



Faculty of Engineering and Applied Science

SOFE 3490U- Software Project Management

Laboratory Report: Learning Management System (LMS)

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Introduction

After experiencing the effects of the Pandemic on online learning, our team realized how fundamentally online education could change traditional learning. Therefore, our team was motivated to develop a shareable e-learning platform that uses cloud computing infrastructure. No more does quality education remain limited to physical classrooms and expensive books, but extends itself beyond geographical boundaries, with the power of technology. We will seek to create a learning environment that is inclusive and dynamic beyond the traditional Learning Management Systems (LMS) by leveraging all the opportunities provided by cloud computing to enhance collaboration, access, and creativity in education.

It is about the detachment and the incompatibility of fixed LMS systems with e-learning standards. As of now, instructors and students cannot interact with each other and exchange learning sources on some platforms, limiting collaboration and the development of knowledge. Besides, the access to the learning material is inhibited and the common LMS systems' architecture reveals growth in online learning.

The following goals are to be achieved by developing the shared e-learning platform based on cloud computing technology. First and foremost, we want to propagate interoperability between different LMS systems, including e-learning standards, to be able to realize smooth sharing and exchanging of learning objects, modules, and material. This will lead to interaction with the faculty and the student, and the best learning environment would be created where knowledge is shared and created. Our platform will also make efforts towards promoting open education as it provides learners access to a wide range of learning resources that are freely available over the internet. Through the scalability and flexibility presented by the infrastructure of cloud computing, reaching out to students residing in underprivileged or rural areas could have increased educational possibilities leading to lifelong learning.

Moreover, we strive to create a dynamic, immersive learning environment that caters to different learning preferences and styles ranging from individualized learning paths to interactive multimedia content. In general, the subject identified does reflect a commitment to the use of technology in the advancement of problems in online learning present today. We wish to encourage the setting up of a cloud computing-enabled platform that brings together

our instructors and students from all over the world, to develop and jointly benefit in this digital age of learning.

2. Clearly outline your project's objectives. Some objectives may seem generic, but you must also include objectives that are relevant to what your project is doing.

Examples include:

- a. Simplify the organization and management of the artists' records for the investor by allowing the investor to add new artists, and track their performance).
- b. Costs must not exceed the money provided by the investors' contract. Feel free to use the project descriptions (and above examples) as your reference, but do not directly lift from the document. A minimum of five objectives is required.

Objective

Facilitate the Sharing of Learning Materials: Develop a system that allows for the sharing of learning materials, modules, and content among independent Learning Management Systems (LMS). This objective aims to promote collaboration and resource sharing within the e-learning community.

Enhance Interoperability: Implement a layered architecture with an indexing module and metadata module to facilitate interoperability among different e-Learning standards. This objective focuses on ensuring that learning materials can be accessed and used seamlessly across various LMS platforms, while allowing for each LMS platform to offer their own features as well.

Improve User Experience: Design the platform to provide a user-friendly interface (for students, teachers, and administrators) to allow a seamless learning experience for stakeholders in an LMS. This objective aims to attract and retain users by offering a platform that is easy to navigate, visually appealing, and intuitive to use.

Promote Innovation: Integrate technologies to promote continuous improvement and advancement within the e-learning platform. This objective encourages the adoption of

emerging technologies and practices to enhance the effectiveness and efficiency of online learning.

Ensure Cost-Effectiveness: Develop the platform in a cost-effective manner, ensuring that the project's costs do not exceed the budget provided by investors. This objective emphasizes the importance of efficient resource allocation and budget management throughout the development process of the project.

Success Measures

To aid in measuring the E-platform project success and alignment with the platform objectives, the following five success factors are considered:

User Engagement Metrics: The system tracks active user counts, session durations, and engagement rates with learning materials to ensure that users are actively interacting and engaging with the content. System success can be measured by high levels of the above user engagement metrics.

Technology Adoption Rate: The system tracks the rate at which users embrace new features and technologies on the platform.

Budget Adherence: Success is measured if the project's actual costs stay within the budget specified in the investor contracts, indicating excellent cost management and resource allocation throughout the project.

Interoperability Achievement: The system tracks successful integration and interoperability of numerous Learning Management Systems (LMS) and e-learning standards within the platform, allowing for seamless communication and content sharing between systems.

Content Sharing Metrics: System success is achieved when the platform enables the sharing and reuse of learning modules across LMS systems, stimulating collaboration and knowledge exchange within the online learning community.

Infrastructure

The components of the infrastructure are the spine of the online learning environment. The infrastructure provides importance to features like storage management, organization of information, and much more. It also provides a way to share the work or the learning material that is needed with other users for collaboration and encourages the interoperability of the system. The requirements included are:

1. **Cloud Computing:** The cloud servers are used to host the online learning environments for storing the learning material, module, and content inside the cloud. The storage services are used for multiple types of files, documents, and other learning materials.
2. **Learning Management System Integration:** This layer is used to implement the middle components for the LMS systems and the online learning environment. This layer is often using APIs and connectors to allow communication and interoperability between different users, platforms, etc
3. **Indexing Module:** The indexing module is created for the middle layer of the infrastructure to organize the material according to the requirements. The module will be used to search and retrieve for the user based on the keywords.
4. **Metadata Module:** The metadata module is created to regulate and convert the metadata formats for the online learning environment standards. The module will make sure that the consistency and compatibility of the work when sharing is prioritized. Also, it should be compatible with different platforms that the user has.