

I. Introduction

A. Background of the Study

The University of the Philippines Manila needs to promote the special role in providing and developing holistic approach in health and wellness as the Health Science Center of the University of the Philippines System. However, the University of the Philippines Manila doesn't have its own gymnasium that could work with other educational institutions within the university to integrate the different fields of science as they response to human health and kinetics. The proposed construction of the Sports Science and Wellness Center will include a three-floor gymnasium with classrooms, laboratories, training rooms, basketball and volleyball courts, a track and jogging oval, and a swimming pool.

The Sports Science and Wellness Center is a shared plan of the different colleges and departments of the University who will benefit from the project. The Center will provide an approach that will promote health and wellness. The Center will also collaborate with the Sports Science Medicine specialists of the College of Medicine and the physical therapists of the College of Allied Medical Professions. The Center also hopes to be the venue for the different events of the University.[1]

The Center, however, due to budget constraints, still remains a plan. The University appeals and asks for support to its alumni and friends for the construction of the Center.[Appendix A]

.The use of Information Technology and 3D modeling to better visualize the proposed Sports Science and Wellness Center will greatly aid in the establishment of ideas and thoughts about the Center. The "feeling" of being inside and physically visited the proposed Sports Science and Wellness Center and walking through it hopes to result in a distinctive impression about the center. Being able to see the magnificence of the Center through the said visualization hopes to encourage more individuals to support its construction. An online virtual Sports Science and Wellness Center will make it easier for the concerned individuals to disseminate the information easily through the Internet regarding the appeals for the construction of the center.

B. Statement of the Problem

The University of the Philippines Manila doesn't have its own gymnasium and most of the time rents outside venues for its events. For the University to broaden and extend its role as the health science center, the construction of the Sports Science and Wellness Center will be of great help. The center will be of great help if the University will be able to gather enough funds (approximately PHP148M) to construct the said center.

The University of the Philippines Manila's website has a feature 'Giving to UP Manila' but is not functional. The website also does not contain any information about the proposed construction of the Sports Science and Wellness Center.

The University of the Philippines Alumni Association is the mother chapter of all University of the Philippines alumni chapters that provide support to the University by raising funds and establishing scholarships, professional chairs and fellowships, as well as other activities.[2] The website of the association currently does not contain any information regarding the construction of the proposed Sports Science and Wellness Center – its funds, donations, and plans.

The University of the Philippines Manila Alumni Association's website at present is not operational. Information concerning the construction of the proposed Sports Science and Wellness Center could have been included in the said website.

Websites of other alumni associations might have talked about the proposed Sports Science and Wellness Center but does not have a system where prospective donors could pledge and interact with some coordinators of the Center. No websites also offer images or virtual tour of the proposed Center.

C. Objectives of the Study

The project aims to create a web portal for the Sports Science and Wellness Center with the following functionalities:

1. Allow prospective donors to:
 - a. View photo gallery of the Sports Science and Wellness Center
 - i. View Old SSWC photos
 - ii. View Proposed SSWC photos
 - iii. View SSWC Construction photos
 - b. View and explore the browser-based virtual Sports Science and Wellness Center's features, amenities, and facilities.
 - i. View the virtual tour online
 - ii. Download the virtual tour
 - c. Help construct the Sports Science and Wellness Center
 - i. Add pledge of donation to the proposed center.
 - ii. Refer other people who are willing to donate to the center.
 - d. View pledges and donations of the center.
 - e. View information Sports Science and Wellness Center information
2. Allow Sports Science and Wellness Center coordinator to:
 - a. Update photos in the gallery
 - i. Upload new photo
 - ii. View photos
 - iii. Delete photos
 - b. Add/Edit/Delete posts in message board
 - c. View/Delete pledges and donations received by the center
 - d. Add donations to the proposed center accepted from donors
 - i. Add donations from donors with existing pledges
 - ii. Add donations from donors without existing pledges
 - e. Generate donation summary report of a selected month
 - f. Edit personal password

3. Allow the College of Arts and Sciences Dean to:
 - a. View photo gallery of the Sports Science and Wellness Center
 - i. View Old SSWC photos
 - ii. View Proposed SSWC photos
 - iii. View SSWC Construction photos
 - b. View and explore the browser-based virtual Sports Science and Wellness Center's features, amenities, and facilities.
 - i. View the virtual tour online
 - ii. Download the virtual tour
 - c. Add/Edit/Delete posts in message board
 - d. View/Delete pledges and donations received by the center
 - e. Generate donation summary report of a selected month
 - f. Edit personal password

4. Allow system administrator to:
 - a. Add/View/Delete users
 - b. Edit personal password

D. Significance of the Study

The project will create a web portal for the Sports Science and Wellness Center. The web portal will include donor-center interaction and the visualization of the proposed Sports Science and Wellness Center that hopes to encourage more individuals to support the construction of the center upon seeing the web-based virtual Center. Users and visitors can see the pledges, donations, refer prospective donors, and construction status of the center that is updated from time to time.

Transparency of funds could be achieved in the pledges and donations system of the Sports Science and Wellness Center Web Portal. All pledges and donations will be kept on track by the system that can be generated into a summary report for a specific month.

The visualization of the center can be utilized to consider some structures or features in the center that might have been planned erroneously. Thus, changes in construction and structure can be done before the actual creation of the center.

The visualization can also help orient the students, faculty, staff, and other persons as to where specific places, amenities, facilities and features are designated when the center is already constructed.

E. Scope and Limitations

1. Prospective donors who pledged cannot edit their pledges.
2. Donations either monetary or materials are received outside the system.
3. Referral of other prospective donors is done outside the system
4. The visualization will not feature full 3D graphics. Some structures could be just images added some perspective to enhance on its 3-dimensionality.
5. The structure, color, equipment and facilities in the walkthrough may not be the actual edifice or units in the center therefore definite features of the center may vary.
6. The visualization is only to simulate the proposed Sports Science and Wellness Center. Act of changes in the plans and structures of the complex can make the visualization misrepresent the real Center.
7. The visualization does not include the overpass connecting the gymnasium to College of Allied Medical Professions and the Rehabilitation Clinics.
8. The virtual tour does not include the tour of the rooms (i.e. classrooms, locker rooms, faculty rooms, etc.)
9. The donation summary report works only for the donation over the past three years.
10. There are only three photo albums: old SSWC photos, proposed SSWC photos, and SSWC construction photos.
11. The Dean's virtual tour is opened in a new window (or tab if the browser supports).

F. Assumptions

1. Adding of donations by the Sports Science and Wellness coordinator will only be done after receiving the actual donation.
2. Donation amount are fixed and based on the sponsorship categories. (i.e. Crystal Club-PhP5,000, Pearl Club-PhP-10,000, etc.)
3. Donations can either be in cash or in check.
4. The Sports Science and Wellness Center coordinator is an associate of the SSWC project.
5. The prospective donors who will pledge donations are dedicated to pledge and donate.
6. Donors may or may not give consent on whether their names will be published on the pledges and donations viewing.
7. Pledges will not be included in the generation of reports.
8. Users who will view visualization are not using dial-up connections but have an existing broadband, cable modem, and other broadband internet services.
9. Construction photos or update images are updated by the coordinator and are dependent on the construction status of the center.
10. Posts are maintained by the SSWC coordinator or by the System Administrator. Posts not relating to the SSWC will be removed from the message board.

II. Review of Related Literature

Rhonda Hankins of Jamail Center for Legal Research, Tarlton Law Library, University of Texas at Austin School of Law had a paper on *Virtual Tours and Law Library Websites* published by Noter-Up on August 2003. The paper tackles virtual tours of academic law library in the United States. As stated in the paper, virtual tours offer a tremendous flexibility in that they need not be restricted by the physical structure. Hyperlinks also allow virtual tours to be designed for a variety of patrons with different purposes. As technology and the skills of Web masters continue to improve, virtual tours are likely to develop in new and creative ways.[3]

Virtual Tour Through Modern Architecture in Concepcion describes the development of a project that was selected and sponsored by the Regional Competition FONDART 1998 (Funds for the Development of Arts of the Regional Secretary of Education) that follows the aim of cultural diffusion. Towards the middle of the 30s, the city of Concepción developed architecture distinctly colonial, neoclassical and eclectic. An earthquake in 1939 abruptly interrupted this scene, destroying the entirety of its most important buildings. The reconstruction of the city followed the manifestoes of Modern Architecture, consolidating the urban importance of buildings such as the Law Courts, the Railway Station and the Regional Government, that emerged as the new architectural and cultural heritage of the city. The project consisted on the modeling of eleven buildings of the modern architectural heritage, and on the generation of 42 virtual tours through the buildings that were finally edited on a 16' video. This video allows the spectator to make a virtual tour through the original modern heritage of the city, nowadays demolished, altered, and sometimes, even forgotten. This project pretends to widen the ways of comprehension of our cultural identity by using computer modeling and animation as a tool for the conservation of the architectural heritage; and creating a record that can be used as a reference and as an instrument of cultural diffusion.[4]

Scene Transition based on Image Registration for Web-based Virtual Tour present a web-based virtual tour system, Easy and Effective Virtual Tour (EEVT), and focus on

describing a robust scene transition method based on an image registration technique. EEVT constructs a virtual tour from a set of images. It uses several snap shots of conventional photos without special tools, builds a simple 3D space within each photo using the spidery mesh technique, and expands the virtual spaces by connecting each space together. For high quality virtual tours, the capability of accurate space connection is crucial in order to provide smooth and seamless transitional scenes to virtual tourists during their navigation. Accurate scene connection is achieved by using an image registration technique, which finds correspondences automatically and estimates transformations. The registration method is a parametric approach and guarantees the accuracy and robustness based on coarse to-fine hierarchical estimation, fast computation based on image feature-correspondences, Fast Fourier Transformation (FFT)-based global matching, and automatic outlier removal by Random Sample Consensus (RANSAC). The expanded virtual space by our approach creates a sense of navigational freedom for virtual tourists with less distorted viewing.[5]

With the advances in information technology over the last decade, the traditional teaching format of having an individual lecture to an audience has been supplemented, and in some cases, replaced by the rapid development and implementation of new distance learning methods. As technology changes rapidly, the importance of educating and training diverse populations of civil/construction engineering/science students becomes more critical. Traditional lecture format teaching methods sometimes fall short of conveying the complex analysis and design principles that need to be mastered in structural design. However when the theories are exemplified in a virtual environment with multimedia, animation, interaction, and manipulated image visualization techniques in a virtual reality environment, students' conceptual understanding are enhanced. The important advantages of the virtual reality environment over other computer-based design tools are that it enables the user to interact with the simulation to conceptualize relations that are not apparent from a less dynamic representation, and to visualize models that are difficult to understand in other ways. The interactive nature of virtual environments made it a natural extension to the 3D graphics that enable students to visualize real life structures before actually building them. The main objective of this research was to create an innovative structural design concept visualization methodology on a web-based interactive virtual environment. The principal elements of the presented approach are: animation, user interaction, manipulated image visualization, and virtual navigation. The presented paper illustrates the design concept visualization techniques for flexural and shear behavior of reinforced concrete beams. It

was created using mainly Java and Virtual Reality Modeling Languages (VRML). The presented teaching and learning methodology employed a generic architecture, which was discipline/course independent, and can be adapted to various other civil/construction engineering/science courses that will certainly promote and enhance students' subject visualization and conceptual understanding.[6]

Quincy University in Illinois, United States of America has an online pledge system. Their website informs people on different ways on developing and giving to their university. Online pledges or donations to Quincy University uses secure server due to the capability of the system to accept donations through credit cards.[7].

The *Visportal* explores ways to deliver advanced Remote/Distributed Visualization (RDV) capabilities through a Grid-enabled web-portal interface. The effort focuses on latency tolerant distributed visualization algorithms, GUI designs that are more appropriate for the capabilities of web interfaces, and refactoring parallel-distributed applications to work in a N-tiered component deployment strategy. Most importantly, our aim is to leverage commercially supported technology as much as possible in order to create a deployable, supportable, and hence viable platform for delivering grid-based visualization services to collaboratory users.[8]

BEenchmarks for Explicit Model checkers (BEEM) include more than 50 models together with correctness properties. The benchmark set is accompanied by an comprehensive web portal, which provides detailed information about all models. The web portal also includes information about state spaces and facilities selection of models for experiments. The report describes the rationale beyond the form of the benchmark set, the design of the web portal and the main aspects of its realization, and also an example of an experimental analysis over the benchmark set: an analysis of a performance of sequential and distributed reach ability.[9]

Natural scientists increasingly rely on web-based information resources. The speed with which these data will be brought to the scientist's desktop in the near future, however, makes only too clear that automated support for efficient and effective use is in its infancy. In fact, most data are still processed by a combination of manual work and ad hoc programming. The Paper *Building Web Resources for Natural Scientists* proposes to alleviate some of the problems by means of a research environment: a web site with

highly graphical user interface that allows transparent access to resources and performs a certain degree of fusion of the information found.[10]

III. Theoretical Framework

A. University of the Philippines Manila (UPM or UP Manila)

The University of the Philippines Manila is the center of health sciences education in the University of the Philippines System and in the country. The university currently has nine degree granting units: College of Allied Medical Professions, College of Arts and Sciences, College of Dentistry, College of Medicine, College of Nursing, College of Pharmacy, College of Public Health, National Teacher Training Center for Health Professions, and School of Health Sciences.[11]

UPM fulfills its role of improving the health of Filipinos by constantly ensuring the significance and excellence of its academic programs, generating significant knowledge and technologies through its researches, and rendering varied forms of health, training and extension services to Filipino communities.

The health colleges, units, programs and facilities that comprise UP Manila include the nine degree granting units that offer a total of 25 undergraduate programs and 33 graduate courses; the Philippine General Hospital, the largest government hospital in the country which provides health care services to about half a million patients a year from all over the country and trains hundreds of medical interns, residents and fellows, and students of allied medical professions; the National Institutes of Health, which serves as the coordinating unit for health research programs, projects and activities; and several academic and administrative support offices.

UP Manila develops programs that serve as models and benchmarks of health education and health care in the Philippines. Many of the pioneering curricular programs are offered only in the University even until now, such as the Integrated Arts and Medicine Program (seven-year medical program); Master of Rehabilitation Science; MS in Clinical Audiology; MA in Health Policy Studies; the step-ladder

curriculum of the School of Health Sciences, its unit based in Leyte south of Manila, which consists of integrated courses on baranggay health work, community health work, midwifery, nursing, and community medicine; and recent offerings that include the MS in Medical Informatics and the Diploma in Bioethics, a joint program with UP Diliman's College of Social Science and Philosophy.

For years now, the university's graduates have been occupying positions of leadership in government, private, and nongovernmental institutions and professional organizations where they exercise a great deal of influence and advocacy in determining directions and policies on national health care program planning and implementation.

In research, UP Manila has been pursuing its mandate by generating and disseminating knowledge and technologies that can effectively contribute to the improvement of the quality of life of Filipinos. Its research outputs have greatly influenced the thrusts and directions of national health care programs and have been used as basis for policy formulation and implementation.

Researches which exerted the biggest national impact on Philippine health care include several research-based program recommendations generated through the national surveys on blindness and the studies on Hepatitis B, diarrhea, and common parasitic infections, which were adopted by the Department of Health; commercialization of five herbal medicinal formulations (Ilagundi, yerba buena, tsaang gubat, sambong and akapulko); textbooks and instructional manuals which are also used by other academic institutions; and very recently, the evaluation by NIH of the performance of PhilHealth, the country's national health insurance program .

The excellence of UP Manila's health courses is proven by the consistent 100% passing of its graduates in nearly all health licensure examinations every year, their placement in the top 10/20 posts of each exam, and consistently garnering the highest national passing rate among all health universities and colleges in the country, a feat which has been recognized many times by the Professional Regulation Commission.[12]

B. **Proposed Sports Science and Wellness Center (Proposed SSWC)**

Envisioned as the Nucleus of the Sports Science and Wellness Center, a gymnasium will be constructed to symbolize the holistic nature of UP Manila as the Health Sciences Center.

Functions and programs

1. Wellness and fitness programs
 - a. Physical fitness for staff, executives and others
 - b. Rehabilitation programs for patients and special groups (handicapped)
2. Sports as a Science
 - a. Generic and metabolic testing for athletes
 - b. Center for research on sports development and other related fields
3. Physical Education Center
 - a. serve as a gymnasium for all units of UP Manila
 - b. serve as a venue for sports and other special events

Cost Benefit

1. Self-sustaining
 - a. It will be a self-sustaining facility where maintenance of the building and equipment will come from the rental fees from other users and other programs.
 - b. It will also save the University rental fees when it uses other venues for PE and other events.
2. Varied sports activities
 - a. Department of Physical Education, College of Arts and Sciences, UP Manila can increase its course offerings.
 - b. Students will have a wider choice of PE activities without worrying about rental fees and risks from going to venues outside the campus.
3. Opportunity for Development of the Department

- a. In collaboration with the College of Arts and Sciences, the College of Medicine and the College of Allied Medical Professions (CAMP), the Department of Physical Education shall grow to become a center for Sports Science and Sports Medicine
- b. The site being adjacent to the CAMP, the National Institutes of Health and a possible Rehabilitation Medicine Building, these shall form the Sports Sciences, Wellness and Rehabilitation Complex.

Special Programs

1. Institutionalization of programs for patients, and special groups (handicapped) who will also be trained in various sports in collaboration with other Colleges.
2. Collaboration with the Philippine Sports Commission for more scientific approach to sports human resource development through genetic and metabolic testing.
3. Institutionalization of extension program (for out-of-school youth, etc.) to help other special groups have activities that will focus on excellence and divert their attention from mischief or non-constructive activities.

The proposed SSWC will be built on a 1800 square meter lot and will include a three-floor gymnasium with classrooms, laboratories, training rooms, basketball and volleyball courts, a track and jogging oval, and a swimming pool.[see Appendix A]

Phases of Construction

1. Construction of the three-floor gymnasium which includes:
 - a. 1st floor: classrooms, laboratories, training rooms and parking lot
 - b. 2nd floor: basketball and volleyball courts and bleachers
 - c. 3rd floor: 200m track and jogging oval

*Total Cost: P108M
2. Construction and completion of the following
 - a. Swimming pool
 - b. Classroom furniture
 - c. Landscaping
 - d. Overpass connecting the gymnasium to CAMP and the Rehabilitation Clinics

*Total cost: P40M

C. University of the Philippines Manila Website

The University of the Philippines Manila Website features different links to certain information and contents as shown in Figure 1. The website features UP Manila’s history, admission, programs and degrees offered, links to its colleges and Philippine General Hospital, news and events section and articles related to UP Manila.



Figure 1. UP Manila's Website

The College of Arts and Sciences Website is currently under construction as shown in Figure 2. The website could have linked the web pages of its departments provide news about the different activities and projects of the college.

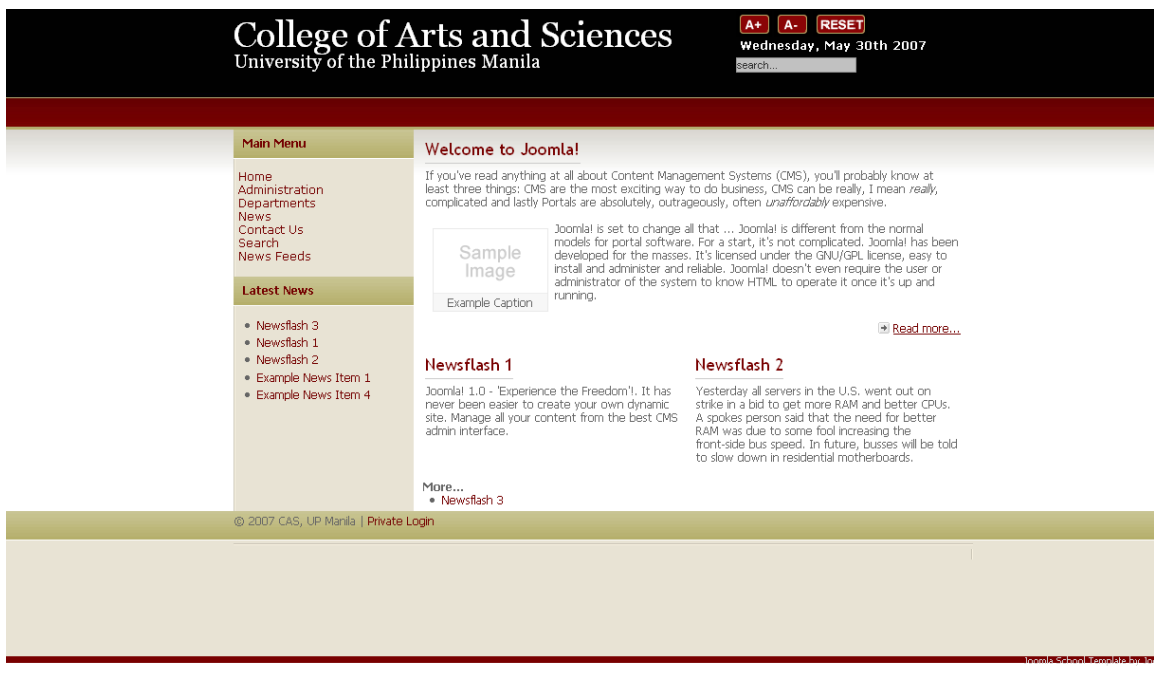


Figure 2. College of Arts and Sciences' Website

The Sports Science and Wellness Center Website as shown in Figure 3 is not fully functional. It links to other web pages relating to SSWC and discourses information on donations, pledges, and construction of the center.

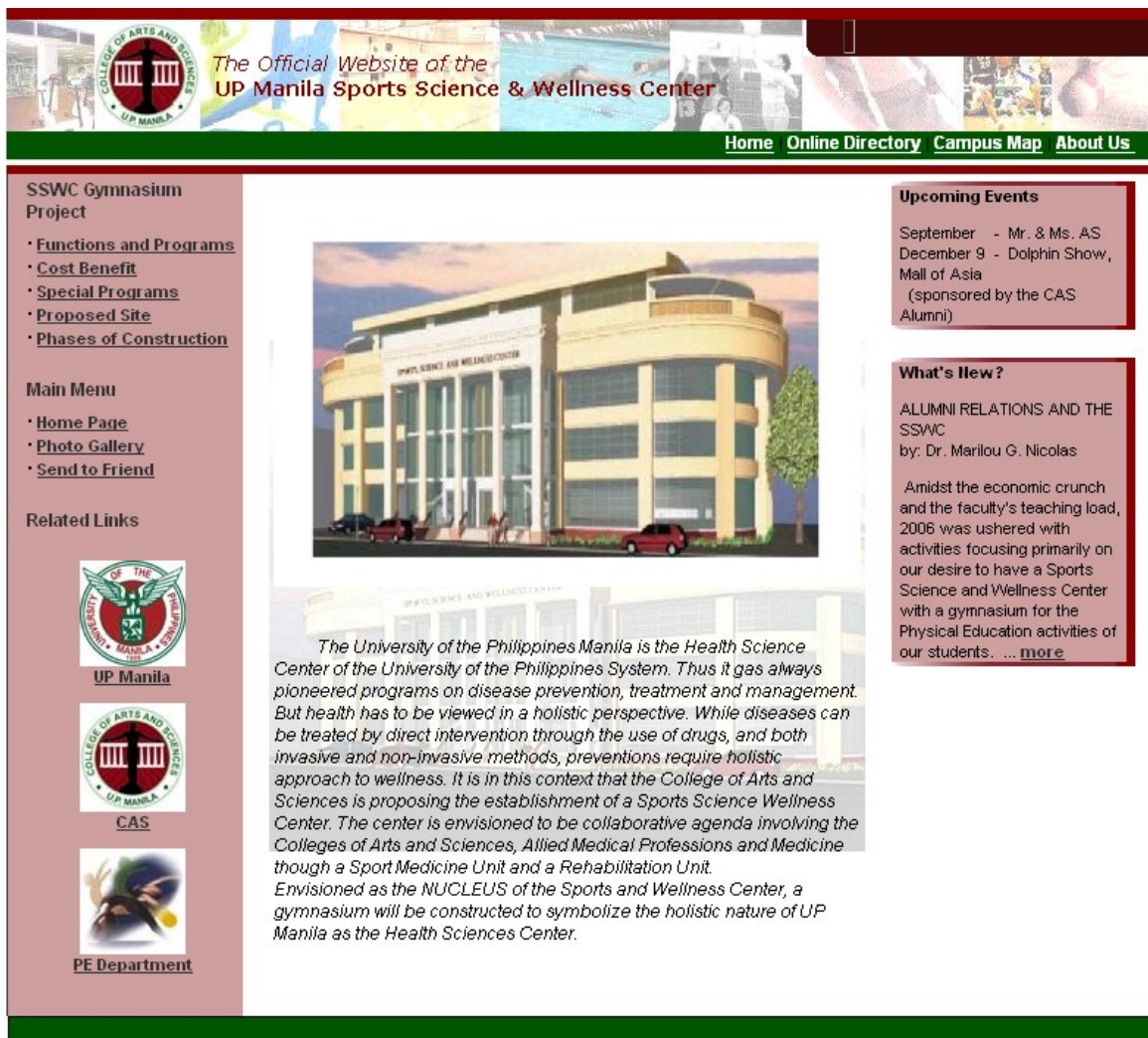


Figure 3. SSWC's Website

The only active UP Manila Alumni website is the UP Manila Alumni Job Portal. It is a version of online recruitment based on most widely used recruitment strategies and services around the globe as shown in Figure 4. It aims to cater its students and companies registered into its system by giving them the best assistance in their respective intentions in the business.



Figure 4. UP Manila Alumni Job Portal

D. Web Portal

A web portal is a site on the World Wide Web that typically provides personalized capabilities to its visitors, providing a pathway to other content. It is designed to use distributed applications, different numbers and types of middleware and hardware to provide services from a number of different sources.[13]

Web portals have a centralized application that has access to various other applications within the same enterprise to share the information across the applications. In web portals, there is better communication between various types of user

A web portal is a term, often used interchangeably with gateway, for a World Wide Web site whose purpose is to be a major starting point for users when they connect to the Web. There are general portals and specialized or niche portals. Some major general portals include Yahoo, CNET, AOL, and MSN.[14]

E. Information Technology (IT)

Information Technology is a broad subject concerned with the use of technology in managing and processing information. Information technology refers to both the hardware and software that are used to store, retrieve, and manipulate information. At the lowest level you have the servers with an operating system. Installed on these servers are the databases and web servers. The servers are connected to each other and to users via a network infrastructure. And the users accessing these servers have their own hardware, operating system, and software tools.

IT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit and retrieve information, securely.[15]

F. Database Management System (DBMS)

A Database Management System is a suite of programs which typically manage large structured sets of persistent data, offering ad hoc query facilities to many users. They are widely used in business applications. A DBMS can be extremely complex set of software programs that controls the organization, storage, and retrieval of data in a database. It also controls the security and integrity of the database. The DBMS accepts request for data from the application program and instructs the operating system to transfer the appropriate data. Database Management System controls the organization, storage, retrieval, security and integrity of data in a database. It accepts requests from the application and instructs the operating system to transfer the appropriate data.[16]

DBMS is a collection of programs that enables you to store, modify, and extract information from a database. DBMS lets one or more computer users create and access data in a database. The DBMS manages user requests (and requests from other programs) so that users and other programs are free from having to understand where the data is physically located on storage media and, in a multi-user system, which else may also be accessing the data. In handling user requests, the DBMS ensures the integrity of the data (that is, making sure it continues to be accessible and is consistently organized as intended) and security (making sure only those with access privileges can access the data).[17]

G. 3D Computer Graphics

3D computer graphics are works of graphic art that were created with the aid of digital computers and specialized 3D software. In general, the term may also refer to the process of creating such graphics, or the field of study of 3D computer graphic techniques and its related technology.

3D computer graphics are distinct from 2D computer graphics in that a three-dimensional virtual representation of objects is stored in the computer for the purposes of performing calculations and rendering images. In general, the art of 3D graphics is akin to sculpting or photography, while the art of 2D graphics is analogous to painting. In computer graphics software, this distinction is occasionally blurred; some 2D applications use 3D techniques to achieve certain effects such as lighting, while some primarily 3D applications make use of 2D visual techniques.[18]

H. Virtual Reality Modeling Language (VRML)

Virtual Reality Modeling Language, usually pronounced as *vermal*, is a standard file format for representing 3D interactive vector graphics, designed particularly with the World Wide Web in mind. VRML is like the 3D equivalent of Hypertext Markup Language (HTML).

VRML produces a world where you can figuratively move within this space. That is, as you press keys to turn left, right, up or down, or go forwards or backwards, the

images on your screen will change to give the impression that you are moving through a real space.

VRML files are commonly called worlds and have the .wrl extension (for example island.wrl). Although VRML worlds use a text format they may often be compressed using gzip so that they transfer over the internet more quickly. Many 3D modeling programs can save objects and scenes in VRML format.[19]

I. **3D Studio Max (3ds max)**

3D Studio Max is a full-featured 3D graphics application developed by Autodesk Media and Entertainment. It runs on the Win32 and Win64 platforms. As of August 2006, 3ds Max is in its ninth version generation.

The original 3D Studio product was created for the DOS platform by the Yost Group and published by Autodesk. Autodesk purchased the product at its second release mark and internalized development entirely over the next two releases. After 3D Studio Release 4, the product was ported to the Windows NT platform, and originally named "3D Studio MAX." This version was also originally created by the Yost Group. It was released by Kinetix, which was at that time Autodesk's division of media and entertainment. Later, the product name was changed to "3ds max" to better comply with the naming conventions of Discreet, a Montreal-based software company which Autodesk had purchased. At release 8, the product was again branded with the Autodesk logo, and the name was again changed to "3ds Max" (upper and lower case).[20]

J. **Cortona® VRML Client**

Cortona® VRML Client is a fast and highly interactive Web3D viewer that is ideal for viewing 3D models on the Web. A set of optimized 3D renderers guaranties the best visual quality on both PCs with the latest video-cards and those with more basic video card capabilities.

Cortona VRML Client works as a VRML plug-in for popular Internet browsers (Internet Explorer, Netscape Browser, Mozilla, Mozilla Firefox, etc.) and office applications (Microsoft PowerPoint, Microsoft Word, etc).[21]

K. Cosmo Worlds

Cosmo Worlds is Used create VRML worlds for publishing on the World Wide Web. Cosmo Worlds provides you with powerful tools to model complex objects and create exciting, animated worlds. Polygon reduction and other optimization tools ensure that your world will be compact once you publish it on the Web--visitors to your world will find it quick to download and navigate. Cosmo Worlds is also used to edit textures from VRML files exported from 3ds max.[22]

L. Definition of Terms

1. Render - the process of generating an image from a model, by means of software programs.
2. Web3d - this Consortium has advanced X3D as an integrated 3D graphics and multimedia framework in the ISO process for Information technology—Computer graphics and image processing.
3. 3D modeler - a software application used to visually produce polygonal 3D models
4. world – the hyperspace produced by VRML. a 3-dimensional space that appears on your display screen. And you can figuratively move within this space
5. gateway - a node on a network that serves as an entrance to another network.

IV. Design and Implementation

A. Entity Relationship Diagram (ERD)

The Entity Relationship Diagram of SSWC Web Portal is shown in Figure 5. Users can be distinguished as either a System Administrator or an SSWC coordinator, each with its own user-specific functionalities. Prospective donors, also known as guests, can also refer other prospective donors. The attributes of the different entities are illustrated in Figures 6-11.

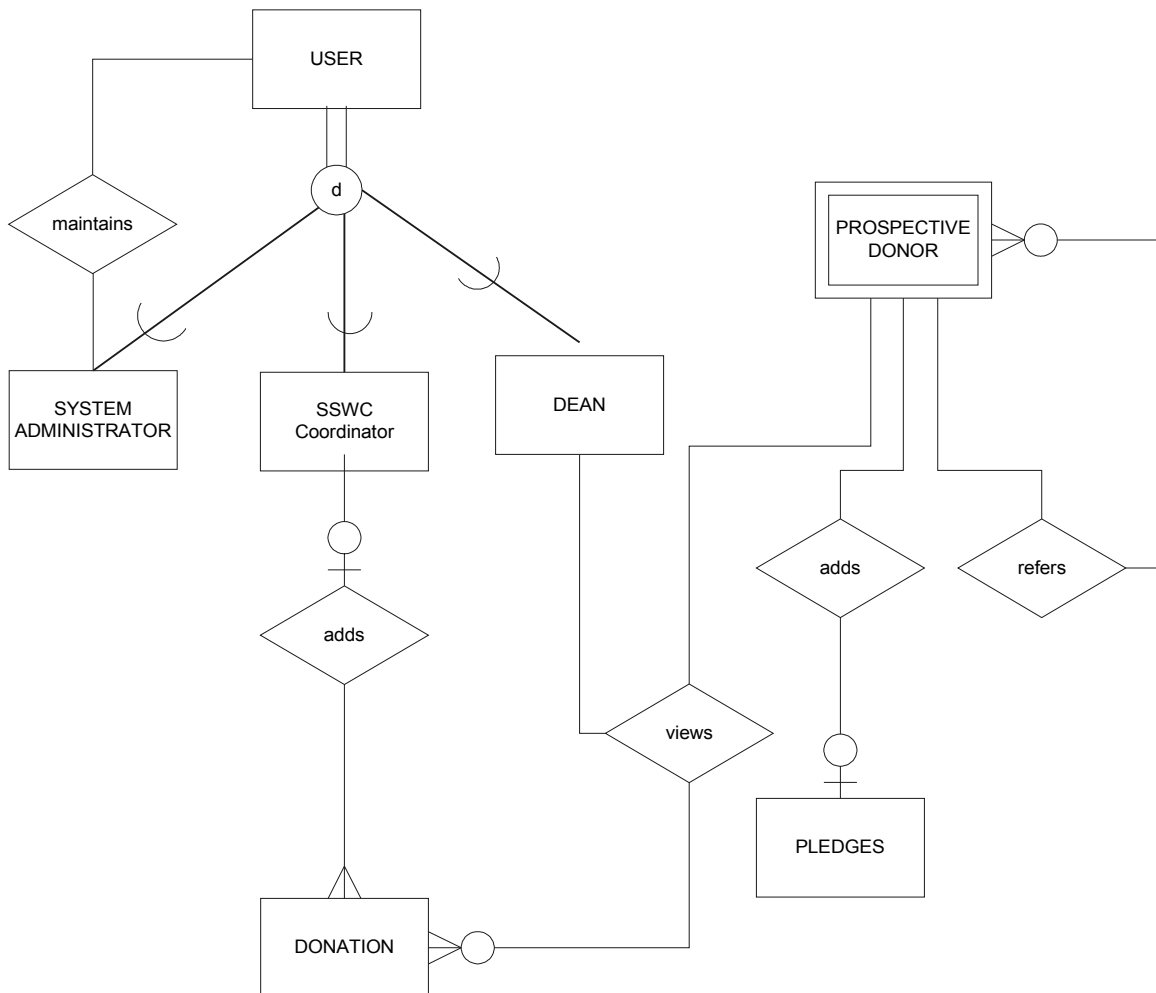


Figure 5. Entity Relationship Diagram, Web Portal with Virtual Tour of the Proposed SSWC

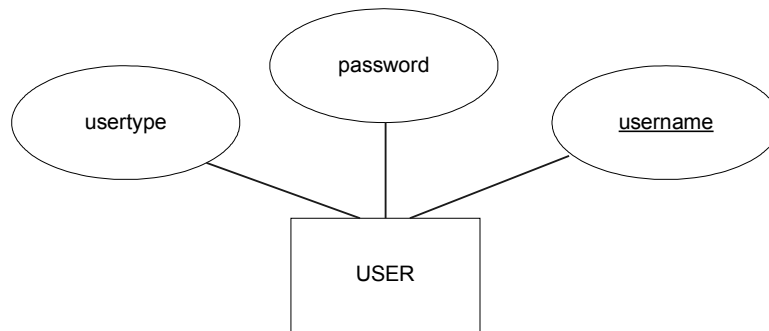


Figure 6. Attributes of the User entity, Web Portal with Virtual Tour of the Proposed SSWC

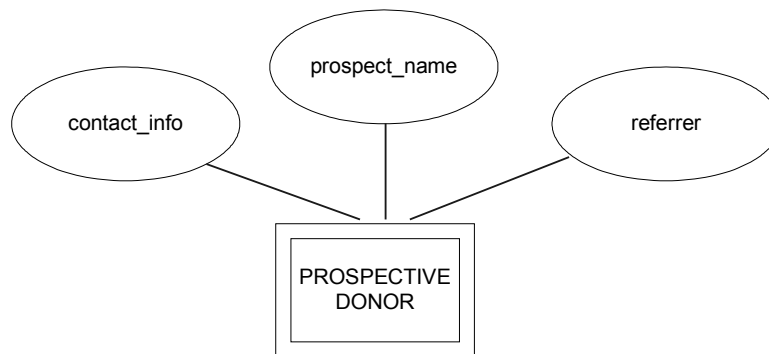


Figure 7. Attributes of the Prospective Donor entity, Web Portal with Virtual Tour of the Proposed SSWC

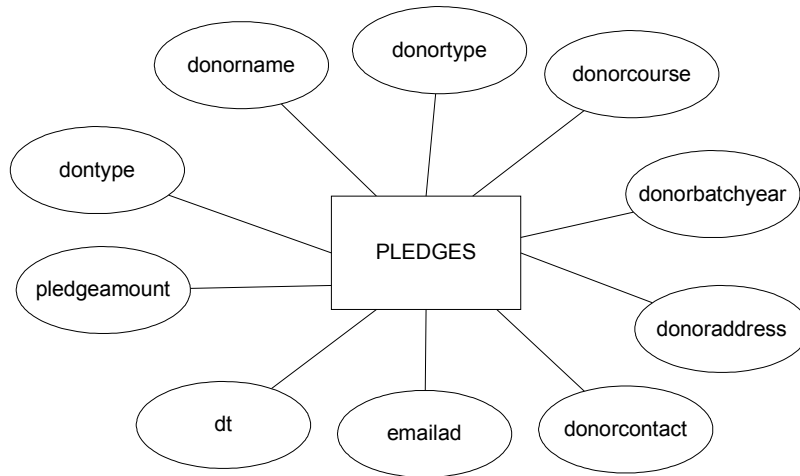


Figure 8. Attributes of the Pledges entity, Web Portal with Virtual Tour of the Proposed SSWC

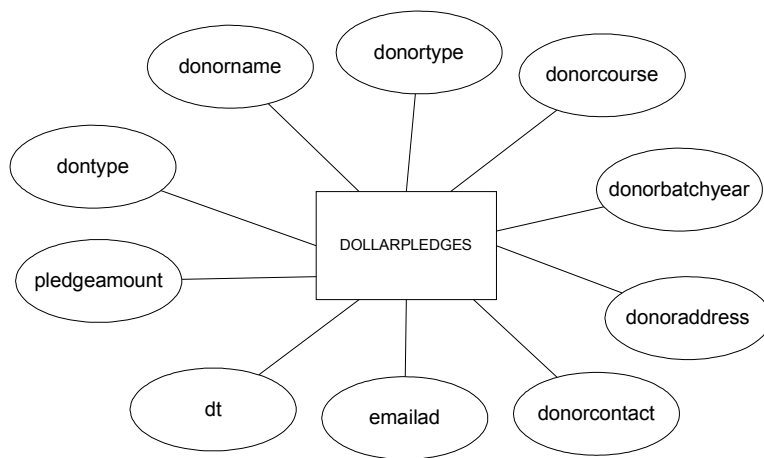


Figure 9., Attributes of the Pledges entity, Web Portal with Virtual Tour of the Proposed SSWC

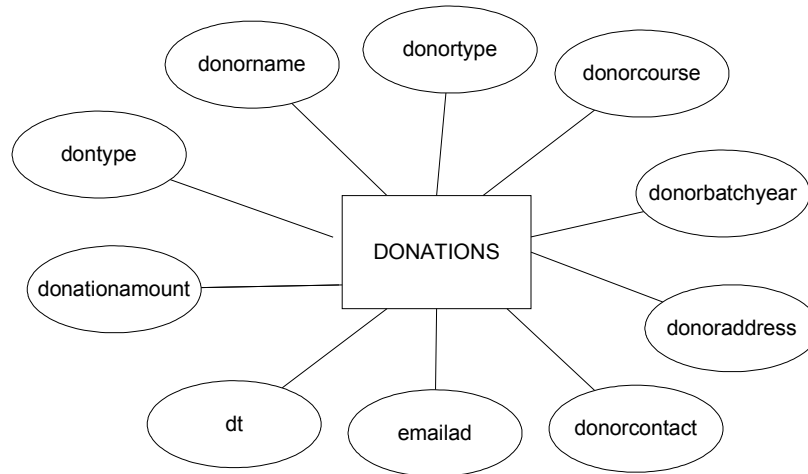


Figure 10. Attributes of the Donations entity, Web Portal with Virtual Tour of the Proposed SSWC

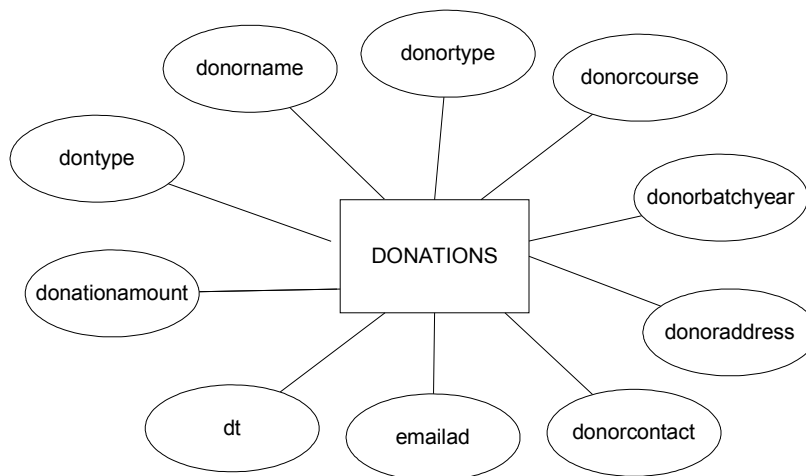


Figure 11. Attributes of the Dollardonations entity, Web Portal with Virtual Tour of the Proposed SSWC

B. Data Dictionary

Figures 6 to 10 have a corresponding table in the database. Thus, there are a total of 5 tables in the database and are specified as follows:

1. Users – list of all registered users

Attribute	Data Type		Description
Username	nvarchar(15)	Primary key	Unique ID for each user
Usertype	Char(1)		Role of each user. A for System Administrator. C for SSWC Coordinator. D for Dean
password	Nvarchar(10)		secret word or phrase that the user uses to gain be able to login to the system

2. Prospective Donor – the guest/visitor of the site. Can also be the person referred to by other prospective donors.

Attribute	Data Type	Description
Prospect_name	varchar(25)	Name of the prospective donor
Contact info	Char(25)	Contact information given by the referrer
Referrer	varchar(20)	Prospective donor who referred other people who might be interested in donating to SSWC

3. Pledges – where information about the Peso pledges are stored.

Attribute	Data Type	Description
Donorname	Varchar(30)	Name of the prospective donor
Donortype	Varchar(6)	Type of the prospective donor. Can either be a UP Alumni or a UP friend

Donorcourse	Varchar(20)	If the prospective donor is a UP Alumni, the degree finished in UP is to be filled
Donorbatchyear	Int(4)	If the prospective donor is a UP Alumni, the year when the degree was finished in UP is to be filled
Donoraddress	Varchar(50)	Address of the prospective donor
Donocontact	Varchar(15)	Contact information of the prospective donor
Emailad	Varchar(25)	E-mail address of the prospective donor.
pledgeamount	Int(8)	Amount the prospective donor wishes to pledge and donate
Dontype	Varchar(5)	Type of donation. Can either be cash or check.
dt	datetime	Date when the pledge was submitted by the prospective donor

4. Dollarpledges – where information about the dollar pledges are stored.

Attribute	Data Type	Description
Donorname	Varchar(30)	Name of the prospective donor
Donortype	Varchar(6)	Type of the prospective donor. Can either be a UP Alumni or a UP friend
Donorcourse	Varchar(20)	If the prospective donor is a UP Alumni, the degree finished in UP is to be filled
Donorbatchyear	Int(4)	If the prospective donor is a UP Alumni, the year when the degree was finished in UP is to be filled
Donoraddress	Varchar(50)	Address of the prospective donor
Donocontact	Varchar(15)	Contact information of the prospective donor
Emailad	Varchar(25)	E-mail address of the prospective donor.
pledgeamount	Int(8)	Amount the prospective donor wishes to pledge and donate
Dontype	Varchar(5)	Type of donation. Can either be cash or check.
dt	datetime	Date when the pledge was submitted by the prospective donor

5. Donations – where information about the donations are stored.

Attribute	Data Type	Description
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Donorname	Varchar(30)	Name of the donor
Donortype	Varchar(6)	Type of the donor. The donor can either be a UP Alumni or a UP friend
Donorcourse	Varchar(20)	If the prospective donor is a UP Alumni, the degree finished in UP is to be filled
Donorbatchyear	Int(4)	If the prospective donor is a UP Alumni, the year when the degree was finished in UP is to be filled
Donoraddress	Varchar(50)	Address of the donor
Donocontact	Varchar(15)	Contact information of the donor
Emailad	Varchar(25)	E-mail address of the donor
donatioamount	Int(8)	Amount the donor donated
Dontype	Varchar(5)	Type of donation. Can either be cash or check.
dt	datetime	Date when the pledge was submitted

6. Dollardonations – where information about the dollar donations are stored.

Attribute	Data Type	Description
Donorname	Varchar(30)	Name of the donor
Donortype	Varchar(6)	Type of the donor. Can either be a UP Alumni or a UP friend
Donorcourse	Varchar(20)	If the prospective donor is a UP Alumni, the degree finished in UP is to be filled
Donorbatchyear	Int(4)	If the prospective donor is a UP Alumni, the year when the degree was finished in UP is to be filled
Donoraddress	Varchar(50)	Address of the donor
Donocontact	Varchar(15)	Contact information of the donor
Emailad	Varchar(25)	E-mail address of the donor.
donatioamount	Int(8)	Amount the donor donated
Dontype	Varchar(5)	Type of donation. Can either be cash or check.
dt	datetime	Date when the pledge was submitted by the SSWC coordinator

C. Context Diagram

The Context Diagram of the SSWC Web Portal is presented in Figure 12. The prospective donors, SSWC coordinator, and the System Administrator are the external interactors.

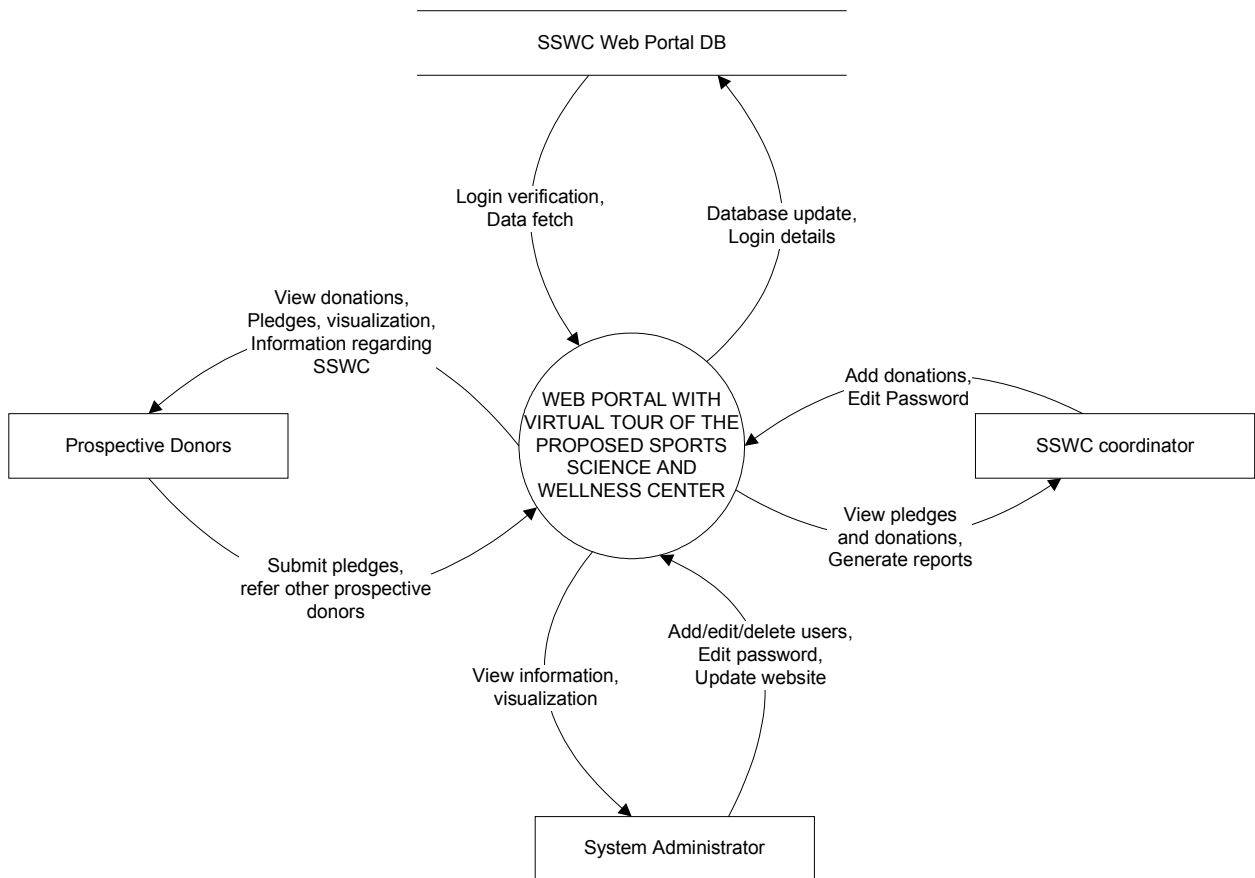


Figure 12. Context Diagram of Web Portal with Virtual Tour of the Proposed SSWC

D. Data Flow Diagram(DFD)

The top-level DFD of the SSWC web portal is shown in Figure 13. The different processes include login, add pledges, add donations, view pledges and donations, generate and print reports, update message board, and update construction images.

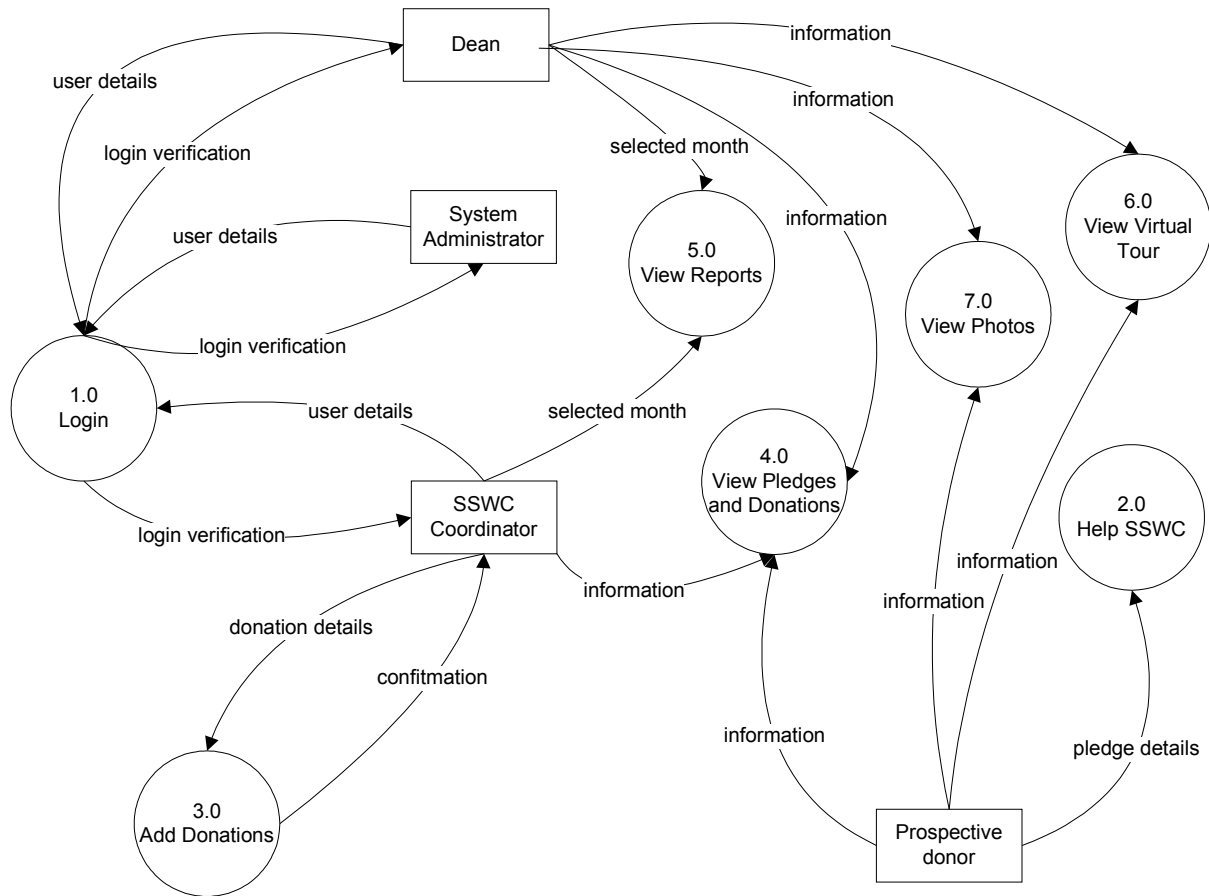


Figure 13. Top-Level Data Flow Diagram of Web Portal with Virtual Tour of the Proposed SSWC

Process Login can still be sub-exploded into two processes, account validation and edit password as shown in Figure14. On the other hand, Process Help SSWC can still be sub-exploded into two processes namely add pledge and refer prospects as shown in Figure 15. Process Add Donations can be sub-exploded into add donations from donors with existing pledges and donors without existing pledges as shown in Figure 16. View pledges and donations can be sub-exploded into peso pledges/donations and dollar pledges/donations as shown in Figure 17. The View Reports process can be sub-exploded to list of referred prospective donors and pledges and donations of a selected month and year while View Virtual Tour process can be sub-exploded to online tour and offline tour ash shown in Figure 19. Lastly, View Photos can be sub-exploded to Old SSWC photos, proposed SSWC photos, and Construction Photos as shown in Figure 20.

