).

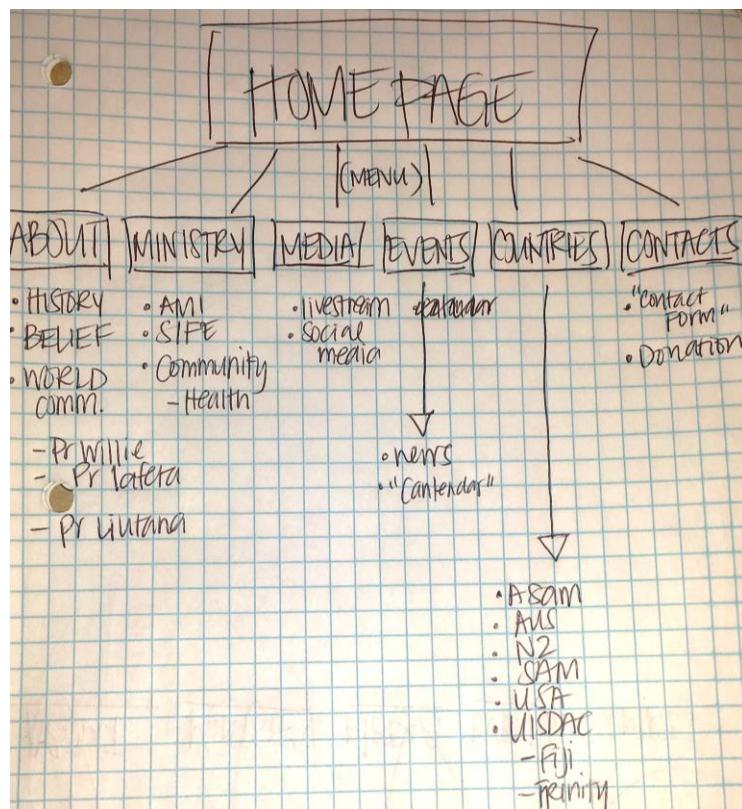
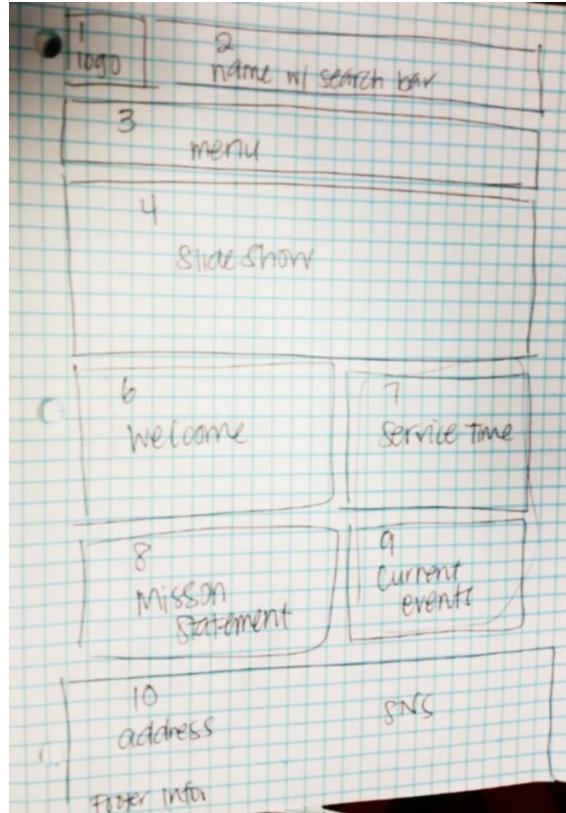
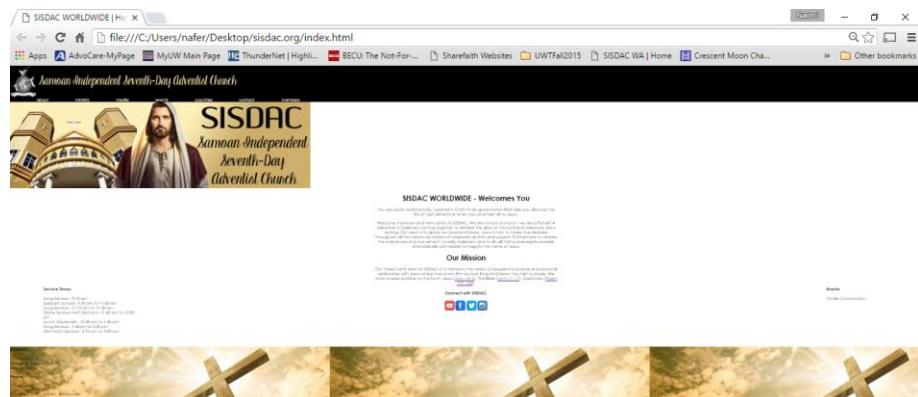


Figure 3.1: Wireframe of Page layout and Content



**Figure 3.2: Rough Draft Wireframe layout of Home Page**

From the drawings, members began creating a mock-up version of the website they thought would give SISDAC website a better look (figure 3.3). Unfortunately, the design was only using HTML5 and CSS. Also, the page was still lacking with the main page photo. Whenever a user would minimize the webpage, the picture would not minimize with the window. There was still functions which 3G addressed in the next prototype.



**Figure 3.3: Mock-up of Home Page #1**

## Website Design - Two

The second mock-up addressed the issues the first mock-up lacked. The main photo was able to scratch and shrink whenever changes were made to the window. The menu now had a drop down aspect which would allow users/ visitors to the site to navigate easily (figure 3.4).

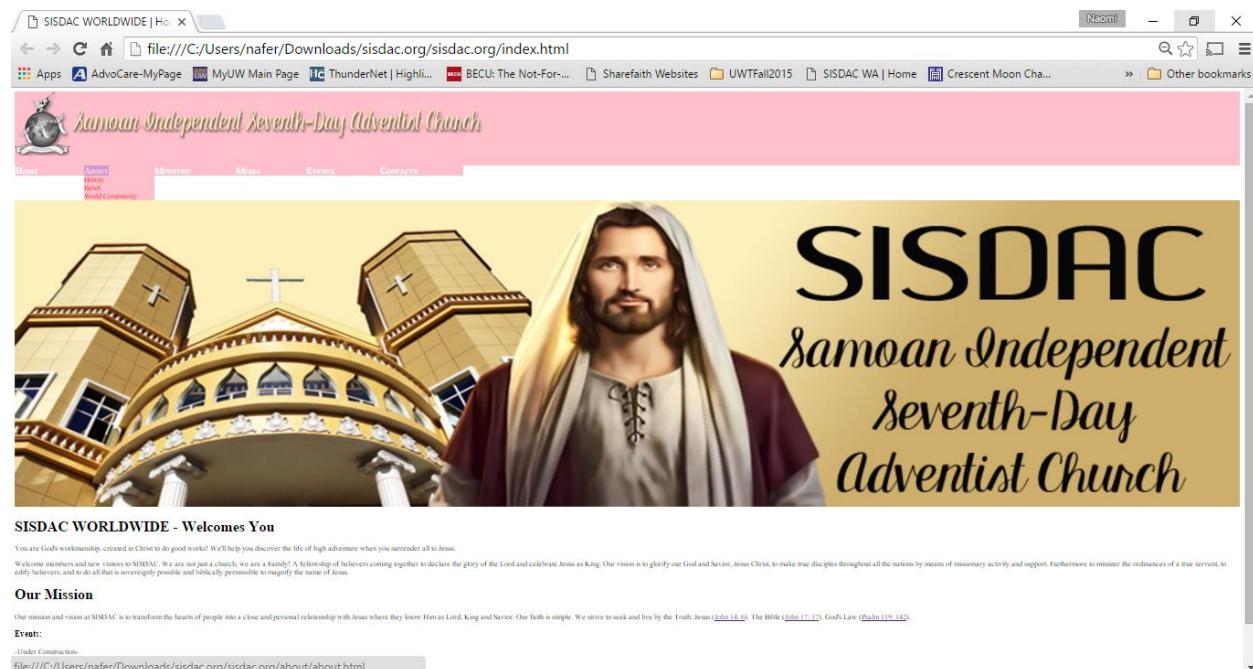
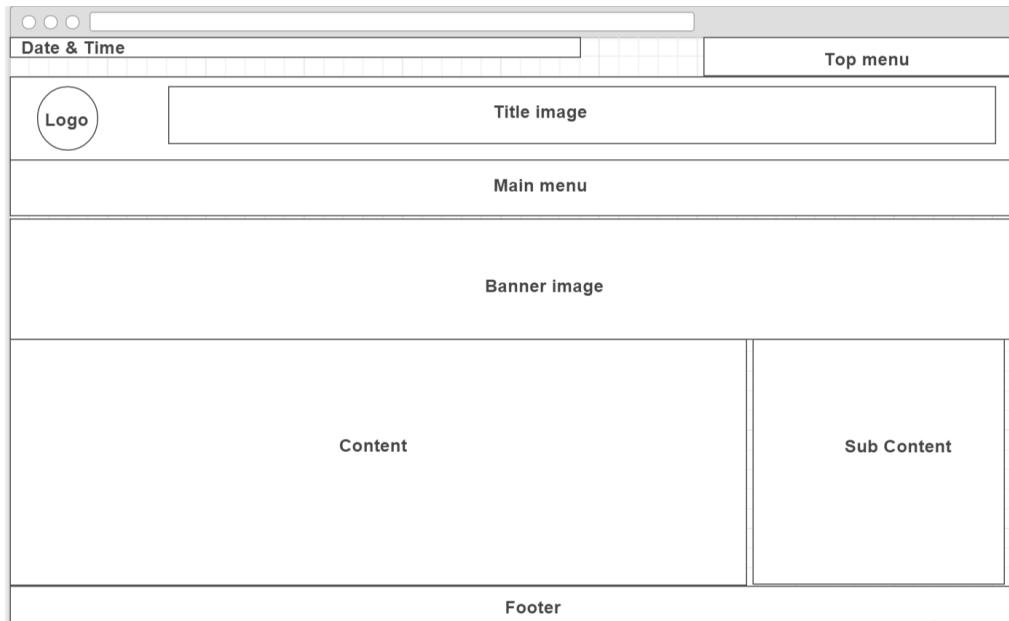
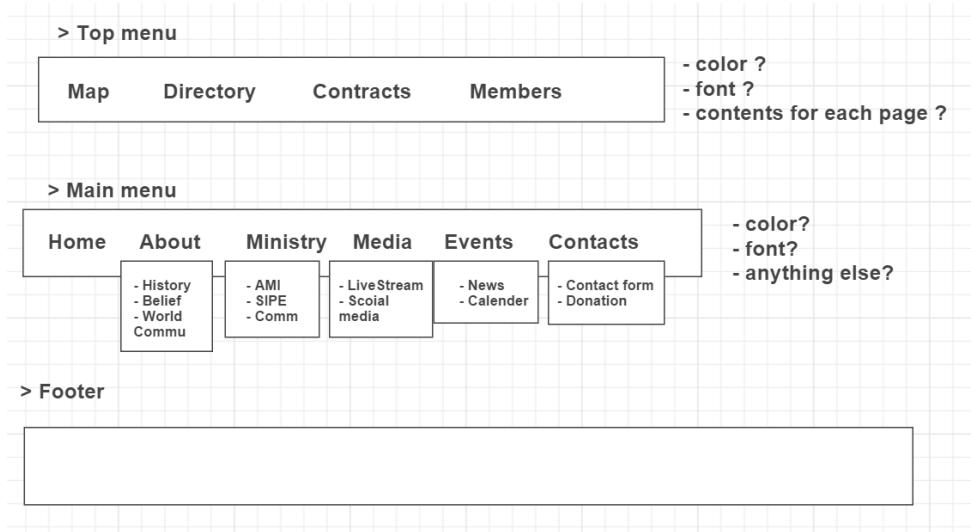


Figure 3.4: Mock-up of Home Page #2

Members also created new wireframes (figure 3.5 and 3.6) for the client. It was their belief that during the client meeting, Naomi would present this mock up as well as the wireframe to have the clients sign off in our contract.



**Figure 3.5: Wireframe of Home Page**



**Figure 3.6: Wireframe of Design**

## Network Design – Physical Server vs. Cloud Server

SISDAC.org

Network Plan:

The idea is to have headquarters be in charge handling the network of each country and subdivision to have constant access to [www.sisdac.org](http://www.sisdac.org). There are two types of network architectures, client-server and cloud computing, that SISDAC can use to connect all the countries and divisions involved to the network.

Down below are the comparison between the two with a sample image to show how the network diagram will appear.

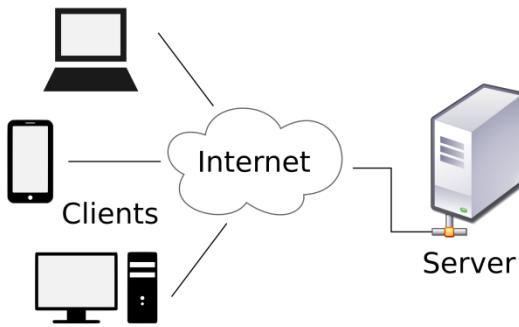
Details:

-5 Countries: Australia, Samoa, American Samoa, New Zealand, United States

-16 Divisions: Tutuila, Queensland, New South Wales, Victoria Australia, Western Australia, North New Zealand, Central New Zealand, South New Zealand, Savaii, Upolu, Alaska, California, Hawaii, Oregon, Utah, Washington

-Headquarters: New Zealand

Client-Server Network:



**Figure 3.7: Basic Network Diagram of a Physical Server**

Advantages:

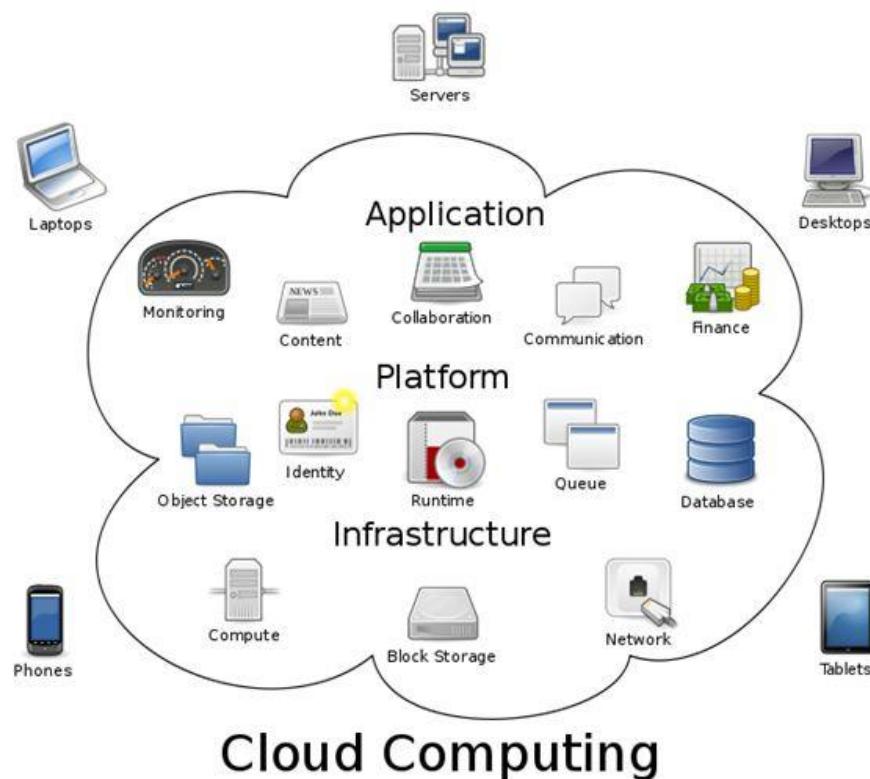
- Centralization – Access, resources, data, security are all controlled through the server
- Scalability (capability of the system to handle growth) – Any element can be upgraded when needed
- Flexibility – New technology can be added into the system
- User friendly
- Manual security setup – users will be able to apply where to add security and the level of control

Disadvantages:

- Dependability – If the server goes down, the website and all services go down too
- Not having the right operating system to allow room for growth
- Can cause network congestion
- Cost can be higher than anticipated
  - Cost of hardware (server, workstation, external hard drives for back up if needed)
    - \$500 to \$1,000

- Cost of server operating system and applications
  - \$550 to \$900
- Cost to administer (if decided to pay someone to manage the server)

Cloud Computing:



**Figure 3.8: Basic Network Diagram of a Cloud Server**

Excellent site to compare different cloud service providers

[https://www.cloudorado.com/cloud\\_providers\\_comparison.jsp](https://www.cloudorado.com/cloud_providers_comparison.jsp)

Advantages:

- Accessibility – Users are able to access the cloud through different forms of devices at their convenience
- Operating system and applications come with the cloud service
- Data centralization – data is stored in one location that can be accessed remotely
- Data recovery – Cloud service provider will be able to perform automatic back-ups without the worries of a hard driver or server crashing
- Larger storage
- Cost is low (actual costs vary depending on services needed and location)

- The cloud service provider is the administer, so no need to hire someone to manage the server
- User friendly
- Security services provided with each cloud service

Disadvantages:

- Constant network connection
- Low bandwidth can interfere with operating the website
- Non-negotiable agreements – once you sign up for the service, there is no adding or taking away a service
- If the cloud service provider experiences an outage or network down, their customers are affected too
- Incompatibilities with software or devices trying to access the cloud
- Security can vary between different cloud service providers

## 3G and Client Contract

January 19<sup>th</sup>, 2016

### Client Agreement and Contract

**Project Name:** Church Organization website & cost/benefits of network documentation

**Project Sponsor:**

Name: SISDAC

Department: SISDAC World Committee & Media Crew

Organization: SISDAC

Phone: +649 275 7945      E-mail: [sisdac@xtra.co.nz](mailto:sisdac@xtra.co.nz)

This contract is between the representatives of SISDAC and members of 3G group whereas I.T. Services will be provided for the following (defined) terms:

- [www.sisdac.org](http://www.sisdac.org)
- Documentation of a network for SISDAC buildings

Due to the time limitation 3G is given for their Senior Project, the following will be done and completed by March 18<sup>th</sup>, 2016.

- [www.sisdac.org](http://www.sisdac.org)

1. Being recognized as an Established Organization with a more sophisticated website design and look.
  2. Beginning stages of creating subdomains for different countries and their divisions.
- Options for building a Network for the Headquarter building in New Zealand.
    1. General cost and benefits of a Network documentation.
    2. General security measures of a network and of [www.sisdac.org](http://www.sisdac.org) (mainly ShareFaith – where the website is being hosted) documentation.

Listed below will be the terms and in-depth explanation of the above proposal:

- [www.sisdac.org](http://www.sisdac.org)
  1. Being recognized as an Established Organization with a more sophisticated website design and look.
    - a) The home page will be completely done with the following:
      - The logo (link to home page) and name of SISDAC at the top.
      - Header menu – which includes links to a map, directory (of members and leaders), countries of SISDAC branches, and members' login.
      - A search bar (**if possible**).
      - Main menu (navigation bar) – which includes links to the About page, Ministry page, Media page, Events page, and Contact page.
      - Fancy box display of photos (slideshow) the client would like featured.
      - The welcome and mission statement.
      - Service Times and Featured events.
      - Social Media links to stay connected.
      - Footer menu – which includes SISDAC Headquarters' contact information, and other information the client would like featured.
    - b) The About Page will be completely done with the following:
      - The logo (link to home page) and name of SISDAC at the top.
      - Header menu – which includes links to a map, directory (of members and leaders), countries of SISDAC branches, and members' login.
      - A search bar (**if possible**).
      - Main menu (navigation bar) – which includes links to the Ministry page, Media page, Events page, and Contact page.
      - Links sub-pages which include History of SISDAC, Belief of SISDAC, and World Committee Bios with “soon to come” content on each page. (**THESE PAGES WILL NOT BE COMPLETED.**) \**If time permits (and all content is available by client), it could be done.*
      - Images the client would like featured.
      - Footer menu – which includes SISDAC Headquarters' contact information, and other information the client would like featured.
    - c) The Ministry Page will be completely done with the following:
      - The logo (link to home page) and name of SISDAC at the top.
      - Header menu – which includes links to a map, directory (of members and leaders), countries of SISDAC branches, and members' login.
      - A search bar (**if possible**).
      - Main menu (navigation bar) – which includes links to the Ministry page, Media page, Events page, and Contact page.
      - Links sub-pages which include AMI (youth department), Sosaiete Fesoasoani (Women's Society), and Community Outreach with “soon to come” content

- on each page. (**THESE PAGES WILL NOT BE COMPLETED.**) \**If time permits (and all content is available by client), it could be done.*
- Images the client would like featured.
  - Footer menu – which includes SISDAC Headquarters' contact information, and other information the client would like featured.
- d) The Events Page will be completely done with the following:
- The logo (link to home page) and name of SISDAC at the top.
  - Header menu – which includes links to a map, directory (of members and leaders), countries of SISDAC branches, and members' login.
  - A search bar (**if possible**).
  - Main menu (navigation bar) – which includes links to the Ministry page, Media page, Events page, and Contact page.
  - Links sub-pages which include Livestreaming and social media pages with “soon to come” content on each page. (**THESE PAGES WILL NOT BE COMPLETED.**) \**If time permits (and all content is available by client), it could be done.*
  - Images the client would like featured.
  - Footer menu – which includes SISDAC Headquarters' contact information, and other information the client would like featured.
- e) The Contact Page will be completely done with the following:
- The logo (link to home page) and name of SISDAC at the top.
  - Header menu – which includes links to a map, directory (of members and leaders), countries of SISDAC branches, and members' login.
  - A search bar (**if possible**).
  - Main menu (navigation bar) – which includes links to the Ministry page, Media page, Events page, and Contact page.
  - Contact form and Donation forms will be looked out. Using PayPal is an option. (**THESE PAGES WILL NOT BE COMPLETED.**) \**If time permits, it could be done.*
  - Images the client would like featured.
  - Footer menu – which includes SISDAC Headquarters' contact information, and other information the client would like featured.

2. Beginning stages of creating subdomains for different countries and their divisions.  
 -Templates of the layout for each page could be made for each country and division, but with contents of “soon to come.”

-Will need images and contents to have each page completed.

- Options for building a Network for the Headquarter building in New Zealand.
  1. General cost and benefits of a Network documentation.
    - An outlined documentation could be made with best options to create a network, as well as how having a network could benefit SISDAC.
  2. General security measures of a network and of [www.sisdac.org](http://www.sisdac.org) (mainly ShareFaith – where the website is being hosted) documentation.
    - An outline documentation of security measures that SISDAC should be aware if they carry out with building a network.
    - An outline documentation of ShareFaith's security for the website.

#### **Special Issues or Constraints:**

-3G is still learning the technology behind the ShareFaith Hosting Control Panel that SISDAC has available for them to use. Many functions are included such as MySQL Database, FTP, pHp functions, as well as creating subdomains.

-Because we are still trying to understand, there is a possibility that the website could not be “live” with the dynamic website features the client will like at this time.

-3G can offer prototypes of the completed website (listed above) during the scope of their Senior Project if they are not able to grasp ShareFaith’s hosting technology.

-All final code will belong to SISDAC.

-3G Group  
Naomi Afereti, Gaby Aranda, Sue Park  
University of Washington -Tacoma  
TINFO 482A – Senior Project

---

I, \_\_\_\_\_ have read the following contract that 3G has presented. As the client, I fully understand what will be completed by March 18<sup>th</sup>, 2016, at the ending of 3G’s Senior Project timeframe. I also understand that as the client, I am able to make suggestions which 3G sees fit their timeframe and what can be done leading up the March 18<sup>th</sup>, 2016.

---

Print Full Name

---

Signature

---

Date

# Client Meeting

Naomi met with our clients on Sunday, January 31<sup>st</sup> in Portland, Oregon. Those who attended the meeting were Naomi Afereti (representative of 3G); SISDAC Executive Director Pastor Willi Papu from Auckland, New Zealand; SISDAC Executive Secretary Pastor Iafeta Masipau and his wife Lesi Masipau; SISDAC Executive Treasurer Pastor Ata Tanuvasa; Division Leader of SISDAC Northwest Pastor Enele Afereti Snr and Pastor Willie Papu Jnr.

During the presentation and meeting, Naomi presented to the leaders on how technology could benefit SISDAC as a whole (figure 4.1). What was presented to them was what 3G will have done for their senior project (figure 4.2).

5 \* WHAT SISDAC SHOULD HAVE

- Should represent SISDAC → about, history, GOD'S TRUTH
- Subdirectories for each country & subdomains for each division
  - www.sisdac.org/countries/aus → nsw.sisdac.org
  - www.sisdac.org/countries/nz → nnz.sisdac.org
  - www.sisdac.org/countries/usa → wa.sisdac.org
  - www.sisdac.org/departments → ami.sisdac.org

6 \* E-COMMERCE ASPECT

- Source of income for SISDAC
  - Sermon DVDs, Praise Team CDs
  - SMS thesis books, books (hardcopy & e-book)
  - Merchandise (shirts, water bottles, etc.)

7 \* E-MAIL & SCHOOL ASPECT

- Emails for aufgauega
  - nafereiti@sisdac.org; wipapa@sisdac.org
  - Built off of gmail or outlook
- SMS School login
  - Teacher
  - Student

Figure 4.1: PowerPoint of Presentation with Clients

## SENIOR PROJECT – MARCH 18TH

ShareFaith – Monthly fee

Design of website – prototypes

- Template
- Missing font, colors, images, content

General Documentation of a network

- Cost of a network
- Benefits of having a network

**Figure 4.2: PowerPoint of Presentation with Clients of Senior Project**

After the meeting and presentation, SISDAC Leaders were astonished at what technology could do. They also began talking amongst themselves on what they would like to have and use for SISDAC. Our clients decided, because of the timeframe left, they would change our project and make the requirements they wanted to see a little easier and obtainable. The cost for what they wanted was not an issue; SISDAC Leaders just wanted to understand more of technology. Cost would be something they would discuss later after what they got from 3G.

# Change Management

---

## Client Requirements

The clients loved the presentation and at the end, when presented with a contract, there was actually a client management change. Our clients decided to make some changes to our project. Because of the timeframe we had left, they had decided to focus on three obtainable aspects:

1. **Website Content** → Making sure all the content for the website is on and available. (Client will send the content.)
2. **LMS Login Aspect** → Because SISDAC owns a ministry school, they would like to have a LMS aspect to help maintain assignments, test, quizzes, lessons, etc. online. Clients' were shown canvas as an example and really liked the look, the feel, and what a LMS could offer.
3. **Cloud Computing and Network** → after seeing the different options of what a network was and what it could offer, our clients decided to invent more on cloud computing as a whole. SISDAC would like for 3G to research more on cloud computing and network. Eventually SISDAC would like to host their website on their own server, create LANs in different countries and a giant WAN.

Clients' indicated that the budget is really up in the air for our project. They would like for us to research the best technology and then give them a price to sit on and negotiation later.

## New Timeline for Project

### **February 4<sup>th</sup> – 10<sup>th</sup> → CLIENT CHANGE PLANNING & NEW PROTOTYPING**

3G decided to research more about LMS and Cloud computing. By doing so, we will reach out to those in the Networking field to help us accomplish the new task given to us. Also, research more about different LMS that will give our clients what they need.

### **February 11<sup>th</sup> → MIDTERM**

Presentation to Prof. Suri what we've done, what has changed, and our plans for the remaining of the quarter.

### **February 15<sup>th</sup> – 18<sup>th</sup> → COMPLETE PROTOTYPE & CLIENT SKYPE MEETING**

### **February 22<sup>nd</sup> – March 4<sup>th</sup> → COMPLETING WEBSITE CONTENT, IMPLEMENTING LMS, REVIEWING CLOUD COMPUTING DOCUMENTATION – TEST RUN**

### **March 7<sup>th</sup> – 10<sup>th</sup> → FINAL TESTING & FINAL CLIENT SKYPE MEETING**

### **March 15<sup>th</sup> & 17<sup>th</sup> → SENIOR PROJECT PRESENTATION & REPORT**

## New Requirements

- Waiting on content from client to add to the website
- Researching the best LMS and cloud based computing for SISDAC to use

# Final Product

## Website – [www.sisdac.org](http://www.sisdac.org)

SISDAC Leaders decided to keep the website as is using WordPress. A redesign using a better theme from ShareFaith was all that they wanted for now. Doing this will allow them to maintain the website after 3G was finished with their senior project.

The theme chosen gave the SISDAC website a better feel; in return the website looked like a general church website. (Figures 5.1-5.5)

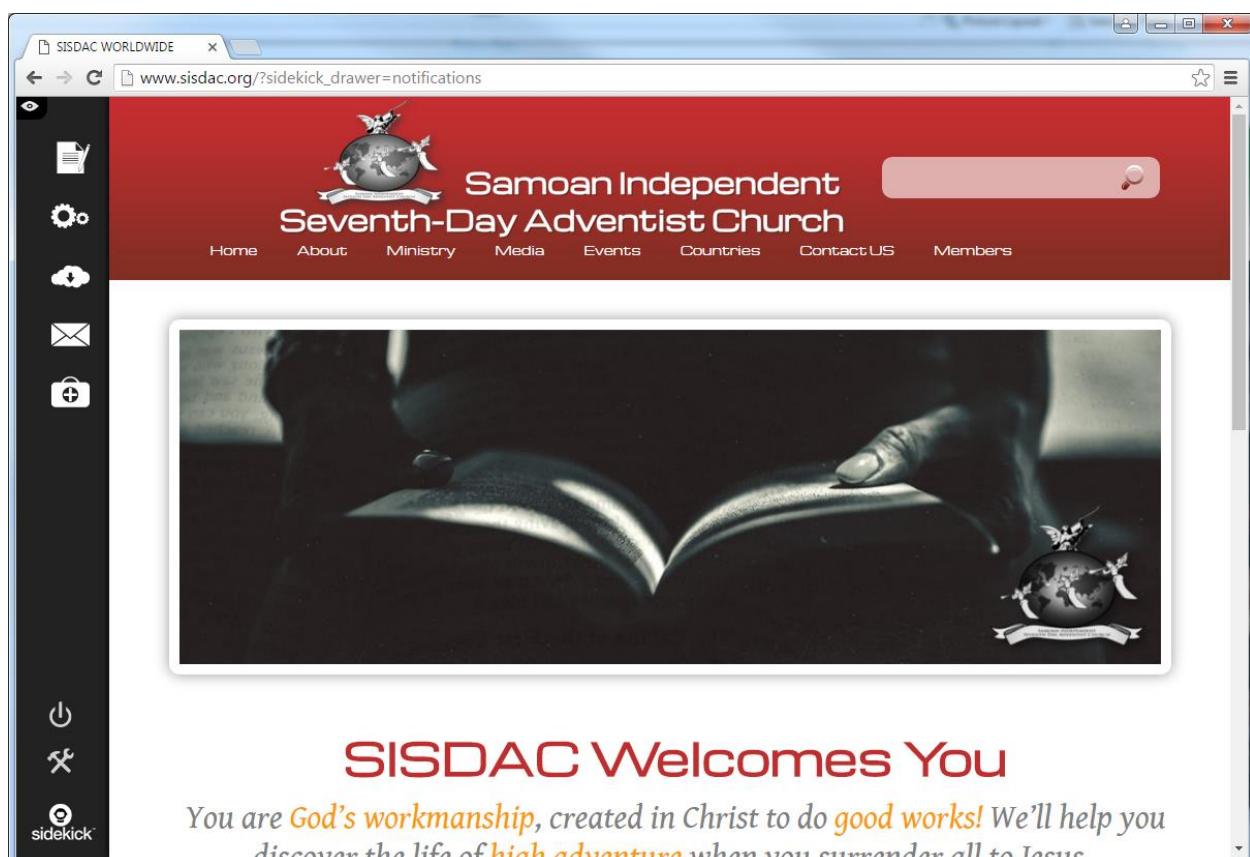
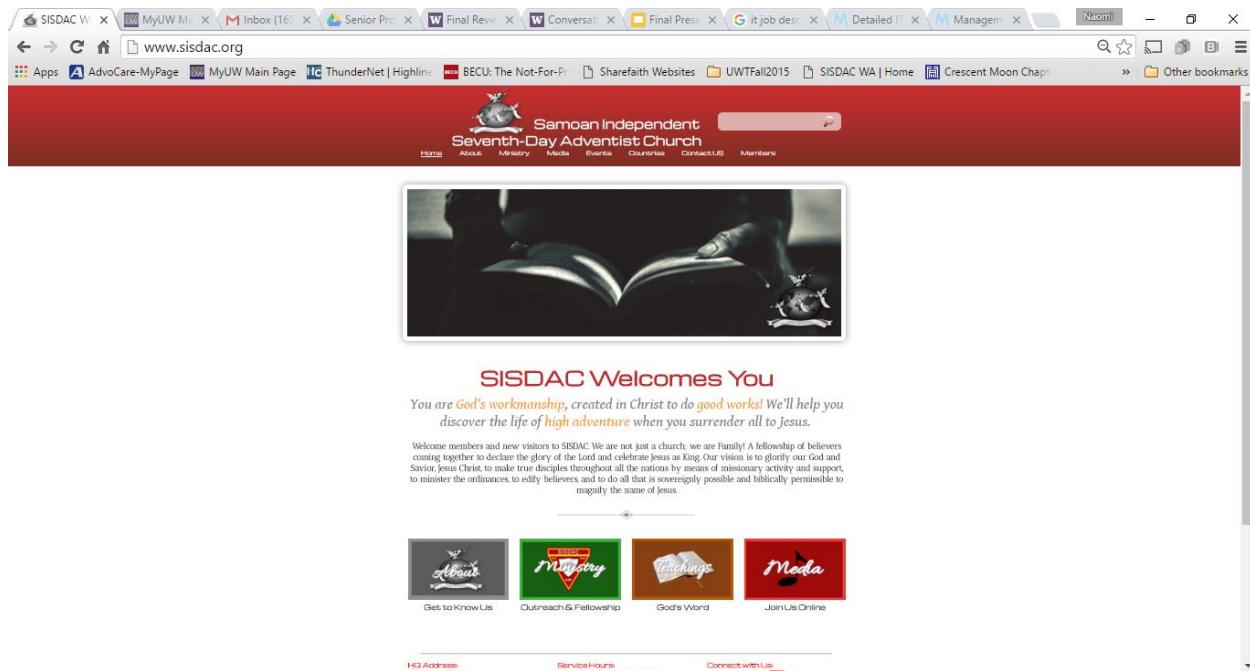
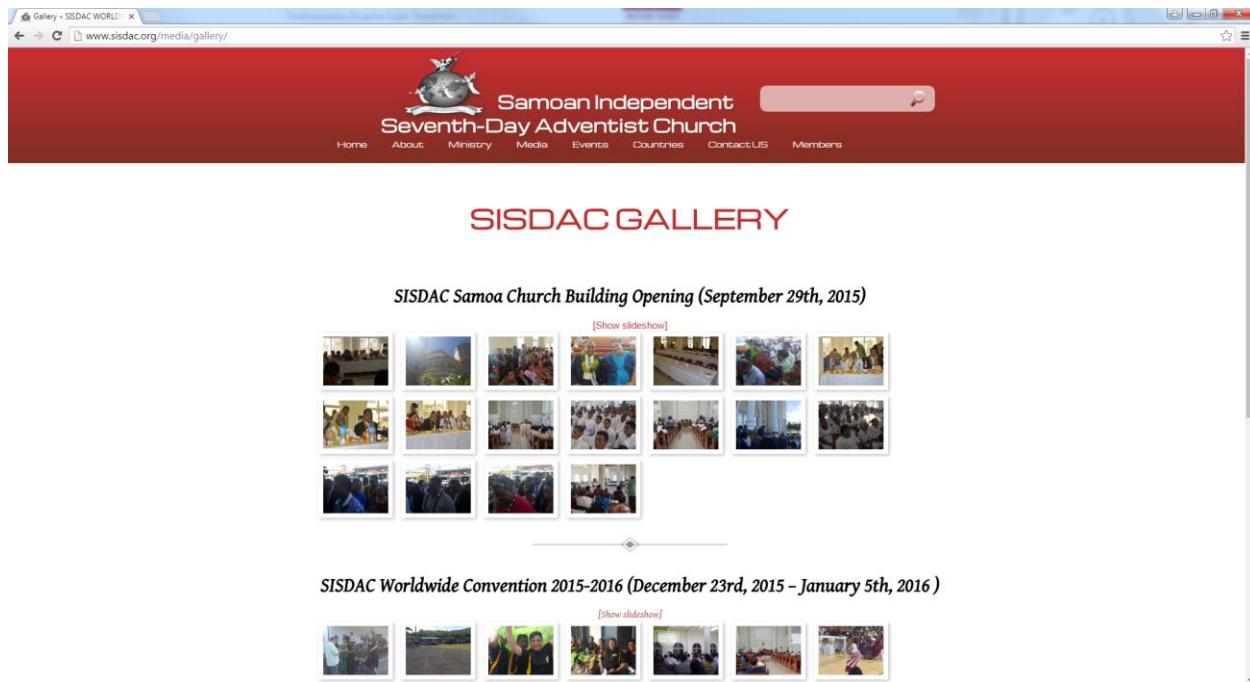


Figure 5.1: GUI interface

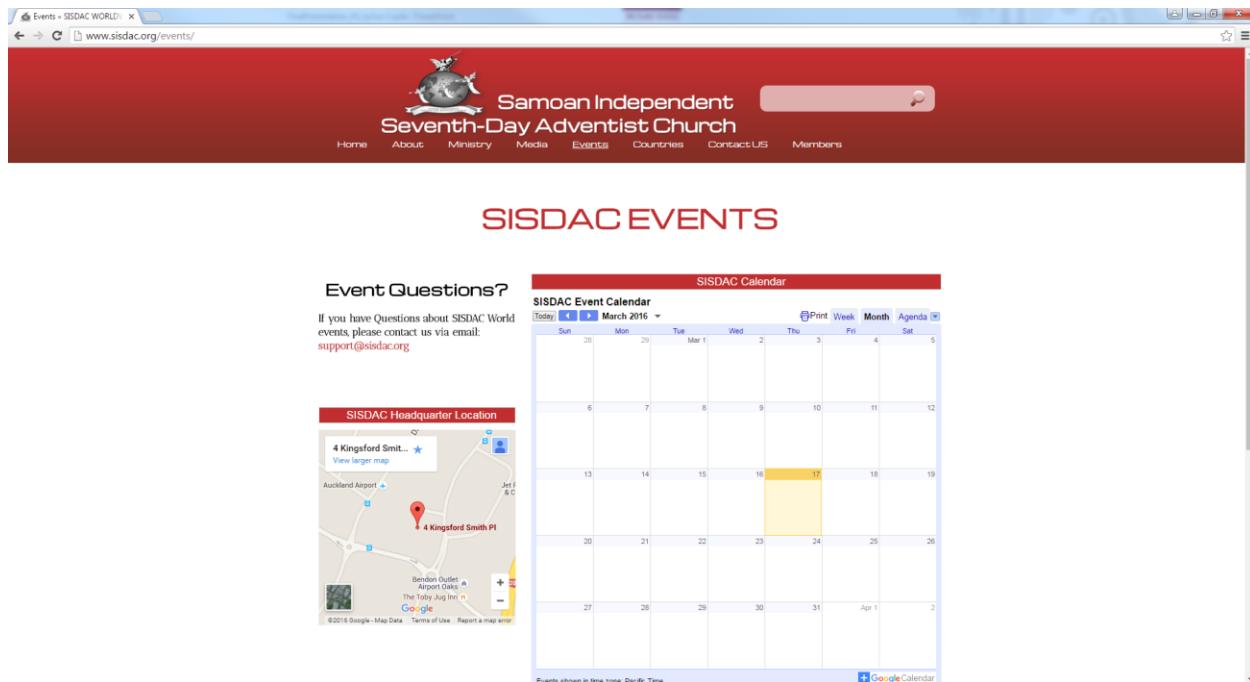


**Figure 5.2: Home Page**

**Figure 5.3: About Page**



**Figure 5.4: Media/ Gallery Page**



**Figure 5.5: Events Page**

## Subdomain – Youth Department

As previously mentioned, we created a subdomain for SISDAC's youth department (figure 5.6). This was created using ShareFaith's Control Panel (Figure 5.7).

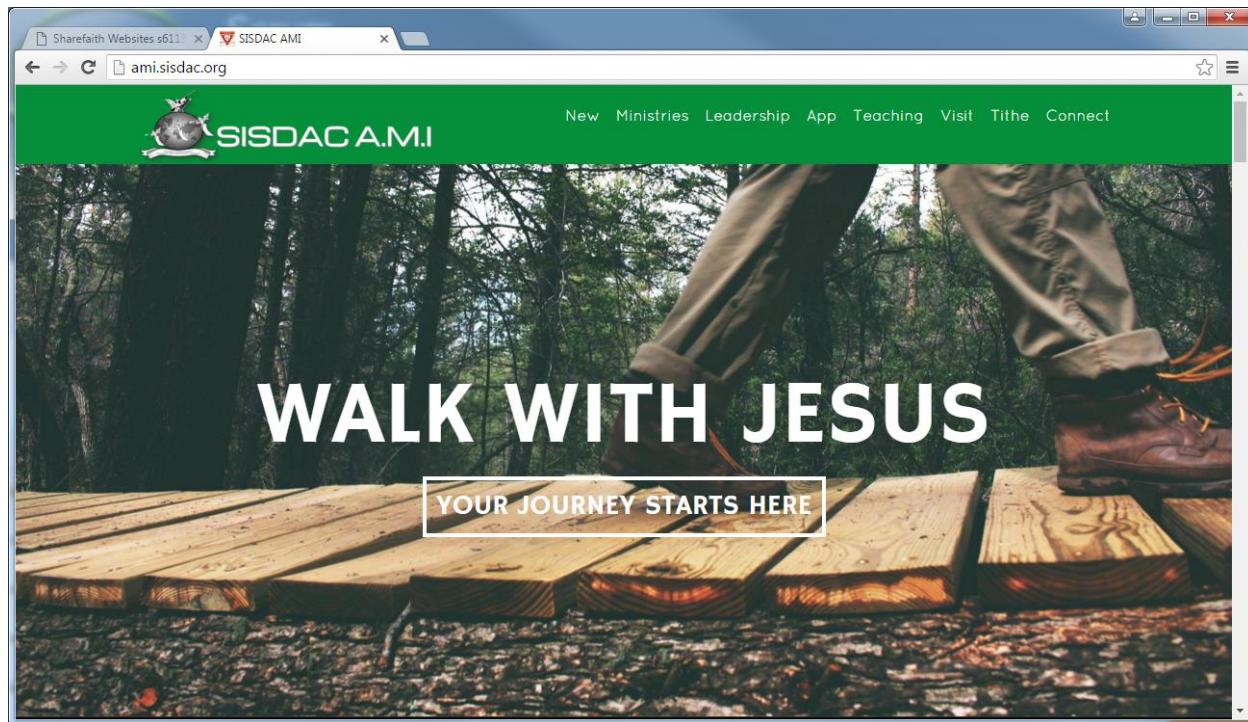


Figure 5.6: ami.sisdac.org

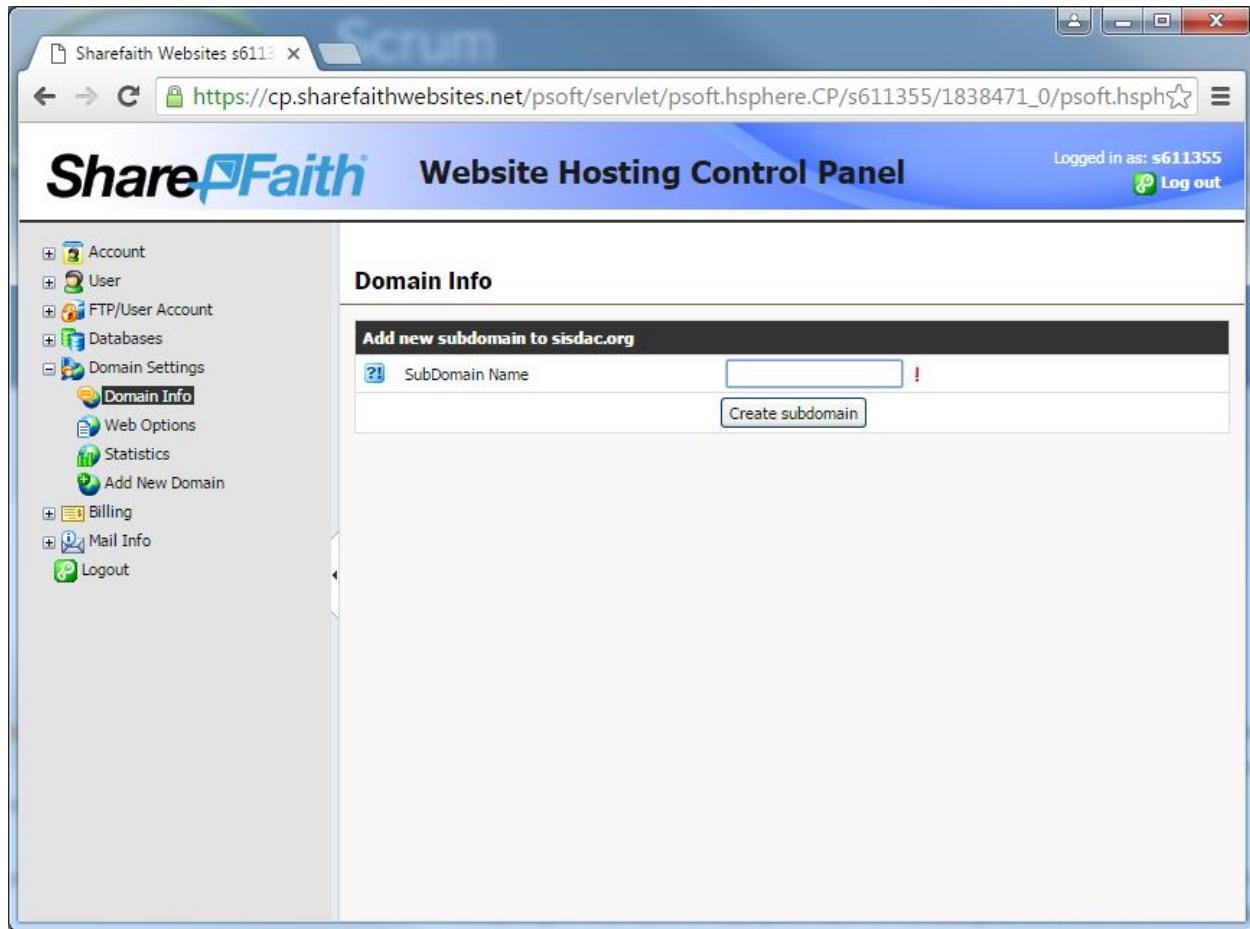


Figure 5.7: ShareFaith Control Panel – Domain Info

## Email Hosting

As previously mentioned, we were able to give SISDAC email addresses. We used ShareFaith to host the addresses (Figures 5.8 and 5.9).

The screenshot shows the ShareFaith Control Panel Mail Manager interface. The left sidebar includes options like Account, User, FTP/User Account, Databases, Domain Settings, Billing, Mail Info (selected), Mail Manager (selected), and SpamExperts Email Filtering. The main area has tabs for Mail Manager, Mail Service, and E-mail Setup Functions. Under Mail Manager, it shows mail domains (sisdac.org) and a list of email accounts with their properties (e.g., 1500 MB storage). Under Mail Service, it shows incoming and outgoing servers, login information, and various service settings like AntiSpam and AntiVirus.

Figure 5.8: ShareFaith Control Panel – Mail Manager

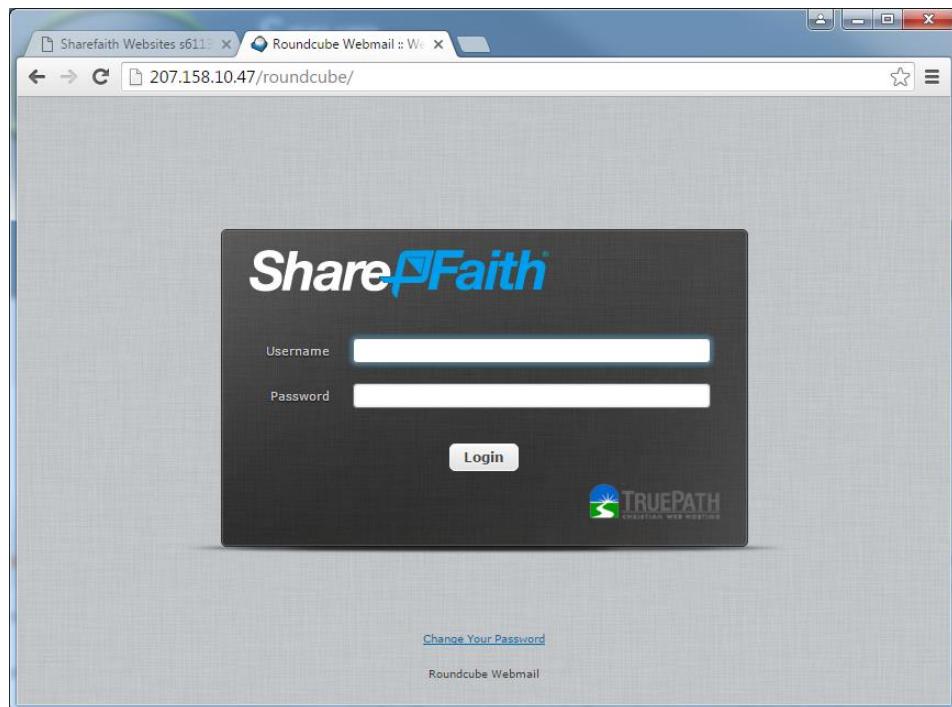


Figure 5.9: ShareFaith Control Panel – Roundcube Email Login

# LMS – Learning Management System

SISDAC Leaders wanted to implement a Learning Management System for their ministry school. After a week of researching, we settled on two LMS that we believed will give SISDAC what they wanted for their ministry school.

The first was LearnUpon. After requesting a demo, an appointment was set for Thursday, February 25<sup>th</sup> at 11:00 AM. The meeting included a conference audio call with Phily, an employee of LearnUpon, to explain what they offered (figure 5.10 and 5.11). The meeting lasted for about an hour. All findings were set to SISDAC Leaders to conduct a testing of their own.

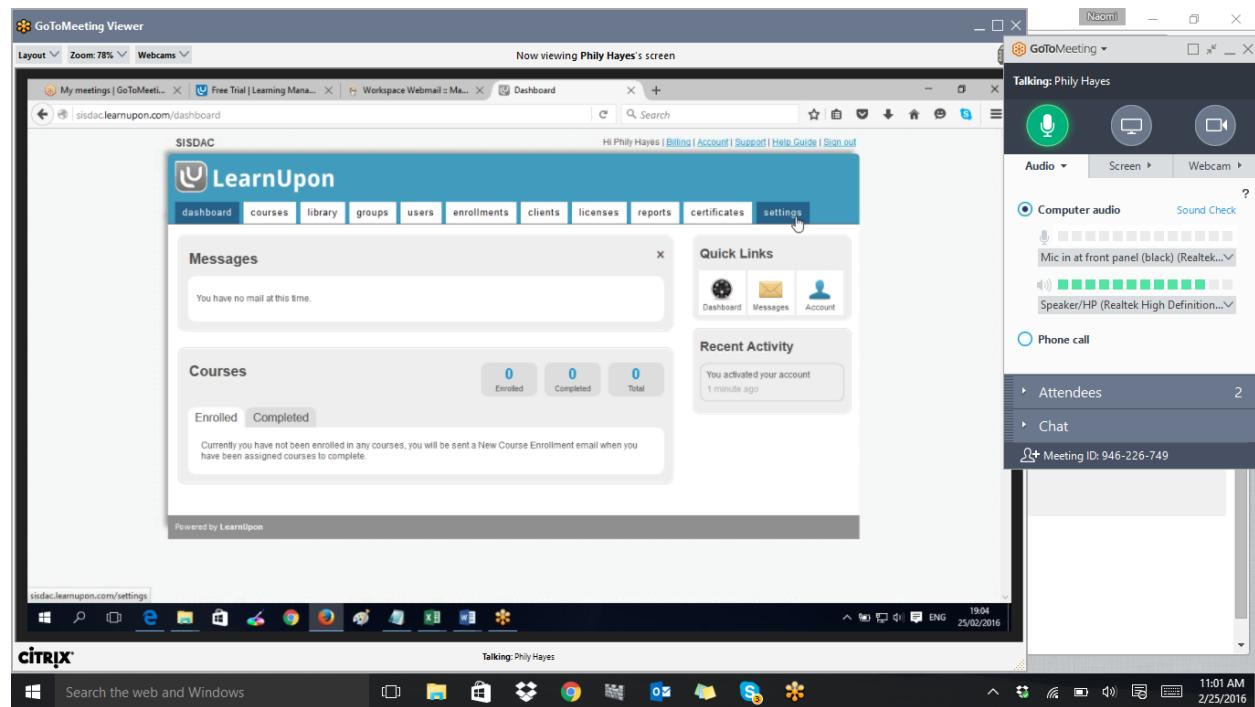
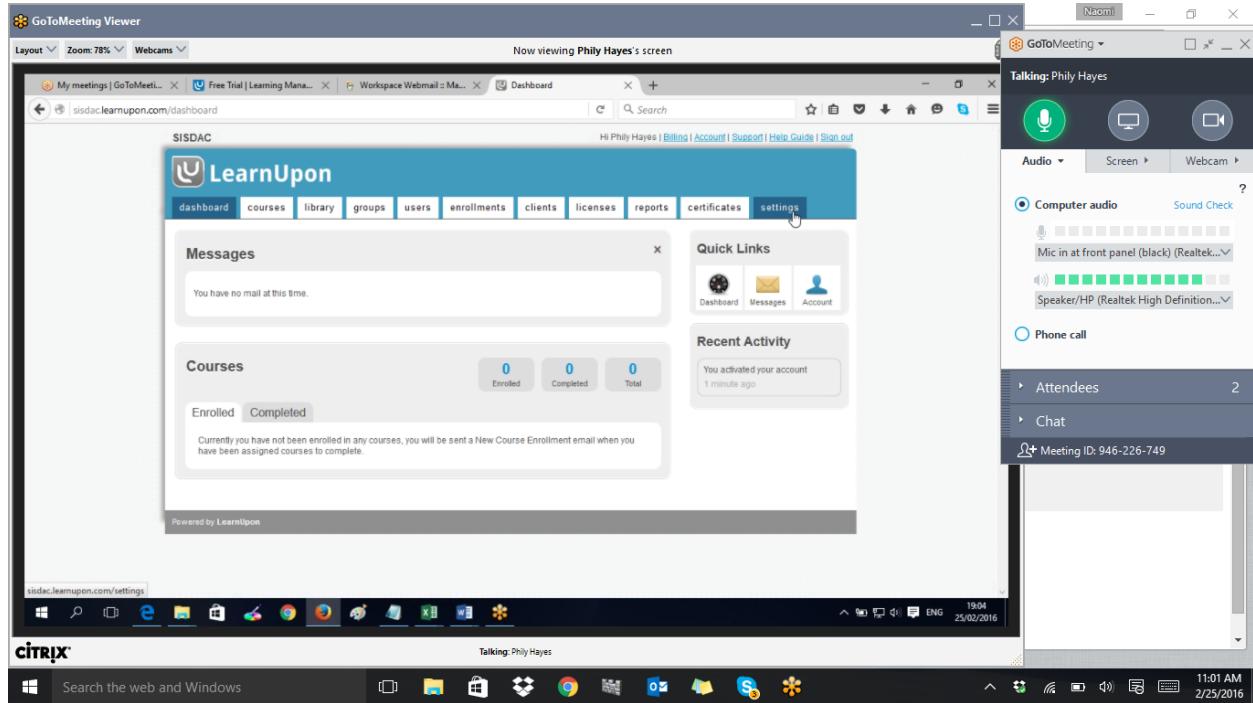


Figure 5.10: LearnUpon Demo #1

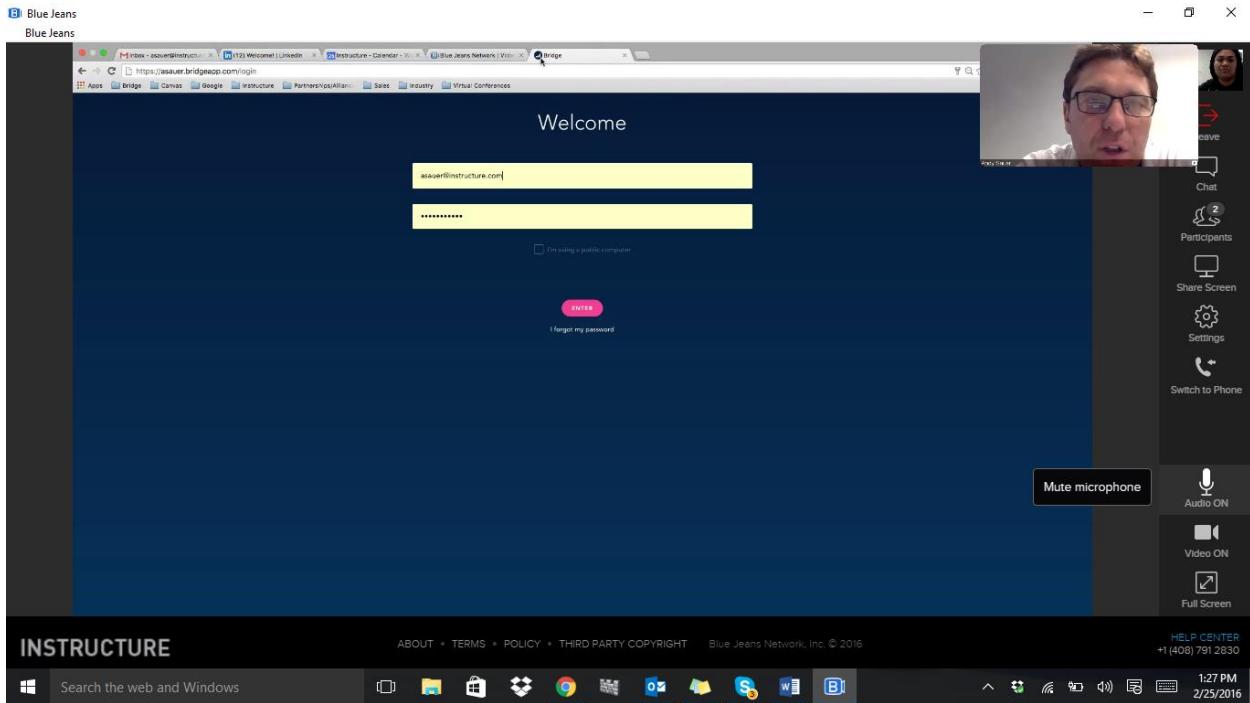


**Figure 5.11: LearnUpon Demo #2**

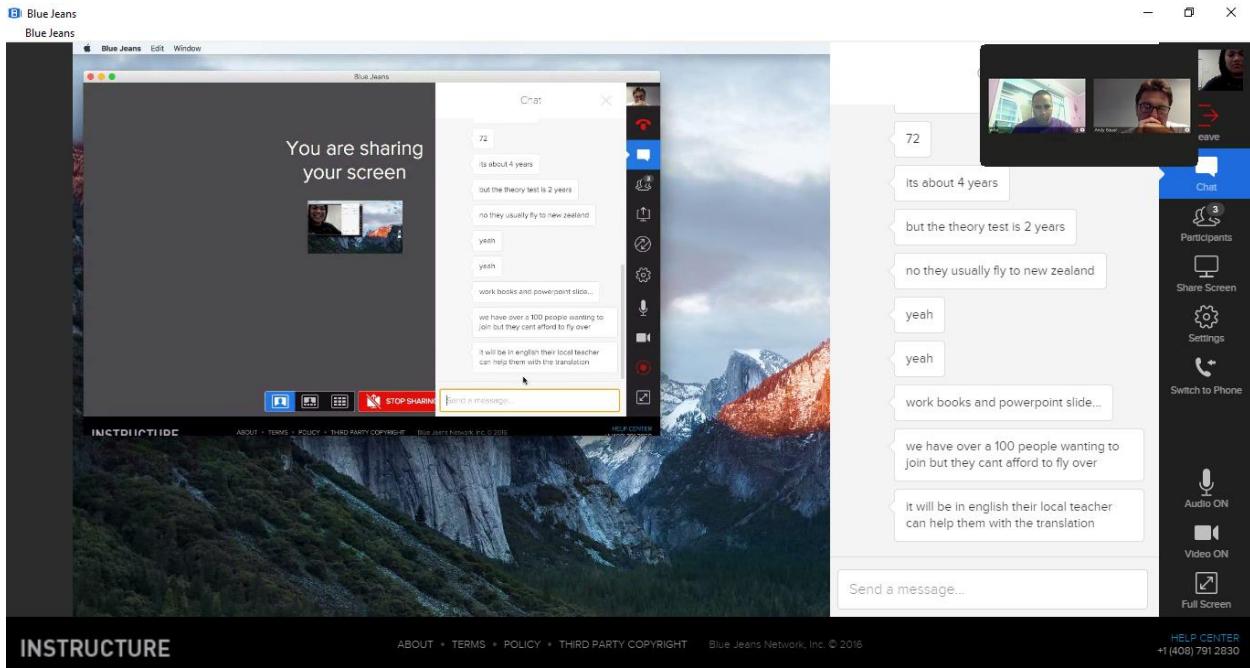
The second was Bridge. The cooperate version of Canvas. After request a demo from Bridge, a meeting was also set on the same day at 1:30 PM. During this time, we were able to video conference with all 3G members, our client Pastor Willie Papu Jnr in New Zealand, and Andy the Director of Bridge for their Oceanic region (figure 5.12).

Andy went through the demo with us and was able to answer questions both 3G and our client had (figure 5.13 through 5.15). All findings and demo were sent to our client to log in and conduct a testing of their own.

During that time, we were able to have a video meeting with our client (figure 5.16).



**Figure 5.12: Bridge Demo #1**



**Figure 5.13: Bridge Demo #2**

The screenshot shows a web-based video conferencing and learning management system. On the left, a sidebar menu includes options like Dashboard, Training, Surveys, People, Tools, and Account Settings. The main dashboard displays various metrics: 16 Overdue Learners (LAST 90 DAYS), 3 Completed Learners (LAST WEEK), and counts for Groups (8), Courses (17), Live Trainings (3), Programs (2), Authors (2), and Admins (3). Below these stats is a list of learners with their names, course titles, and status (e.g., NOT STARTED or UNFINISHED). A video call interface on the right shows two participants, Willie and Andy Sauer, with controls for leaving, chat, participants, share screen, settings, switch to phone, audio, video, and full screen. At the bottom, there's a help center link and a copyright notice for Blue Jeans Network, Inc. © 2016.

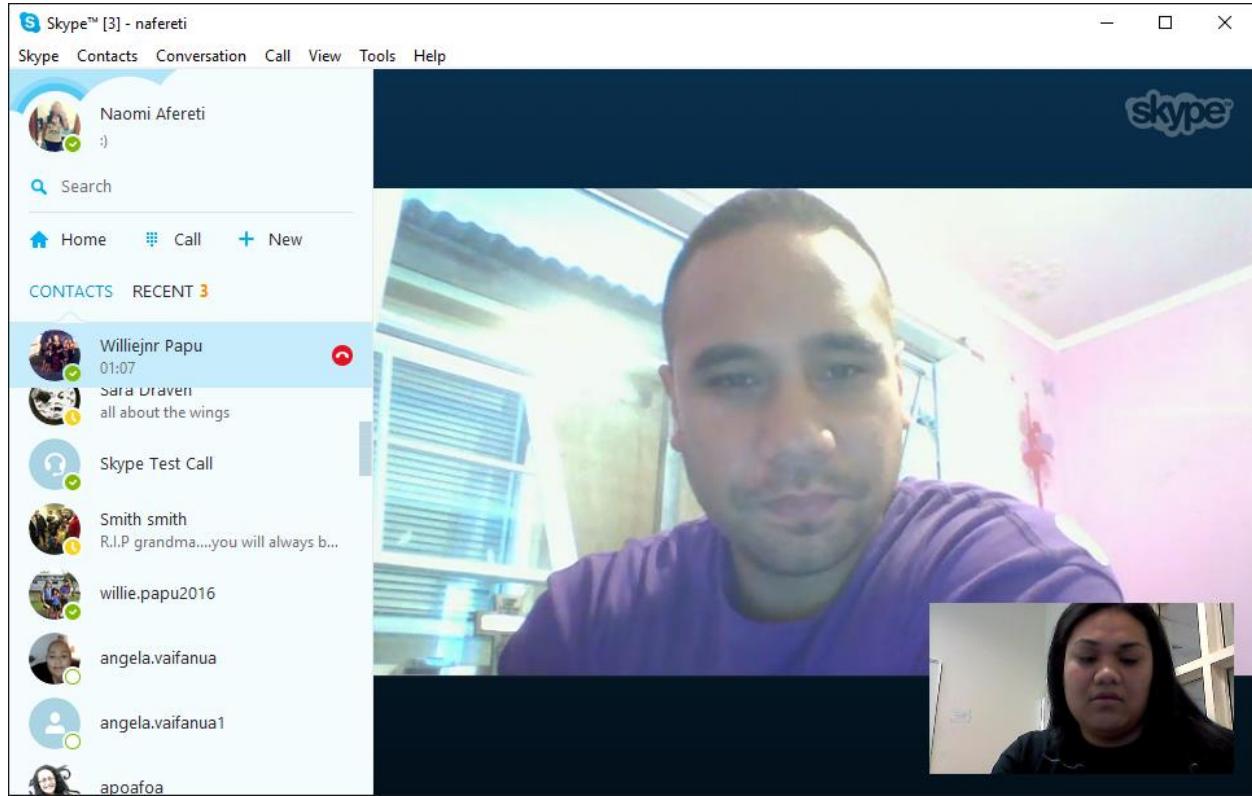
Figure 5.14: Bridge Demo #3

This screenshot shows a video call between two users, Willie and Andy Sauer. The video frames show Willie on the left and Andy Sauer on the right. To the right of the video is a chat window with the following transcript:

- AS: yes we do, but our minimum spend is 10k PA for anyone so that's where you sit
- W: ok thank you so much for your time,
- AS: we can talk through it in more details in a couple of weeks
- AS: I better run, thanks guys!
- W: Thank you Andy
- W: this is what we are looking for. i would have to bring it to the board
- AS: ok we can talk through it. we would try to be as flexible as possible

At the bottom of the chat window, there's a message input field with "Send a message..." and a Skype logo. The bottom navigation bar includes links for ABOUT, TERMS, POLICY, and THIRD PARTY COPYRIGHT, along with the copyright notice for Blue Jeans Network, Inc. © 2016.

Figure 5.15: Bridge Demo #4



**Figure 5.16: Skype Conference Call with Client (Pr. Willie Papu Jnr)**

## Cloud Computing Providers

SISDAC Leaders wanted to understand more about what cloud computing could do. With that, they had hope to implement cloud service for SISDAC Worldwide in the next year.

After weeks of researching, 3G settled on three webs services. The providers had much in common when comparing.

Providers	Amazon Web Services	Rackspace	Google
<b>Features and Management</b>			
Hourly Pay-As-You-Go	X	X	X (per minute)
Cloud Management & Software	Proprietary	OpenStack	Proprietary
One Account for All Locations	X	X	X
Web Interface	X	X	X
Mobile App	X	X	-
Languages	English	English	English
Terminal Access	-	X	-
API	X	X	X

AWS compatible API	X	-	-
Open Stack compatible API	-	X	-
Command Line	X	X	X
Auto-scaling	X (horizontal)	X (horizontal)	X (horizontal)
Vertical scaling without reboot	-	-	-
Image from cloud server	X	X	X
Upload cloud server image	X (VM Import/Export Tools)	X	X
Download cloud server image	X (VM Import/Export Tools)	X	X
Mount CD/DVD ISO	-	Partial	-
<b>Cloud Servers</b>			
Hypervisor	Xen	Xen	KVM
RAM	630 MB – 244 GB	1 GB – 120 GB	0.6 GB – 208 GB
CPU cores	1 – 32	1 – 32	1 – 32
Storage	Instance: 160 GB – 48 TB EBS: 1 GB – 20 TB	20 GB – 1.2 TB	1 GB – 64 TB
Persistent instance storage	-	X	X (unless using SSD local storage)
Custom RAM & CPU ratio	-	-	-
Independent storage size	- (can be extended or replaced by EBS)	Partial (can be extended with block store service)	X
Burstable CPU	Partial (with exception of t1 and t1 instances)	-	- (only f1-micro)
GPU instances	X	-	-
SSD storage availability	X	X	X
Resources Usage Monitoring	X	X	X (including application metric for typical open source software)
Turned off cost	EBS storage if used, Elastic IP if used.	Full	Storage only
<b>Images and Licenses</b>			
Preinstalled cloud server images	12000+	37	28
Windows license	X	X	X (2008 R2)
SQL server license	X	X	-

RedHat Linux license	<b>X</b>	<b>X</b>	<b>X</b>
Other licenses	<b>Oracle</b>	<b>X (Vyatta vRouter)</b>	<b>X (SUSE)</b>
Transfer MS license	-		<b>X</b>
<b>Transfer</b>			
Transfer of bandwidth	<b>Transfer</b>	<b>Transfer</b>	<b>Transfer</b>
Free transfer in	<b>X</b>	<b>X</b>	<b>X</b>
Free transfer included	-	-	-
Pay-as-you-go	<b>X</b>	<b>X</b>	<b>X</b>
Transfer packages	-	-	-
No transfer limit	<b>X</b>	<b>X</b>	<b>X</b>
Transfer per server or account	<b>Account</b>	<b>Account</b>	<b>Account</b>
Free private transfer	<b>X (only within a zone)</b>	<b>X</b>	<b>X (within an availability zone)</b>
Free transfer to dedicated/collocation	-		-
<b>Networking</b>			
Free IP	<b>X (1 per cloud server, either dynamic, or fixed but paid if cloud server is off)</b>	<b>X</b>	<b>X (1 IP server while it is running)</b>
Mappable IP	<b>X (elastic IP)</b>		<b>X</b>
Multiple IP per cloud server	<b>X</b>	<b>X</b>	-
IP cost	<b>\$0.005/hour (one free per cloud server if running)</b>	<b>\$0.00274/hour</b>	<b>\$0.01 per hour</b>
IPv6	-	<b>X</b>	-
Private IP	<b>X</b>	<b>X</b>	<b>X</b>
Manage VLANs	<b>X (virtual private cloud)</b>	<b>X</b>	<b>X</b>
Load balancing service	<b>X</b>	<b>X</b>	<b>X</b>
Load balancing type	<b>Software</b>	<b>Software</b>	<b>Software</b>
<b>Security</b>			
Encrypted storage	-	-	<b>X (All data written to disks is encrypted by default)</b>
VLAN per customer	<b>X (if in virtual private cloud)</b>	<b>X</b>	<b>X</b>
Dedicated & cloud servers in single VLAN	-	-	-
VPN	<b>X</b>	-	<b>X</b>
Firewall	<b>X (\$0.05/hour)</b>	<b>X</b>	<b>X</b>
ISO/IEC 27001	<b>X</b>	<b>X</b>	<b>X</b>
HIPPA Compliant	<b>X</b>	-	
FISMA Compliant	<b>X</b>	-	

PCI DSS	X	-	X
Safe Harbor / EU Directive 95/46/EC	X	X	X
<b>Locations</b>			
North America	<b>X (Northern Virginia, USA East Northern California, USA West Oregon)</b>	<b>X (Chicago, Dallas, Northern Virginia)</b>	<b>X (US central)</b>
South America	<b>X (Sao Paulo, Brazil)</b>	-	-
Europe	<b>X (Ireland)</b>	<b>X (England)</b>	<b>X (EU west)</b>
Asia	<b>X (Singapore Tokyo, Japan)</b>	<b>X (Hong Kong, China)</b>	<b>X (Asia)</b>
Australia	<b>X (Sydney, Australia)</b>	<b>X (Sydney, Australia)</b>	-
Africa	-	-	-
<b>Reliability and Failover</b>			
SLA level	<b>99.995%</b>	<b>Unmanaged: 99.9% Managed: 100%</b>	<b>99.95%</b>
SLA credit	<b>10% of annual bill</b>	<b>Unmanaged: 5% for each hour, up to 100% Managed: 10% for each hour, up to 100%</b>	<b>10% - 50%</b>
SLA exceptions	<b>5 min</b>	<b>Maintenance</b>	<b>Maintenance, periods &lt; 5 min</b>
Multiple zones in region	<b>X (2-5 per region)</b>	X	X
Tier 3+ DC			
Automatic failover to other server	<b>Partial</b>	X	X
Storage attachment	<b>Instance storage server EBS: network</b>	<b>Network</b>	<b>Network &amp; local</b>
RAID level		<b>RAID 10</b>	
Backup – snapshot	X	X	X
Backup – storage	<b>X (S3 or Glacier)</b>	X	X
<b>Services</b>			
Cloud file services	<b>X (S3)</b>	X	X
CDN service	<b>X (Cloud Front)</b>	X	-
DNS service	<b>X (Route 53)</b>	X	X
NoSQL service	<b>X (Dynamo DB, Redshift, SimpleDB)</b>	X	X
SQL service	<b>X (RDS)</b>	X	X
Memcache service	<b>X (Elasticache)</b>	-	X

Dedicated servers	-	X	-
Collocation	-	X	-
<b>Support</b>			
Response time	<b>Basic: - Developer: 12 hours Business: 1 hour Enterprise: 15 min</b>	<b>15 seconds (not in SLA)</b>	<b>15 min: Platinum 1 hour: Gold 4 hours: Silver None: Bronze</b>
24x7	X	X	X (platinum, gold)
Free	- (basic level)	X	X (bronze)
Phone	X (business, enterprise levels)	X	X (platinum, gold)
Chat	X (business, enterprise level)	X	-
Ticket system or email	X (developer, business, enterprise levels)	X	X (paid plans only)
Forum	X	-	X
Knowledge base	X	X	X
Managed services	X (enterprise level)	X	-
<b>Billing</b>			
Cloud server billing period	<b>Hour</b>	<b>Hour</b>	<b>1 min 10 min minimum</b>
No monthly precharge	X	X	X
Billing per cloud server or account	<b>Cloud server</b>	<b>Cloud server</b>	<b>Account</b>
License billing period	<b>Hour</b>	<b>Hour</b>	<b>1 min 10 min minimum</b>
Prepaid	-	-	-
Currency	<b>USD</b>	<b>USD</b>	<b>USD</b>
Credit card	X	X	X
PayPal	-	-	-
Wire transfer	-	-	-
Resource plans	-	-	X
Longer subscriptions	-	X	-
Reservation	X	-	-
Volume discounts	X (in reserved instances and transfer)	X	-
<b>Trial &amp; Specials</b>			
Free trial	-	-	X (\$300 for 2 months)
Money back guarantee	-	X	-
Free entry level service	X (Free tier for one year)	-	-
<b>Third party tools support</b>			

Rightscale	X	X	X
Scale	X	X	X
<b>Provider information</b>			
Name	Amazon	Rackspace	Google Inc.
Address	Seattle, Washington, USA	1 Fanatical Place, City of Windcrest, San Antonio, TX 78218, USA	Googleplex, Mountain View, California, USA
Year founded	1994 AWS: 2006	1998	1998

## Amazon Web Services



Figure 5.17: Network Map of SISDAC

### 16 Divisions:

Tutulia, American Samoa  
 Queensland, Australia  
 New South Wales, Australia  
 Victoria, Australia  
 North, Central, South Island of New Zealand  
 Savaii, Samoa  
 Upolu, Samoa  
 Alaska, USA

California, USA

Hawaii, USA

Oregon, USA

Utah, USA

Washington, USA

The client and members of SISDAC are small enough that it is only necessary for them to need one cloud server that will be able to communicate to the other five countries who will then communicate with the 16 divisions within those countries. New Zealand is the headquarters and will be the main source of where the cloud service provider will be handling. The cloud service provider they decide to use, will have the option of a backup system and security to keep their data and personal information safe as well as monitoring of their network and websites(s). The need for New Zealand to be the only country to have the cloud server at their location is because it would be a financial waste to set up a server for each of the five countries plus the cost to have backups and security. Technology has improved greatly that only one server is needed and communicate to other locations globally.

### **Using AWS Amazon:**

While researching the different types of cloud service providers, AWS Amazon provided the best option to be able to get the hands on experience of how the cloud works and the potentials it can have, especially for our client. AWS Amazon provide a free Tier 12 month long trial with some free features/resources to a certain limit. If that limit has been reached and crossed then the charges start to appear on a bill. Learning the cloud was a new experience for us as well for our clients. We set up the cloud as if it we are located in New Zealand (in the approved location for Amazon, it was Sydney, Australia) to see what services and resources were available to them in that region.

The screenshot shows the AWS Dashboard with the URL <https://ap-southeast-2.console.aws.amazon.com/console/home?region=ap-southeast-2#>. The dashboard is organized into several sections:

- Amazon Web Services** (header)
- Compute**: EC2, EC2 Container Service, Elastic Beanstalk, Lambda
- Storage & Content Delivery**: S3, CloudFront, Elastic File System (PREVIEW), Glacier, Import/Export Snowball, Storage Gateway
- Database**: RDS, DynamoDB, ElastiCache, Redshift, DMS (PREVIEW)
- Networking**: VPC
- Developer Tools**: CodeCommit, CodeDeploy, CodePipeline
- Management Tools**: CloudWatch Metrics, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor
- Security & Identity**: Identity & Access Management, Directory Service, Inspector (PREVIEW), WAF, Certificate Manager
- Analytics**: EMR
- Internet of Things**: AWS IoT
- Game Development**: GameLift
- Mobile Services**: Mobile Hub, Cognito, Device Farm, Mobile Analytics, SNS
- Application Services**: API Gateway, AppStream, CloudSearch, Elastic Transcoder, SES, SQS, SWF
- Enterprise Applications**
- Resource Groups**: A resource group is a collection of resources that share one or more tags. Create a group for each project, application, or environment in your account.
- Create a Group**, **Tag Editor**
- Additional Resources**: Getting Started (PREVIEW), AWS Console Mobile App (PREVIEW), AWS Marketplace (PREVIEW), AWS re:Invent Announcements (PREVIEW), Service Health
- Service Health**: All services operating normally. Updated: Mar 08 2016 15:48:01 GMT-0800. Service Health Dashboard

**Figure 5.18: AWS Dashboard**

This is the dashboard when the user signs into the console. These are all the services that can be done through AWS.

## AWS Free Tier (12 Month Introductory Period):

These free tier offers are only available to new AWS customers, and are available for 12 months following your AWS sign-up date. When your 12 month free usage term expires or if your application use exceeds the tiers, you simply pay standard, pay-as-you-go service rates (see each service page for full pricing details). Restrictions apply; see [offer terms](#) for more details.

### Elastic Compute Cloud (EC2)

- 750 hours of [Amazon EC2](#) Linux t2.micro instance usage (1 GiB of memory and 32-bit and 64-bit platform support) – enough hours to run continuously each month\*
- 750 hours of [Amazon EC2](#) Microsoft Windows Server† t2.micro instance usage (1 GiB of memory and 32-bit and 64-bit platform support) – enough hours to run continuously each month\*
- 750 hours of an [Elastic Load Balancer](#) plus 15 GB data processing\*
- 30 GB of [Amazon Elastic Block Storage](#) in any combination of General Purpose (SSD) or Magnetic, plus 2 million I/Os (with EBS Magnetic) and 1 GB of snapshot storage\*
- 500 MB-month of [Amazon EC2 Container Registry](#) storage for new customers\*

### Amazon Simple Storage Service (S3)

- 5 GB of [Amazon S3](#) standard storage, 20,000 Get Requests, and 2,000 Put Requests\*

### Data Transfer

- 15 GB of bandwidth out aggregated across all AWS services\*

### Amazon Data Pipeline

- 3 low frequency preconditions running on AWS per month\*
- 5 low frequency activities running on AWS per month\*

### Amazon ElastiCache

- 750 hours of [Amazon ElastiCache](#) cache.t2micro Node usage – enough hours to run continuously each month.\*

### Amazon CloudFront

- 50 GB Data Transfer Out, 2,000,000 HTTP and HTTPS Requests of [Amazon CloudFront](#)\*

### Amazon AppStream

- 20 free hours per month\*

**Figure 5.19: AWS Free 12-Month Services**

This is a portion of the services you get with the Free Tier. The goal for this project was to be able to get the AWS to host [www.sisdac.org](http://www.sisdac.org), set up an email server, and to see how to migrate the LMS into the cloud.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS	Pub...
WordPress	i-62e3c9bd	t2.micro	ap-southeast-2a	running	2/2 checks ...	None	ec2-52-63-86-77.ap-so...	52...
Instance: i-62e3c9bd (WordPress)    Elastic IP: 52.63.86.77								
<a href="#">Description</a> <a href="#">Status Checks</a> <a href="#">Monitoring</a> <a href="#">Tags</a> <a href="#">Usage Instructions</a>								
Instance ID	i-62e3c9bd	Public DNS	ec2-52-63-86-77.ap-southeast-2.compute.amazonaws.com					
Instance state	running	Public IP	52.63.86.77					
Instance type	t2.micro	Elastic IP	52.63.86.77					
Private DNS	ip-172-31-10-113.ap-southeast-2.compute.internal	Availability zone	ap-southeast-2a					
Private IPs	172.31.10.113	Security groups	WordPress powered by Bitnami -HVM-4-4-2-1-r04 on Ubuntu 14-04-3-AutogenByAWSMP-, view rules					
Secondary private IPs		Scheduled events	No scheduled events					
VPC ID	vpc-1bc0b47e	AMI ID	bitnami-wordpress-4.4.2-1-r04-linux-ubuntu-14.04.3-x86_64-hvm-ebs-mp-7d426cb7-9522-4dd7-a56b-55dd8cc1c8d0-ami-1692a37c.3 (ami-b4587ed7)					
Subnet ID	subnet-6959010c	Platform	-					
Network interfaces	eth0	IAM role	-					
Source/dest. check	True	Key pair name	-					
		Owner	880254623699					

Figure 5.20

When clicking on EC2 under compute, a new dashboard appear with the ability to create an instance. The client told us when the change management occurred, to stick with WordPress. In hopes of making it easier for them, we created an instance using Amazon's own Linux instance and used WordPress application powered by Bitnami-HVM.

Filter by attributes or search by keyword								
Elastic IP	Allocation ID	Instance	Private IP Address	Scope	Public DNS			
52.63.86.77	eipalloc-729e3117	i-62e3c9bd (WordPress)	172.31.10.113	vpc-1bc0b47e	ec2-52-63-86-77.ap-southea...			
Address: 52.63.86.77								
Elastic IP	52.63.86.77	Network interface ID	eni-2da1bb4a					
Instance	i-62e3c9bd (WordPress)	Private IP address	172.31.10.113					
Scope	vpc	Network interface owner	880254623699					
Public DNS	ec2-52-63-86-77.ap-southeast-2.compute.amazonaws.com	Allocation ID	eipalloc-729e3117					

Figure 5.21

Next, we had to try and migrate www.sisdac.org over to the cloud. By doing so, we had to create an Elastic IP address that will tie the SISDAC domain name to the above IP address.

<a href="#">Back to Hosted Zones</a>	<a href="#">Create Record Set</a>	<a href="#">Import Zone File</a>	<a href="#">Delete Record Set</a>
<input type="text"/> Record Set Name <span style="margin-left: 10px;">X</span> <span style="margin-left: 10px;">Any Type ▾</span> <span style="margin-left: 10px;"><input type="checkbox"/> Aliases Only</span> <span style="margin-left: 10px;"><input type="checkbox"/> Weighted Only</span>			
<span style="margin-right: 10px;">◀</span> <span style="margin-right: 10px;">◀</span> <span>Displaying 1 to 2 out of 2 Record Sets</span> <span>▶</span> <span>▶</span>			
<input type="checkbox"/>	Name	Type	Value
<input checked="" type="checkbox"/>	sisdac.org.	NS	ns-730.awsdns-27.net. ns-241.awsdns-30.com. ns-1079.awsdns-06.org. ns-1973.awsdns-54.co.uk.
<input checked="" type="checkbox"/>	sisdac.org.	SOA	ns-730.awsdns-27.net. awsdns-hostmaster.amazon.

