**Live Project – Waterfall part – 1**

**Business Case Document**

**Why is this project Initiated?**

The organization currently lacks a centralized platform to manage, track, and deliver online learning content. Training and skill enhancement activities are managed through multiple disconnected systems, leading to inefficiencies and inconsistencies.
To overcome this, develop an **LMS** that provides a unified platform to deliver, track, and assess e-learning content for employees and external stakeholders.

**What are the Current problems?**

* Limited accessibility to learning materials in traditional system
* Ineffective tracking of student/employee progress.2
* High administrative workload due to manual processes.
* Difficulty in scaling learning programs efficiently.
* Inconsistent training quality across different locations.
* Inefficiency in updating learning materials and distributing them to learners.
* High costs associated with physical training sessions.
* One to one to mentorship is not available for doubt clarification
* Difficulty in evaluating student performance and certification readiness.

**With this project how many problems could be solved?**

* Remote learner or employee working in different area can access the content with cloud based LMS anytime, anywhere
* Automated progress tracking like real time tracking of the learner progress and assessment score
* Automates registration, attendance tracking, assessment grading, and certification issuance.
* Scalable LMS infrastructure supports an unlimited number of users and courses with minimal additional cost.
* Centralized content management with version control
* Digital learning with reduced costs
* Discussion boards, virtual classrooms, and mentorship
* Automated assessments and certification readiness tracking

**What are the resources required?**

Development Team: Developers, UI/UX Designers, QA Testers.

Infrastructure: Cloud-based or on-premise servers for hosting.

Learning Content Creators: Subject matter experts to create learning content.

Admin and Support Staff: For managing and maintaining the system.

Budget required to complete this project

**How much organizational change is required to adopt this technology?**

Moderate change is required to migrate existing learning processes to a digital platform. The training sessions will be conducted for instructors and administrators to adapt to the new system.

**Time frame to recover ROI?**

The expected ROI recovery period is 18 months post-implementation, depending on the scale of implementation and adoption rates.

**How to identify Stakeholders?**

**Brainstorm with Key Team Members:** List potential stakeholders with project managers and senior leadership.

**Analyse Organizational Structure:** Identify departments and roles affected by the LMS.

**Identify End-Users:** Include learners, instructors, and training managers.

**Engage Subject Matter Experts (SMEs):** Consult SMEs to identify critical roles.

**Review Compliance Requirements:** Consider regulatory bodies ensuring LMS compliance.

**Consult IT and Security Teams:** Address technical and security aspects.

**Conduct Interviews/Surveys:** Gather feedback to ensure no key stakeholders are missed.

Key stakeholder is

**Primary:** Learners, Trainers, HR/Training Managers

**Secondary:** Compliance Officers, Leadership, IT Team

**External:** Regulatory Bodies, Content Providers

**BA strategy (Document- 2)**

As a Business Analyst (BA) in an LMS (Learning Management System) project, the approach strategy involves several key steps to ensure the project's success. Below is a detailed breakdown of each aspect mentioned in the question.

Elicitation techniques to apply

Elicitation is the process of gathering requirements from stakeholders. For an LMS project, the following techniques can be used:

* **Interviews** – Conduct structured discussions with HR, trainers, IT teams, and learners to understand their needs.
* **Surveys & Questionnaires** – Gather user preferences regarding course management, tracking, and reporting features.
* **Workshops** – Organize brainstorming sessions to define user roles and workflows.
* **Document Analysis** – Review existing training processes and LMS competitors for insights.
* **Prototyping** – Create mock-ups of the LMS interface to validate user expectations.

**How to Do Stakeholder Analysis (RACI/ILS)**

Stakeholder analysis identifies key individuals and their roles, the RACI matrix( accountable, responsible, consulted, informed) helps define the role

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Role | Responsible  | Accountable  | Consulted  | Informed |
| Project Manager  |  |  |  |  |
| Business Analyst  |  |  |  |  |
| HR manager  |  |  |  |  |
| IT Team |  |  |  |  |
| Trainers  |  |  |  |  |

**What Documents to Write?**

Several documents are crucial for the LMS project:

* **Business Case Document** – Justifies the need for the LMS.
* **Business Requirements Document (BRD)** – Defines objectives, scope, and functional needs.
* **Functional Specification Document (FSD)** – Describes system functionalities like user login, course management, tracking, etc.
* **Requirement Traceability Matrix (RTM)** – Maps each requirement to test cases.
* **User Acceptance Test (UAT) Plan** – Ensures the system meets end-user expectations before deployment.

**Process to Follow to Sign Off on Documents**

To ensure project alignment, follow this process:

1. **Draft the Document** – Based on requirements gathered.
2. **Internal Review** – Validate with the development and QA teams.
3. **Stakeholder Review** – Share with key decision-makers (HR, IT, Trainers).
4. **Feedback & Revisions** – Modify based on stakeholder input.
5. **Final Approval** – Obtain signatures from project sponsors and management.

**How to Take Approvals from the Client?**

Client approval is essential for project progression. The steps include:

* **Presentation of Findings** – Summarize requirements, features, and benefits.
* **Demo of LMS Prototype** – Show a working model of the LMS for feedback.
* **Approval Forms** – Use sign-off forms to confirm acceptance of deliverables.
* **Stakeholder Meetings** – Regular check-ins to address concerns.

**Communication Channels to Establish & Implement**

Effective communication ensures project success. For LMS projects, use:

* **Email Updates** – Regular status reports.
* **Project Management Tools** – Jira, Trello, or Asana to track tasks.
* **Slack/Teams for Collaboration** – Real-time discussions.
* **Meetings & Webinars** – Periodic stakeholder updates.

**How to Handle Change Requests?**

Change requests are inevitable in an LMS project. Follow this process:

1. **Receive Change Request** – Document new feature requests or modifications.
2. **Impact Analysis** – Assess cost, time, and technical feasibility.
3. **Approval from Stakeholders** – Present findings to decision-makers.
4. **Update Project Plan** – Adjust timelines and resources accordingly.
5. **Implement & Test Changes** – Develop, test, and deploy the changes.

**How to Update Project Progress to Stakeholders?**

Regular updates keep everyone aligned:

* **Weekly Reports** – