

# **Ghanaian Cincinnati Home**

Presented by

Lukman Ellis

Submitted to  
the Faculty of the Information Technology Program  
in Partial Fulfillment of the Requirements for  
the Degree of Bachelor of Science  
in Information Technology

University of Cincinnati  
College of Applied Science

# Ghanaian Cincinnati Home

Presented by

Lukman Ellis

Submitted to  
the Faculty of the Information Technology Program  
in Partial Fulfillment of the Requirements for  
the Degree of Bachelor of Science  
in Information Technology

© Copyright 2008 Lukman Ellis

The author grants to the Information Technology Program permission  
to reproduce and distribute copies of this document in whole or in part.

---

Lukman Ellis

---

Date

---

Prof. Annu Prabhakar, Faculty Advisor

---

Date

---

Dr. Hazem Said, Department Head

---

Date

## **Acknowledgements**

I would like to give special thanks to Prof. Annu Prabhakar. I would also like to give special thanks to faculty members of the Information Technology Department. I am grateful for all that I have learned through the Senior Design process.

## Table of Contents

### Section

Acknowledgements.....	i
Table of Content.....	ii
Table of Content.....	iii
List of figures.....	iv
Abstract.....	v
1. Problem Statement.....	1
2. Product Description.....	1
3. User Profile.....	2
4. Design Protocol.....	3
4.1 Members.....	4
4.2 Visitors.....	4
4.3 Administrator.....	4
5. Design Protocol.....	5
5.1 Member Profile Interface.....	5
5.2 Administrative Interface .....	6
6. Proof of Concept.....	7
6.1 Drupal Module and Themes.....	8
6.2 User Registration and Authentication.....	9
6.3 Forum.....	10

6.4 Making Payment.....	11
	iii
7. Testing.....	12
7.1 Usability Testing.....	13
7.2 Navigational and Functional Testing .....	15
7.3 Acceptance Testing.....	13
8. Timeline.....	14
9. Cost of Implementation.....	14
10. Deliverables.....	15
11. Conclusions.....	17
12. Reference.....	18

## List of Figures

<b>Figure Number</b>	<b>Page</b>
Figure 1 Use Case Diagram.....	3
Figure 2: Home Page Design Layout.....	5
Figure 3: User Profile layout.....	6
Figure 4: Administrative interface.....	7
Figure 5: User Registration.....	9
Figure 6: Member Profile view.....	10
Figure 7: Forum Interface.....	11
Figure 8: Payment Subscription.....	12
Figure 9: Project Timeline.....	14
Figure 10: Cost of Implementation.....	15

## **Abstract**

The Ghanaian Cincinnati home Web site was developed for Ghanaians in the Greater Cincinnati area. The Association does not currently have a fully functional Web site that enables members to discuss community issues. The new Ghanaian Cincinnati Home Web site allows members of the association to go on-line, view events, view the calendar, register, create profile, join a forum and pay their yearly dues on-line. The Web site was developed using Drupal, PHPBB and PayPal. MySQL Database and Php were also used to create and configure database. The primary colors used on the Web site were the colors of the Ghana flag. Paint.net was used to configure the various interfaces of the Web site. The Web site is easy to manage users and content and easy to navigate.

## **1. Problem Statement**

The Ghanaian Association of Cincinnati is made up of Ghanaians in the Cincinnati and Fairfield area. New members come in from Ghana and others travel from different states. Currently there is not a fully functional Web site for the Ghanaian Association. The association organizes special events and ceremonies. These ceremonies and events include Independence Day celebrations, soccer games and basketball. The organization's main focus is to raise awareness on events and issues going on in Ghana. Members of the association pay yearly dues that are used to sponsor events and ceremonies. The Ghanaian Cincinnati Web site was developed to host information about the Ghanaian community.

## **2. Product Description**

The Ghanaian Cincinnati Web site enables members of the association and visitors to go on-line and view various events and announcements. The announcements are updated every week to keep all members informed about events. A visitor has the ability to view some content on the Web site but is limited on information access. For instance, a visitor is able to view some events on the calendar but not able access all events.

In order for the organization to be up-to-date with current member information, the developed Web site allows members to create profile and update their personal information. Each member has a profile; he/she is able to edit and make changes to his/her personal information. Members of the association first have to register with the approval of the administrator. The Administrator of the Web site then makes member's accounts active. The Administrator is able to block a member from registering if the

person does not agree with the conditions of the Web site. These conditions include a valid email address, using member's actual name and an agreement to pay the yearly dues.

The discussion board created allows members to share their opinions with other registered members on community issues. If a member wants to have a private discussion with other members, he/she uses a private forum or joins user group discussions. Registered members are able to view another member's user name, full name, and picture ID but the member's profile detail information is blocked from members. The administrator only accesses information such as phone numbers and email addresses, unless a member chooses to make such information public.

Members have the ability to pay their yearly dues. Payment information is stored in the database. All payments are processed by using PayPal. Members must first subscribe to PayPal; this process included validating a member's telephone numbers, credit cards and billing addresses. This process is done to ensure member information confidentiality.

### **3. User Profile**

There are at least three different interfaces on the Ghanaian association Web site. Visitors interface allows them to view various information posted on the Web. Members of the Ghanaian association also have their own interface. After members login, they are able to edit and change their interface. Figure 1 shows the use case diagram of the

Ghanaian Cincinnati Home Web site. The major actors in the use case are the member, visitor and administrator.

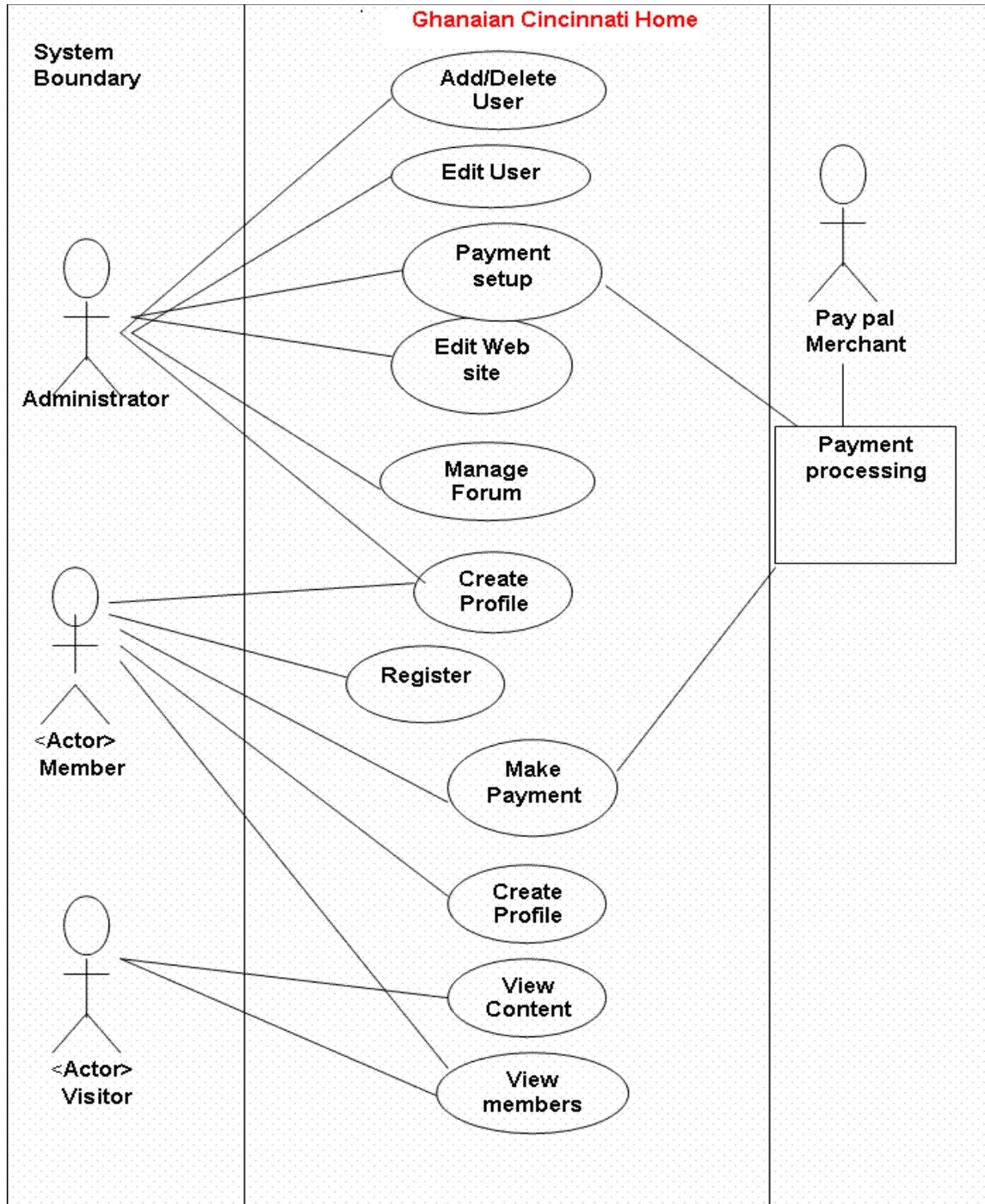


Figure 1: Use Case Diagram

### **3.1 Members**

Members of the association have the ability to go on-line, view various announcements, and view other member's information. Members first have to go on-line and register, create a profile and save their profile information. Members also have the capability to change their personal information, content on their profile and change the look of their view. Members in addition pay their yearly dues on-line. This enables the association to keep track of all member payments history. Some members of the association are given administrative privileges to add content and create new topics at the forum.

### **3.2 Visitors**

Visitors coming to the Web site have the ability to view announcements posted on the Web site. They are able to view events on the calendar and read about the Ghanaian Cincinnati Home. A visitor is able to contact the administrator for member information. Content of the Web site cannot be altered by visitors until they become registered members.

### **3.3 Administrators**

Administrators have the ability to control the content of the overall site. The Administrator also has the capability to add and remove members. The site contents and

design is configured by the administrator. The administrator is able to perform all responsibilities of the visitors and registered members.

#### 4. Design Protocol

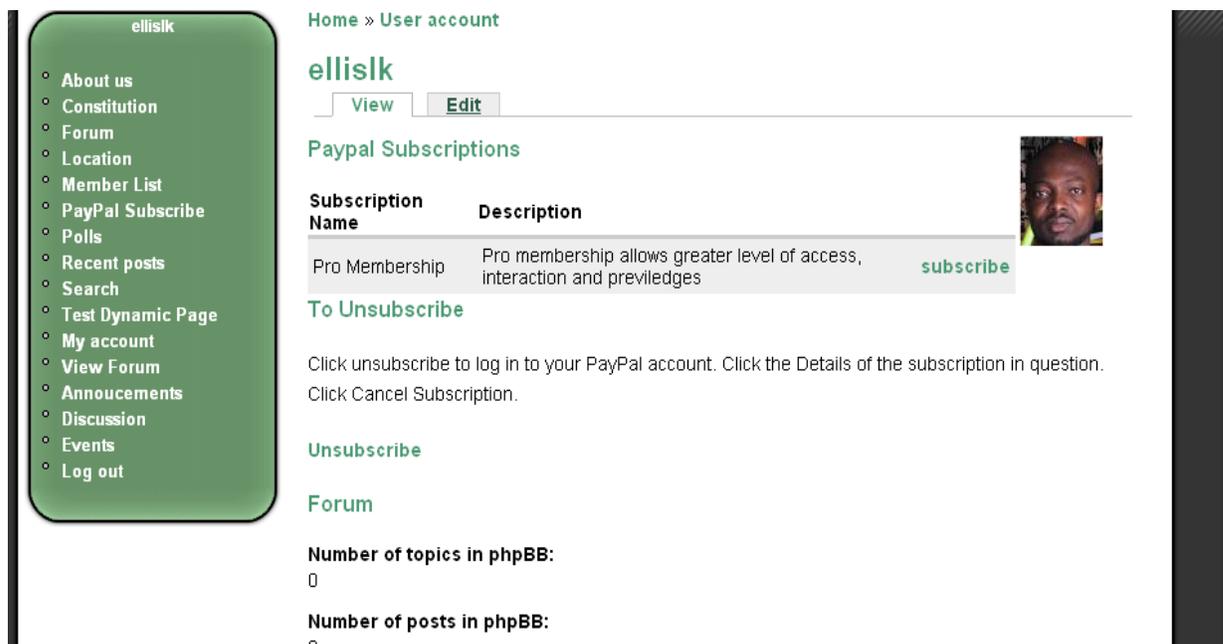
There are three primary user roles for the Web site. Members use the system to view events, check the calendar and communicate with other members. The administrator has the ability to manage users and content. Some members have administrative rights. Since members will also be paying yearly dues there will be a distinction between paid and unpaid members. Figure 2 shows the main page design. The layout makes use of the primary colors of the Ghana national flag.



**Figure 2:** Home Page Design Layout

## 4.1 Member Profile Interface

Member profiles are created in two ways: by the member or by the administrator. When members create their profiles, they are required to add a passport size image. All images are converted into a fixed size, 80 by 80 pixels. This helps identify new members because new member profile information is made available to all members. Figure 3 shows a sample member profile. The profile information is available for other members to view.



The screenshot displays a user profile for 'ellisik'. On the left is a green sidebar menu with the following items: About us, Constitution, Forum, Location, Member List, PayPal Subscribe, Polls, Recent posts, Search, Test Dynamic Page, My account, View Forum, Announcements, Discussion, Events, and Log out. The main content area shows the breadcrumb 'Home » User account', the username 'ellisik', and buttons for 'View' and 'Edit'. Below this is a 'Paypal Subscriptions' section with a table:

Subscription Name	Description	
Pro Membership	Pro membership allows greater level of access, interaction and privileges	<a href="#">subscribe</a>

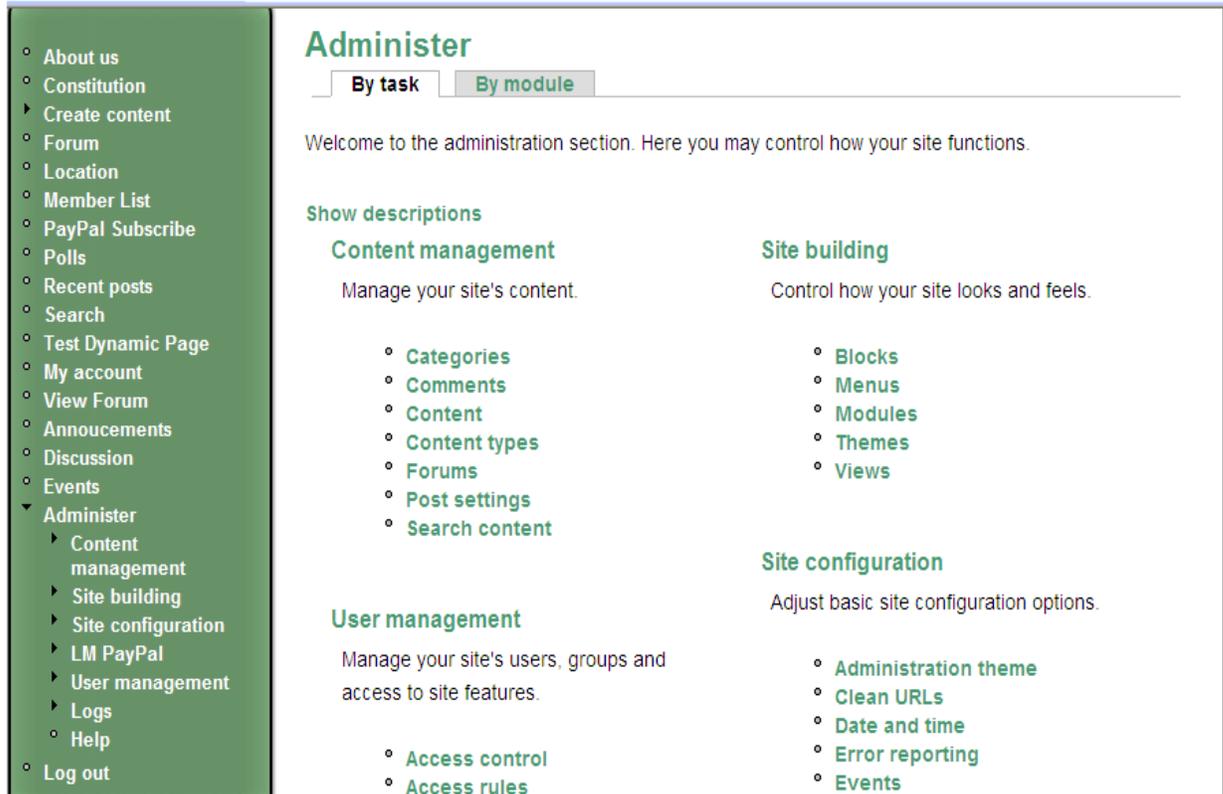
Below the table is a 'To Unsubscribe' section with instructions: 'Click unsubscribe to log in to your PayPal account. Click the Details of the subscription in question. Click Cancel Subscription.' There is also an 'Unsubscribe' button. At the bottom, there are two statistics: 'Number of topics in phpBB: 0' and 'Number of posts in phpBB: 2'.

**Figure 3:** User Profile layout

## 4.2 Administrator Interface

The Administrators have interfaces that allow Content Management, Site Building, Site Configuration, PayPal Management, User Management and Logs of the site. Each function has its own sub functionality that allows an administrator to configure and

administer it. Figure 4 shows the administrative screen of the Ghanaian Cincinnati Home Web site.



