

ADVANCED SCHOOL OF SYSTEMS AND DATA STUDIES (ASSDAS)

DEPARTMENT OF INFORMATION TECHNOLOGY

TOPIC

**DESIGN OF A 3D ART GALLERY**

BY

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**(ADS19A00110Y)**

A PROPOSAL SUBMITTED TO THE ACCRA INSTITUTE OF TECHNOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE DEGREE IN INFORMATION TECHNOLOGY

DATE

SEPTEMBER, 2022

**INTRODUCTION SECTION**

**CHOSEN TOPIC**

DESIGN OF A 3D ART GALLERY

**PROBLEM STATEMENT**

Despite researching LOOM AFRICAN ART GALLERY, I get to understand that one cannot access the African Art Gallery because of its physical location which is at Ide Rd, Accra. People require access to Art found in galleries to strengthen their sense of artistic identity. People are unable to visit galleries located hundreds of kilometers away. Even when it is open, the physical gallery is frequently so filled that visitors cannot enter without making reservations months in advance. In the course of the system investigation, some problems were noted:

* Much time is devoted to searching for information about a particular item.
* The Art gallery is located at a particular geographical location and thus people that live far off cannot benefit from the gallery.
* Documentation of items in the Art gallery is pretty hard and rigorous.
* Statistics of the Art gallery contents are inaccurate due to human error.
* The development of our system will help solve this problem and also allow visitors to visit the Art gallery even when the actual arts are far away.

**MAIN AND SPECIFIC OBJECTIVE**

The project is not done without an objective. The reason for embarking on the project is to remove the limitations found in the existing system. Majorly this is to overcome the distance barrier and then create a solution to documentation and retrieval of information. Having specified the problems inherent to the present art gallery, the specific objectives of the project are:

* To build a system that will provide an art gallery that will present the gallery to people living on their computer systems.
* To develop a system that will balance a load of overwhelming visitors having to be at the physical Art gallery daily. This in turn will allow the manager of the gallery to keep the physical gallery in order.
* To provide a system that will keep a record of the item in a well-formatted manner. E.g., according to the year, artists, item title, etc.
* Visitors can be able to view the gallery in 3D.

**RESEARCH QUESTIONS OF THE STUDY**

Questions for the study Answers should be YES / NEUTRAL / NO

* The mouse gadget made it simple to move around the 3D Art Gallery.
* Without becoming lost or confused, it was simple to go through the gallery display sections (for example, by simulating a walk-through).
* Using the keyboard keys to traverse the Virtual Art Gallery was simple.
* The "Navigation Techniques and Tips" supplied when entering the Web site created for the Virtual Art Gallery were textual instructions with accompanying graphic images that were simple to grasp and follow.
* Due to the 3D visual environment and interactive interface characteristics offered by the 3D application, you felt at ease doing the walkthrough within the Virtual Art Gallery?
* The number of artistic photographs shown in each of the separately categorized rooms in the 3D Art Gallery seemed to be an appropriate number for viewing purposes.
* The overall 3D visual environment/setting of the 3D Art Gallery included an acceptable level and utilization of "related interactive capabilities."?

**SIGNIFICANCE OF THE STUDY**The development of this project is not done for just a test of knowledge; instead, the project has several significances which we will give attention to in this section. Principally, the significance of the work is to collect, preserve, interpret, and display items of cultural, artistic, or scientific significance for the education of the public. The significances are pointed out as follows:

* Improved Art gallery service due to greater access to accurate information.
* Increased productivity and work satisfaction among staff members as it eliminates duplication of effort.
* More economical and safer means of storing and keeping track of item records.
* Easier access to Information for the generation of reports, as well as more accurate and faster results from statistical analyses.
* Reduces errors and eliminates the problem of long and repetitive manual processing.
* Greater accountability and transparency in operations.
* Improved efficiency and effectiveness in administration and management as it has unprecedented access to real-time information.
* More reliable security for sensitive and confidential information.

**LITERATURE REVIEW**

As the researchers used various frameworks in their investigations, the models used in the literature to try to describe the viewer's art experience differed. For instance, the model first put forth by Leeder, Belk, Oeberst & Augustin in 2004 and later expanded upon in Leeder & Nadal's (2014) paper offers an integrated framework for understanding the process of appreciating art on an aesthetic level and identifies aesthetic judgment and aesthetic emotion as two distinct outcomes of the art experience (Leeder & Nadal 2014). The approach put out by Peplowski & Akiba (2011) places a strong emphasis on the conceptual shift and meta-cognitive reflection that follow the initial disruption caused by art. Although the issue of how the perception of the gallery affects the viewer's perception of the artwork has been researched, for example by Kirk, Skog, Hulme, Christensen, & Zeki (2009), the stream of literature on the psychology of art does not place much emphasis on the relationship between the viewer's art experience (on the traditional or online market) and the impact of this experience on the perception of the art gallery brand which displays the artwork. In terms of unstudied subjects, there are (at least) the following connections:

* the connection between the viewer's online art experience and their behavior related to potential purchases, such as their intention to buy a ticket or piece of art;
* the patron's attitude toward the brand (e.g., the perception that the brand of a particular artist is trustworthy);
* the online viewer's intention to recommend the art gallery brand as a result of visiting the art online gallery.

The environment in which an artwork is viewed is increasingly acknowledged as a key aspect impacting the viewer's experience with art, in contrast to the formalist conceptions of art. Examples of its effects on how people see art include Duchamp's "readymade" pieces (such as "Bottle Rack," "Fountain," and "Bicycle Wheel") or the Pop Art movement (see, for example, the debate in Leeder & Nadal 2014, Gartus & Leeder 2014). The extent of the pieces making up the "design" as well as the information about the art itself helps to define the context of presentation in the online environment.

**METHODOLOGY SECTION**

**RESEARCH METHODOLOGY**

Research methodology is the name given to the organized way of performing research. Methods are employed in many various types of research, and the word is commonly understood to include study design, data gathering, and data analysis. Methodologies for conducting the research might be quantitative (counting how many times someone acts in a certain way, for instance) or qualitative (for example, asking people how they feel about a certain situation). However, this is not always achievable, mainly because of time and budgetary restrictions. Ideally, complete research should attempt to include both qualitative and quantitative approaches.

To test theories or hypotheses, research methodology is typically used in academic research. A good design should guarantee that the research is valid, that is, that it directly tests the hypothesis and does not include other variables and that the study is dependable, that is, that it consistently produces the same results. Here, the SSADM methodology is applied. A systems approach to the study and design of information systems is the Structured Systems Analysis and Design Method (SSADM).

**SSADM:** splits a project for creating an application into modules, stages, steps, and tasks. It offers a structure for outlining a project in a style that's appropriate for managing it. The following are the reason why SSADM is used:

* Enhance project management and control
* utilize both experienced and inexperienced development staff more effectively
* create higher-quality systems
* creates detailed strategy documentation
* helps develop resilient systems.
* make projects more resilient to staff loss
* enable projects to be supported by computer-based tools like computer-aided software engineering systems (CASE)
* create a framework for effective communication among project participants.

**HOW SSADM IS USED:**

**Begin Feasibility study:** Examining the technological and financial viability. Both the project and the issues are recognized. Out of up to five options, the best business choice is picked. The feasibility step is not necessary for SSADM.

**Stage 1:** *Analyzing the current situation***:** defining general criteria, researching the latest facts, and processing. Cost estimates are being made as the project is identified. This step is crucial since any errors here will negatively impact the project as a whole.

**Stage 2:** *Business Systems Options***: the** creation of business system specifications. Analyzing the implications and advantages of each suggestion.

**Stage 3:** *Specifying requirements***:** Detailing the distinction between functional and non-functional requirements new methodologies and approaches to explain processing and data structures are proposed.

**Stage 4:** *Technical system Options***:** Definition and selection of preservation of certain technological possibilities, such as various implementation techniques. and Examine

**Stage 5:** *logical design***:** maybe concurrent with stage 4. The definition and choice of user dialogues, update procedures, and inquiry processes.

**Stage 6:** *Physical design***:** The SSADM cycle is finished, and the applications are prepared for delivery, after producing a physical design and developing a function and data design.

**SYSTEM ANALYSIS**

Analyzing anything is carefully looking into its origins or root causes. The goal of a system analysis is to conduct a thorough investigation into an existing system to identify its flaws and strengths so that a decision can be made regarding whether to keep or replace it. In this instance, we don't intend to get rid of our actual museum; instead, we want to create a system that will supplement it and make management of it easier.

The research and analysis of the data requirements within the museum are fundamental to system analysis in its business sense. Additionally, it is a disciplined process that starts with determining the user requirements for a particular application. How would we even know what we are doing without analysis? In this project, we put up a framework that would enable us to do systematic searches on various products. How would we even know that the search item(s) is/are a fault with the old system without evaluating the system? In this instance, we focus on the questions listed below:

* What causes the issue to exist?
* Why were particular work practices adopted?
* Is there a different approach?
* What are the data growth rates?

**SYSTEM REQUIREMENTS AND DESIGN METHOD**

Requirements analysis encompasses those tasks that go into determining the needs or conditions to meet for a new or altered product, taking account of the possibly conflicting requirements of the various stakeholders, such as beneficiaries or users. Determining whether the stated requirements are unclear, incomplete, ambiguous, or contradictory and then resolving these issues. The process of gathering information and using that approach to recommend improvements to the existing system and detailing what the recommended system should do**.**

The 3D Art gallery system will make it easy for visitors to view the gallery. The system will be used or can be used by anyone anyway, to a family looking for entertainment on a Sunday afternoon, a trip to an African Art gallery could be a fun, and enlightening way to spend the day. To city leaders, a healthy Art gallery community can be seen as a gauge of the economic health of a city, and a way to increase the sophistication of its inhabitants. To an art professional, an Art gallery might be seen as a way to educate the public about Art’s mission, such as civil rights or environmentalism. Arts are, above all, storehouses of knowledge.

In summary, the system will perform these functions;

* Creating a user account
* Generation of the annual report
* Provide beautiful Arts
* Gives users accurate feedback

To implement an efficient and effective system one needs to understand the business and

technical requirements of the implementation process. The main requirement of the proposed

the system is categorized into:

* Functional requirement
* Non-functional requirement
* Software Requirement Specification
* Hardware Requirement Specification

**Functional Requirements for the 3D Art Gallery**

The detailed requirements of the system consist of the input design, output design and logic design, and security measures.

Input Design: In the input design, user-oriented inputs are converted into a computer-based system format. The major approach to input design is the menu and prompt design. In each alternative the user’s options are predefined. The data flow diagram indicates logical flow, data stores, source, and destination. Input data are collected and organized into a group of similar data.

Output Design: In the output design, the emphasis is on displaying output on the screen in a predetermined format. The most important output media for this system is the screen and audio speakers. The output device capability, response time requirements, etc. are considered. The form design elaborates the way output is presented and the layout available for capturing information in other to produce a clear, accurate and speedy information for users.

Logical Design: Logical data design is about the logically implied data. Each and every data in a form can be designed in such a manner to understand the meaning. Logical data designing should give a clear understanding and idea about the related data used to construct a form and to process information and events. Here are some functional requirements the system shall perform:

* The system shall create an interface for users to be authenticated in order to proceed
* registration.
* The system shall create an interface for users to log into the system
* The system shall authenticate provided user information before granting access to user.
* The system shall allow logged in users to update their account details.
* The system shall allow administrators to manage the Arts.
* The system shall allow modification of Arts.
* The system shall allow the administrator to add items.
* The system shall allow the recovery of account credentials.

**Non-Functional Requirements for the 3D Art Gallery**

Non-functional requirements are statements of how the system should behave; it specifies all existing requirement that is not handled by the functional requirement. Some of these non-functional requirements include:

Usability: the most important requirement of this system is its ease of use. The system is developed in a way that users with little knowledge on the technical workings of a computer system will have no difficulty in using the system and will find comfort with its use.

Maintainability: Changes can easily be made to the proposed system to meet new trends and evolution of the platform.

Interoperability: this is the ability of this application to be compatible with different windows such as windows 7, Linux and MAC which are the latest trend in computer system devices.

Here are some non-functional requirements the system should perform:

* The system should present to visitors the required feature at any given time.
* The system should present text using readable font style i.e., no demographic font.
* The system should authenticate login in less than 5 second with an internet speed greater or equal to 200kbps.
* The system should filter search results as the user is typing.
* Basic operation shall be done without the page refreshing.
* The system should allow visitors to login with their username and password.
* The system should be accessible at any location in the world.
* The system should be available at every hour of the day.
* The system should be responsive to any device.
* The system should sort post by time and date.
* The system’s functionalities should work on every recent browser.

**Software Requirements**

Operating System: Any Operating System with a web browser. (Windows OS, Macintosh OS, Linux, Android, IOS, Symbian, RIM, Windows Mobile, Web OS, Palm OS etc.)

Front-End Tool: HTML, CSS, JavaScript (Query, JSON), AJAX

Server-Side Too: PHP, XML

Server: Apache

Back-End Tool: MySQL

Operating System: Any Operating System with a web browser

**Hardware Requirements**

Device: Computer (Desktop, Laptop), Hand held devices (PDA, Smartphone, Tablet)

Processor: Pentium I or higher

Memory: 64MB RAM (minimum)

Secondary Storage: 1GB Disk space (minimum)

**System Design**

Systems design according to Whitten, Jeffery L. et al. (2004) is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development. The architecture of the system defines how it will be layered and partitioned to encapsulate the system functionality into manageable components or subsystems. System design also determines the physical platform for the system and how the various services should be distributed.

**TECHNIQUES / INSTRUMENT / APPROACH**

The approach that will be used is the pilot implementation. This is because the 3D Art Gallery System is a new system for the LOOM African Art Gallery. A company can validate its strategy for full application deployment through a pilot implementation. Running an application pilot can reveal operability problems related to production-like circumstances and give a chance to fix these problems before a complete application roll out. An organization should create a thorough pilot strategy, choose the right participants, organize the pilot environment, and decide how to monitor the pilot in order to properly be ready for a pilot deployment. This might entail either exploring a brand-new idea or method, or applying a tried-and-true method that has been suggested by outsiders but has never been used by the organization.

**TECHNIQUES / INSTRUMENT / APPROACH RELEVANCE**

Why is it necessary? One reason is that a pilot implementation provides a chance to assess the application infrastructure and assess the viability of a full implementation in addition to serving as the first stage in the entire application deployment process.

Low use data - If a company is thinking about running a pilot for a low-usage application, such reporting trip expenses, it should be aware that the advantages for business process and operability validation will be minimal. A pilot for a low-usage application is still legitimate, but given the few data provided, it might not be financially viable**.**

Organizations may more efficiently verify their application architecture and procedures while reducing preparation time and full deployment risk by putting a solid pilot implementation methodology in place.

**How it is used**:

The capacity of an organization to identify needs, prepare for the pilot, identify application duties, establish a pilot strategy and plan, and monitor the pilot are all necessary for successful pilot implementation.

* Determine Requirements for Pilot Implementation: Developing a pilot methodology, participation criteria, and pilot deliverables is a crucial step in determining the needs for implementing pilot. A fundamental project management task, identifying these criteria includes balancing pilot aims with other requirements that must be integrated into the organization's current workflow. Choosing how much work should go into the pilot preparation is a main focus of these efforts.
* Plan for the Pilot: Analyzing the organization's pilot strategy, setting up pilot deliverables (such as pilot plans or test designs), and making decisions on the pilot's participant group, time needs, and environment are all part of the planning process. The criteria for the organization's pilot will influence many of these choices. Analyzing pilot needs while taking into account elements like the application scope, the intended duration, and the resource requirements is frequently the first step in the planning process. The organization can choose the pilot participant group as part of the pilot planning process. The participant group is made up of people who will be in charge of the application's development, implementation, testing, and training.
* Determine Application Responsibilities: The business must also decide on the application tasks for the pilot. Based on the complexity of the application, the maturity of the functional and technical business processes, and the pilot deliverables, these roles should be determined. Choosing the organization component(s) in charge of designing, implementing, testing, and training the application is a common way to define the application's duties. These organizational elements are often the business operations or business units that will make use of the program. For instance, in a multi-site firm, it is likely that the application will be piloted at one site before being installed at other locations.
* Develop Pilot Strategy and Plan: The business's plan for creating, implementing, and testing the application is called the pilot strategy. Who will do what, when it will be done, where it will be done, and how it will be done should all be specified in the plan. From planning to go-live, the pilot implementation schedule typically takes one to six months. The features of the application and the time needed to design and test the business processes and user interfaces are the main determinants of the length of the pilot planning phase. Additionally, it could be important to plan time for certain participants to prepare for the pilot instead of working on assignments.
* Review and Monitor the Pilot: The performance indicators from the pilot are compared to those that are specified for the full deployment as part of the assessment and monitoring of the pilot. This is a crucial phase that may be used to spot any potential problems, such performance or data problems. Examining the pilot might also offer a preview of potential problems in the future. When the application is fully built, the company has to think about potential problems.