**Figure 5.22**

In order to start the migration, we had to create a Hosted Zone, which allows AWS to find the domain database the domain is one and assign it to the IP address that Amazon created when the instance was made.

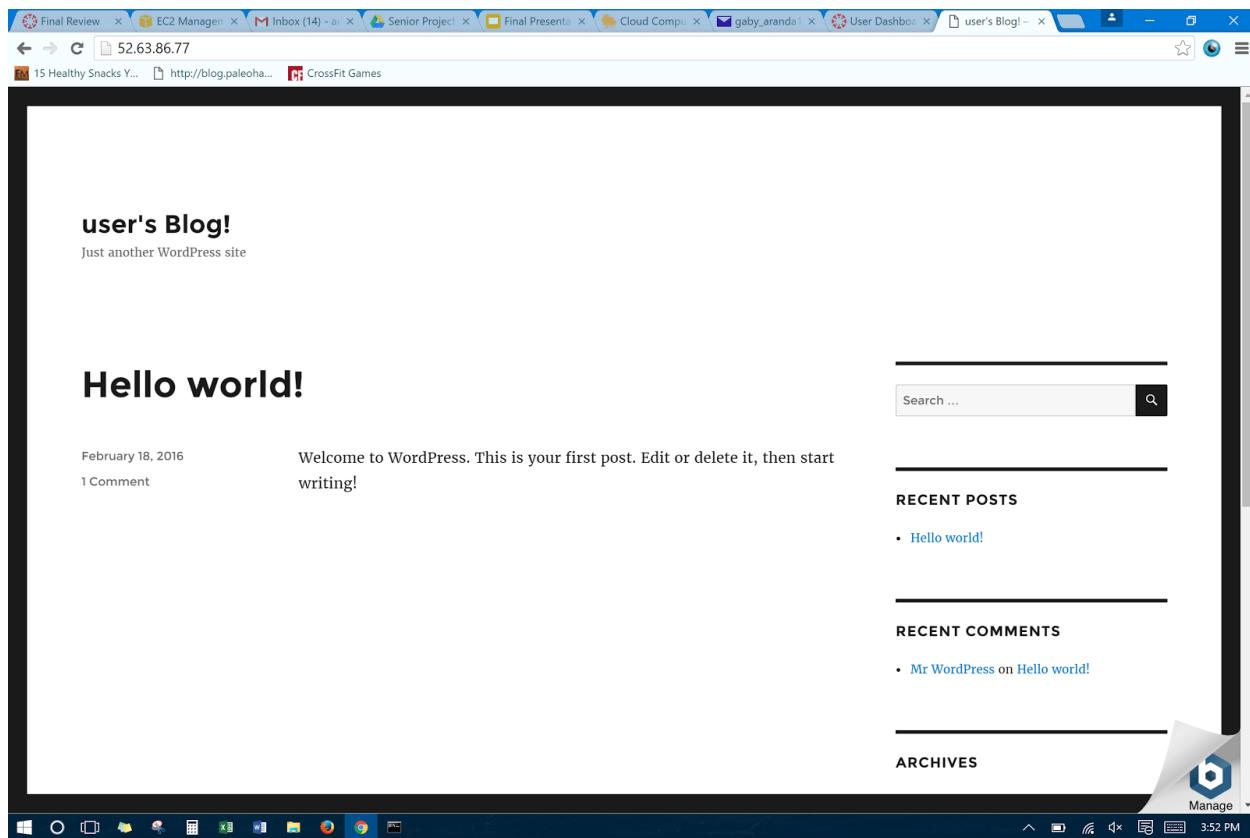
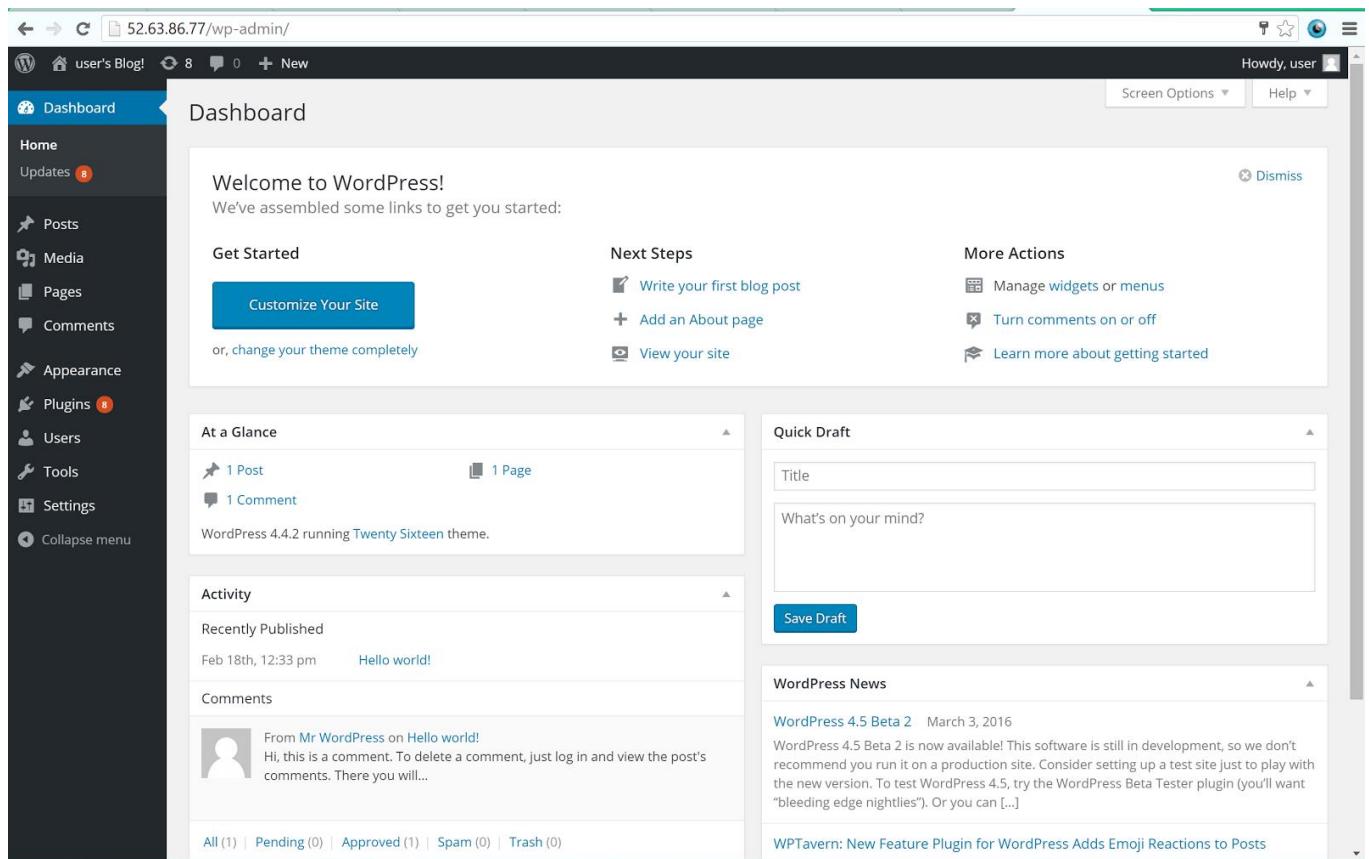


Figure 5.23

If the user types in the IP address that was given to us when an instance was created, it shows that a WordPress is active and ready to be viewed.



**Figure 5.24**

This is the dashboard of the WordPress that shows the capabilities of being edited to the client's needs.

### Problems encountered:

While some services were free, we were still limited to accomplishing the goal of hosting the SISDAC websites. The first time around, it took several hours to figure out the setup of beginning to get AWS to host the site. After looking through tutorials, it was difficult to understand because the steps were very technical and advanced. There was no video or image to help make the process easier. While making we were staying within the bounds of the “free” services, we ended up getting charged a significant amount which was from creating a database through MySQL in order to set up the site. Fortunately, Amazon had great customer service and refunded us the money after explaining the situation.

While trying to set up an email server for our client and members, AWS Amazon did not support their region which prevented us from reaching our goal. For now, Share Faith will continue to host emails for SISDAC.

After creating another account and start from scratch in hopes of avoiding accumulating any fees, we noticed that upon signing up there were video tutorials about creating/executing basic tasks like, “Deploying a WordPress Site”. During the migration setup of bringing the SISDAC domain name to

AWS, we encountered a problem with the domain name. The owner of www.sisdac.org still had a contract to keep the domain name and on top of that, the IP address was being shared with around 40 other domain names. This was a huge setback for us. We decided to let the clients handled this issue in hopes of buying the rights to the domain name. As shown above with WordPress, worst case scenario would be to create a new domain name for SISDAC and transfer the WordPress setup used under Share Faith and bring it to the WordPress under AWS Amazon. While this tutorial was much easier to understand, we still managed to get charged a small fee. Unfortunately, since we were not getting paid or provided money to explore theses services for our client, we decided to close the account early.

# Team Reflection

---

Our senior project was a great experience for us three. As the project began, we were a bit hesitant in our skills. Because we had a real client, it made the project a challenging one. We wanted to be able to succeed but provide our client with a final product they were happy with.

At the beginning of our projects we had a lot of known risk. This included, but not limited to, the following:

- Technical Skills/Tools
- Web-based front-end languages: HTML5, CSS, JavaScript, and related client-side script languages
- Server side: PHP, MySQL
- Scope of the project (Clients' needs VS. Clients' wants)
- Security
- Access Control
- User
- Firewall, Anti-virus
- Updates

We felt these areas would hinder us during our project because we are still learning. As the change management took effect, there were newer but less risks for us.

- SISDAC headquarter location
- Cost
  - LMS
  - Cloud Computing Service
- Domain name
- Technical terms
- DB Server
- Client communication (we all lived in different countries)
- Timeframe

In the end, we felt we put our best efforts into this project. Not only were we happy and satisfied with the work that we did, our clients were happy as well. Although the website was not fully completed (content is missing due to our clients), our clients were happy with our final product at the end.

As a team, we were grateful for the opportunity given to us by our clients. During this project each of us were able to work in the respected I.T. field we hope to pursue in the future. This was a great experience for us three; one that was full of hard work, memories, and especially showed our passion for the I.T. field.

## References

---

Amazon (n.d.) *Hosting a Static Website on Amazon Web Services*. AWS Amazon. Retrieved from <http://docs.aws.amazon.com/gettingstarted/latest/swh/website-hosting-intro.html>

Amazon (n.d.). *Getting Started with AWS*. AWS Amazon. Retrieved from <https://aws.amazon.com/getting-started/>

Amazon (n.d.) *Hosting a Web App on Amazon Web Services*. AWS Amazon. Retrieved from <http://docs.aws.amazon.com/gettingstarted/latest/wah-linux/web-app-hosting-intro.html>

Bridge (n.d.). Retrieved from <https://www.getbridge.com/>

LearnUpon (n.d.) Retrieved from <https://www.learnupon.com/>

ShareFaith (n.d.) *Adding subdomains to make additional websites*. ShareFaith. Retrieved from <https://support.sharefaith.com/support/solutions/articles/1000102794-adding-subdomains-to-make-additional-websites>

ShareFaith (n.d.) *Create email accounts for your Domain*. ShareFaith. Retrieved from <https://support.sharefaith.com/support/solutions/articles/1000080431-create-email-accounts-that-have-your-domain>

ShareFaith (n.d.) *Embedding and Customizing a Google Calendar*. ShareFaith. Retrieved from <https://support.sharefaith.com/support/solutions/articles/1000202572-embedding-and-customizing-a-google-calendar>

Scrum Definition (n.d.) *What is Scrum?* Retrieved from <http://searchsoftwarequality.techtarget.com/definition/Scrum>