**Figure 4:** Administrative interface

## 5. Proof of Concept

This section addresses in detail the concepts used in developing the Ghana Cincinnati Home Web site. All functions mentioned in the deliverables are addressed.

The concepts used are addressed below.

## **Database, PHP and HTML**

MySQL database was used to host database information on Drupal and PhpBB. “MySQL has complex, flexible account and database access management”(5, p32)

Drupal is defined as “a free software package that allows an individual or a community of users to easily publish, manage and organize a wide variety of content on a Web site” (2).

PhpBB is defined, as “is the most widely used forum script currently on the web. This free and very powerful piece of software is easy to install and administer and allows flexibility in terms of design and organization” (9). Drupal was first unpacked after setting up the database. After the Drupal databases were created, then users for the MySQL database are also created. A separate MySQL database was created for PhpBB. Php programming language was used to configure modules that had errors in it and HTML was used to create the page layout.

### **5.1 Drupal Module and Themes**

Drupal was the major product used in developing the Ghanaian Cincinnati Home Web site. Drupal allows the administrator to create and maintain the Web site. There are various modules and themes available to develop the Web site. Most of the programming for Drupal was already done by open source developers. Configurations were done on modules that had errors in the code. Most bugs had already been fixed and blogs were consulted to get fix information. Drupal modules and themes were downloaded from the Drupal Web site (3). The default design theme was created by FineX design. (4).

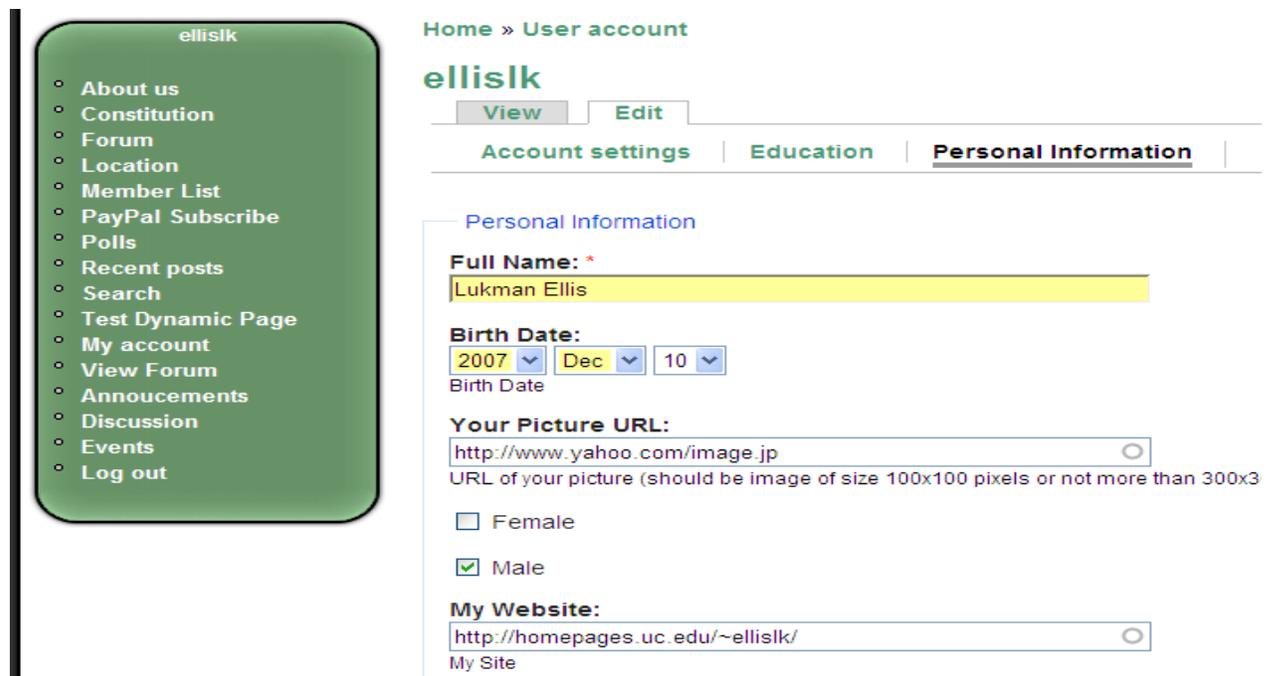
Paint.net was also used to configure the views on Drupal and PhpBB theme or style. This open source software enabled the site to utilize the primary colors of the Ghanaian flags.

## 5.2 User Registration and Authentication

In order for members of the Ghanaian Association to access data on-line, they have to register and then create a profile. This process enables the member registration information to be used to access other member profiles and log on the forum. During registration members of the association have the view of Figure 7. Figure 8 shows the view of the member profile after registration.

The screenshot shows a web page for user registration. On the left is a green navigation menu with the following items: About us, Constitution, Forum, Location, Member List, Polls, Recent posts, Test Dynamic Page, View Forum, Announcements, Discussion, and Events. The main content area is titled 'User account' and has a header with links for 'Create new account', 'Log in', and 'Request new password'. Below this are two sections: 'Account information' and 'Personal Information'. The 'Account information' section contains a 'Username' field with a note: 'Your preferred username; punctuation is not allowed except for periods, hyphens, and underscores.' and an 'E-mail address' field with a note: 'A valid e-mail address. All e-mails from the system will be sent to this address. The e-mail address is not made public and will only be used if you wish to receive a new password or wish to receive certain news or notifications by e-mail.' The 'Personal Information' section contains a 'Full Name' field, a 'Birth Date' field with dropdowns for year (2008), month (Feb), and day (27), a 'Your Picture URL' field with a note: 'URL of your picture (should be image of size 100x100 pixels or not more than 300x300)', and radio buttons for 'Female' and 'Male'.

**Figure 5:** User Registration



**Figure 6:** Member Profile view

### 5.3 Forum

GhanaCin Forum allows members to use their profile registration information to log on the forum and join discussions. Members are able to see other registered members online. This forum allows sending private messages and contributing to discussions. The only limitation is registered members are not able access profiles of other members for information. Private messages are used by members to exchange profile information. PHPBB was used for this forum because “Newer users will appreciate phpBB's extensive administration panel, which allows the customization of even the most intricate features without having to edit code directly, while advanced users will value the ease with which

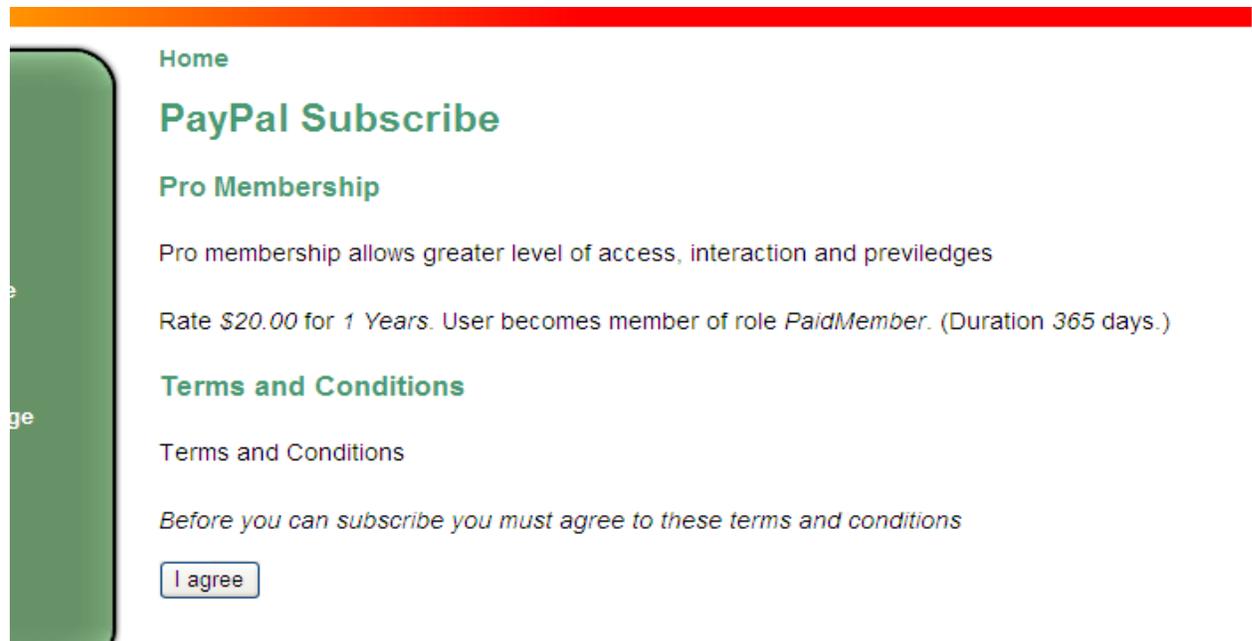
PhpBB can be integrated into existing systems”.(7) Figure 9 shows the customized forum interface.