**PROPOSED SOLUTION**

The creation of computer application software for upgrading the art gallery was a major focus of this project effort. The design, objectives, and rationale upon which this project work was, curiously, undertaken were all clearly specified. Included in the very important portion of the research activities the researcher undertook for this project work are: thorough evaluation of various literatures by various researchers and authors in the fields of computer applications and web design, evaluation of the existing system which includes interviewing Art gallery managers to learn about the challenges they face, and developing of the new system expected to address the issues with the existing system, adhering to specifications and using requirements. Also, worth nothing in the activities of this project work is the very important aspect of designing which is testing and debugging.

Our project is only a humble venture to satisfy the needs of a Art gallery. Several user-friendly coding has also adopted. This package shall prove to be a powerful package in satisfying all the requirements of the Art gallery.

The objective of software planning is to provide a frame work that enables the manger to make reasonable estimates made within a limited time frame at the beginning of the software project and should be updated regularly as the project progresses.

We are certain that the issues with the current system have been resolved after the project has been finished. This project's major goal is to reduce human labor while increasing accessibility to the Art gallery's material at all times. Because all of the records are kept in the access database, which makes it simple to obtain data, the maintenance of the records is efficient. To traverse the numerous records, a navigation control is available on every page. Additionally, the editing is simplified. To update the needed item, the admin only needs to choose the necessary item and click the update button.

The problems, which existed in the physical Art gallery, have been removed to a large extent. And it is expected that this project will go a long way in satisfying users’ requirements. The computerization of the Art gallery will not only improve the efficiency but will also reduce human stress thereby indirectly improving human recourses.

**ETHICAL ISSUES**

This system is meant for all kinds of computers and devices since it runs on a browser. The new system contributed to the existing one, and has a lot of significant advantages if employed. Therefore, it is recommended:

* For proper management of the activities in the Art gallery
* For reference’s sake.
* For the sake of knowledge expansion or further research.

**REFERENCES**

Marion schumacher (2001) *The use of SSADM (Structured Systems Analysis and Design Methodology) as a standard methodology on Information Systems Projects.* the development stages of SSADM. 3.3.2

pulp magazine (2020), *Complete Guide to Pilot Implementation Strategy*

Ben Lutkevich **(2022),** *SSADM (Structured Systems Analysis and Design Method).* update

Hutchings, T., (2001*) Introduction to Methodologies and SSADM* [Internet] Pontypridd, University of Glamorgan. Available from: <http://www.comp.glam.ac.uk/pages/staff/tdhutchings/chapter4.html>

Camarero C., Garrido M. J., Vicente E., (2010), “Components of art exhibition brand equity for internal and external visitors”, *Tourism Management*, 31 (2010), 495-504, doi: 10.1016/j.tourman.2009.05.011

Pelowski M., Akiba F. (2011), “A model of art perception, evaluation and emotion in transformative aesthetic experience”, *New Ideas in Psychology*, 29 (2011), 80–97, doi: 10.1016/j.newideapsych.2010.04.001

Sommervilie. (2001). system analysis. *system analysis materials to be used*.