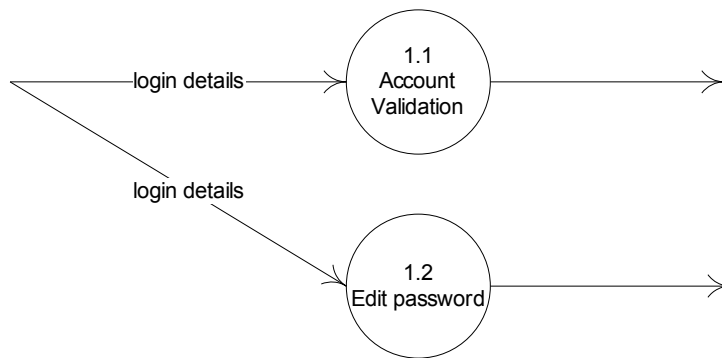


Figure 14. Sub-explosion of Login of Web Portal with Virtual Tour of the Proposed SSWC

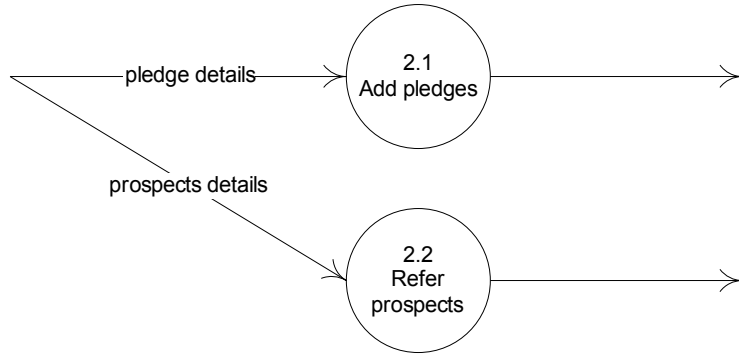


Figure 15. Sub-explosion of Help SSWC of Web Portal with Virtual Tour of the Proposed SSWC

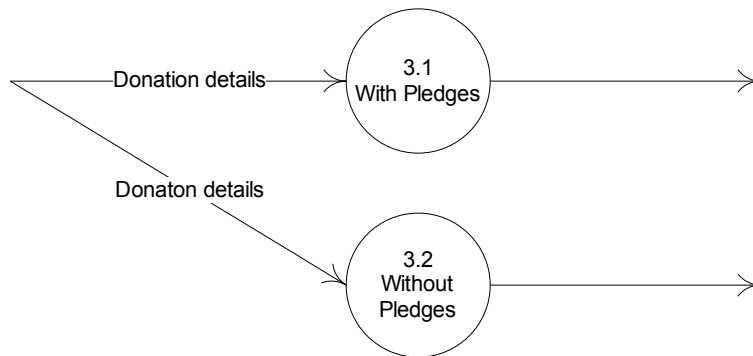


Figure 16. Sub-explosion of Add Donations of Web Portal with Virtual Tour of the Proposed SSWC

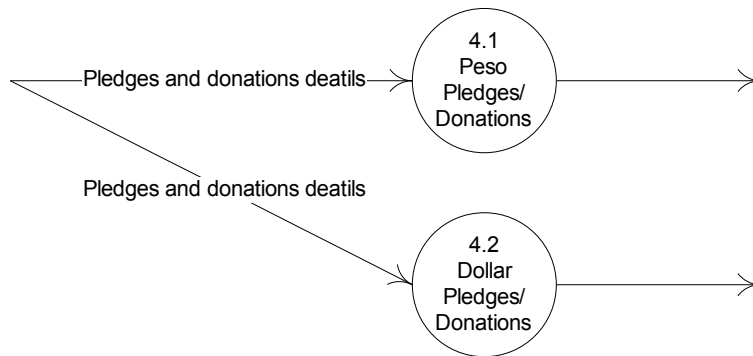


Figure 17. Sub-explosion of View Pledges and Donations of Web Portal with Virtual Tour of the Proposed SSWC

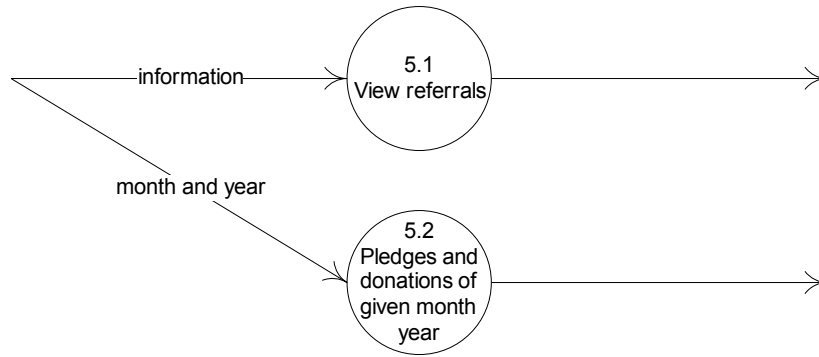


Figure 18. Sub-explosion View Reports of Web Portal with Virtual Tour of the Proposed SSWC

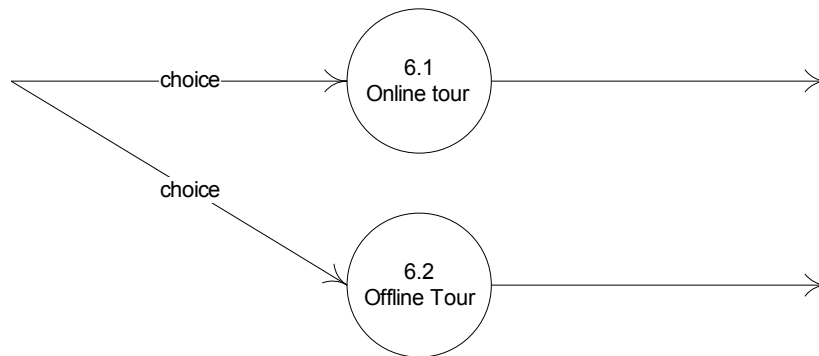


Figure 19. Sub-explosion View Virtual Tour of Web Portal with Virtual Tour of the Proposed SSWC

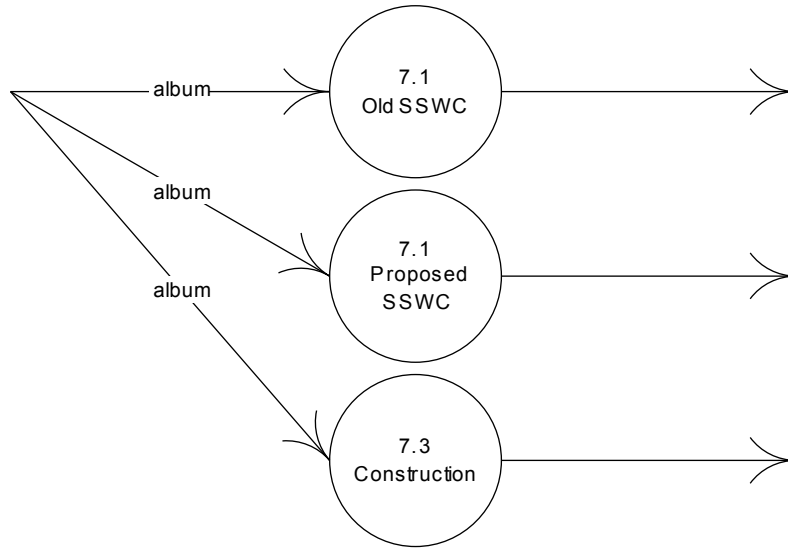


Figure 20. Sub-explosion View Photos of Web Portal with Virtual Tour of the Proposed SSWC

E. Technical Architecture

1. The minimum hardware requirements for the machine of the developer that must be used in the system are:
 - a. CPU: 1GHz or higher
 - b. RAM: 1GB or higher
 - c. VRAM: 128MB or higher
 - d. Internet Connection: Cable/DSL or higher (at least 1mbps download speed)

2. The software requirements for the developer that are necessary for the system to function are:
 - a. Windows OS (Windows 98/2000/XP/ME)

- b. Internet Explorer 5.0 or higher
 - c. VRML plug-in for Internet Explorer (can be downloaded for free)
 - d. PHP
 - e. MySQL
 - f. 3D Studio Max
 - g. Cosmo Worlds
3. The minimum hardware requirements for web portal visitors are:
- a. CPU: 1GHz or higher
 - b. RAM: 512MB or higher
 - c. Internet Connection for the online virtual tour: Cable/DSL or higher (at least 1mbps download speed). For downloadable virtual tour, at least 256kbps bandwidth speed is needed.
4. The software requirements for the Web Portal visitors/users are:
- a. Windows OS (Windows 98/2000/XP/ME)
 - b. Internet Explorer 5.0 or higher
 - c. VRML plug-in for Internet Explorer (can be downloaded for free)