**Figure 7: Forum Interface**

## 5.4 Making Payment

PayPal was used for members of the Ghanaian Association to make their yearly payments. PayPal provided the ability for members of the association to subscribe to PayPal to make all their payments. The Pay Pal Subscription is very important and one of the most secure ways to make payments on-line is through a merchant service.



**Figure 8:** Payment Subscription

## 6. Testing

Different types of testing were done on the Ghanaian Cincinnati Home Web site. All testing have already been completed and included Usability Testing, Functional Testing, Navigation Testing and Acceptance Testing. All testing was done to ensure that when a user visits the site, all functionalities and navigations are available for them. The testing done made the Web site user friendly and stable.

### 6.1 Usability Testing

The purpose of this test was to ensure that users are able to use the Ghanaian Cincinnati home site for its intended purposes. Ron Patton author of Software Testing

defines user interface testing as “The means that you use to interact with a software program is called its user interface or UI. All software has some sort of UI.” (6 p.15)

Members of the Ghanaian association did some of the usability testing. Testing continues to be done by various users to ensure the User Interface is easy to use.

## **6.2 Navigational and Functional Testing**

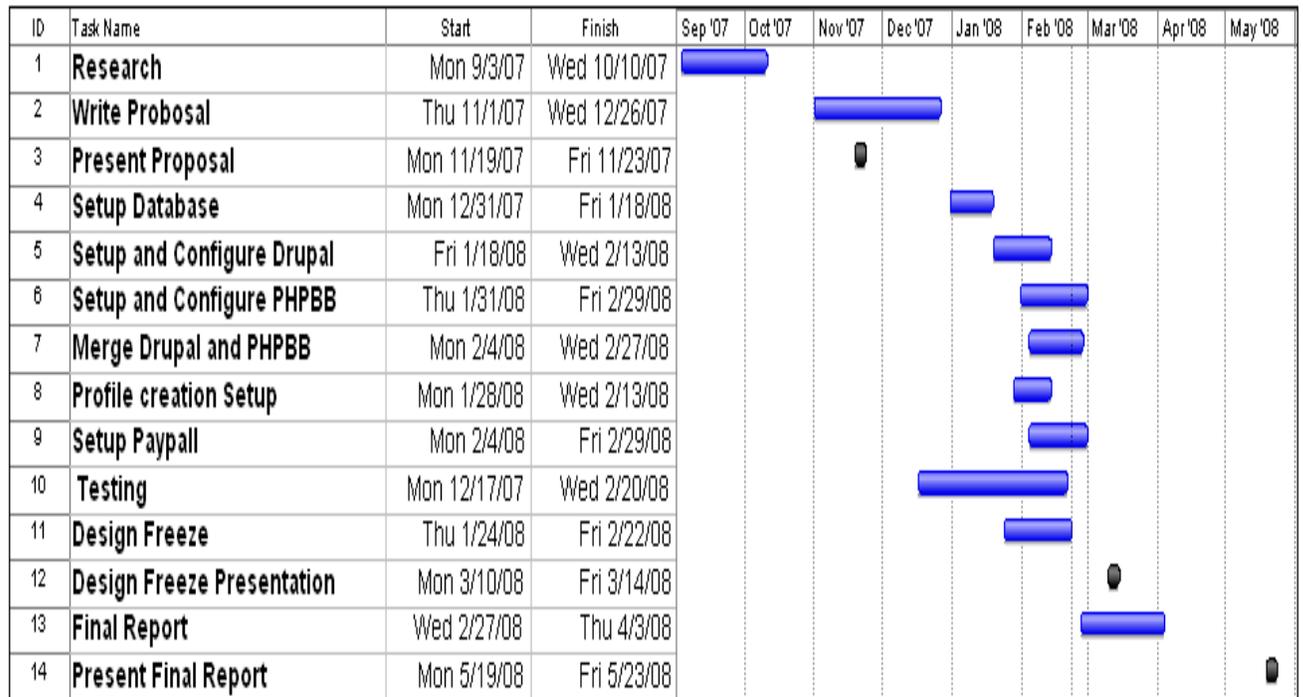
Navigation testing ensured that members of the Ghanaian association get access to information as they follow the navigations. When a new user enters the Web site and registers, there should be an option that allows members to enter personal information, upload a personal picture or profile and possibly type in their personal picture link. After registration a member is able view other members profiles and send them private messages. Navigational testing also ensures visitors are able to access information available for them.

## **6.3 Acceptance Testing**

Acceptance testing focused on various functionalities and how they work together. There are three sub-systems that make up the Ghanaian Cincinnati Home site. The sub-systems incorporated in Ghanaian Cincinnati home are Drupal, PayPal and PhpBB. Testing was done on each sub-system to ensure it was well incorporated in the Ghanaian Cincinnati Home Web site. Acceptance testing focused on Drupal and PhpBB to ensure that user information is available on the forum and profile.

## 7. Timeline

Figure 11 shows the Senior Design project timeline. The timeline for Senior Design II and III have been updated. The black symbol shows the date's presentations are done. Presentations for Senior Design I and II have been completed.



**Figure 9:** Project Timeline

## 8. Cost of Implementation

The organization bears the cost of developing, designing and hosting the Ghanaian Cincinnati Home Web site. The total cost of developing the site is indicated in **Table 1**. Host Monster was used to host the Web site. Hostmonster has a built in MySQL and PHP, and this allowed the database to be created and hosted on the web server.

PayPal was also used during the process of developing the payment setup. Drupal was used to create site content and user profile. PHPBB was used for the Forum.

Item	Cost	Actual Cost
MYSQL Enterprise	\$0	\$0
Pay Pal	\$0	\$0
Drupal	\$0	\$0
Paint.net	\$0	\$0
Web hosting for 12 months	\$95	\$0
PHPBB	\$0	\$0
<b>Total Cost</b>	<b>\$95</b>	<b>\$95</b>

**Figure 10: Cost of Implementation**

## 9. Deliverables

This section lists and describes all the deliverables implemented in the Ghanaian Cincinnati Home Web site

1. MySql Database was used to store member's information and the administrator has the permission to alter and modify database contents.
2. The Web site was developed using Drupal, PhpBB, and PHP. Drupal was used to create the Web site design and layout. PHP was used to connect the database and gather information from the database. Php was also used to setup Drupal and PhpBB. Drupal was used because of the review it got. According to David Mercer author of Drupal "... advantage of Drupal is that the code itself is very well written, which makes modifying it

easy. This means that as you attempt, the very way in which Drupal is written will lend you an advantage over other platforms.” (6, p.33).

**3.** Members of the association are able to go on-line and register and use the information to log on. The Administrator also needs authentication to access database information.

**4.** The Administrator should be able to do the following:

- Configure site
- Change member permission
- Register for members
- Delete users
- Manage discussion board
- Create content for the Web site
- Manage Forum

**5.** Members are able to make payments on-line. These payments are for their monthly or yearly dues. The database keeps track of all payments. Notifications are sent when member’s payments are due. All payments will be automated when the member subscription is completed. According PayPal Hacks “With a PayPal subscription button, you can offer your customers the chance to pay you again and again without any further human intervention. Subscription buttons allow you to collect automatically recurring payments easily for such things as club membership dues and monthly access to online content.” (1, p.23)

**6.** Members should have the ability to do the following:

- Update their profile content

- Change their Theme
- Create a profile of personal information
- Have discussions on Web site after registration
- Have private discussing using PhpBB
- Contribute to topics
- Vote on polls to determine the out come of events

7. Automatic email notifications are sent to members on their payments, announcements and events

## **10. Conclusion**

In conclusion the Ghanaian Cincinnati Home Web site was developed to help members to up-to-date on events going on in the community. The Web site also allowed sharing their opinion participating in discussions and voting on issues. Members can now easily pay their yearly dues with a click of a button. All members can be contacted about upcoming event by mass email or through event calendar.

## Reference

1. Burchell, Dave, David Nielsen, Shannon Sofield PayPal Hacks by 2004
2. Drupal Definition <http://drupal.org/> 2007
3. Drupal Modules <http://drupal.org/project/Modules> 2007
4. FiNex design Web Page <http://www.finex.org/> 2007
5. Lane, David, Hugh E. Williams. Web Database Application with PHP and MySQL, 2004
6. Mercer, David. Drupal. Packt Publishing. 2006.
7. Patton, Ron. Software Testing, Second Edition. Sams Publishing 2005
8. PHPBB Download site <http://www.phpbb.com/downloads/> 2007
9. PhpBB Definition [http://kb.siteground.com/article/What\\_is\\_phpBB.html](http://kb.siteground.com/article/What_is_phpBB.html) 2007
10. PhpBB <http://www.phpbb.com/about/?sid=2317f827c7d985cd18c4ddca55ba9bf1>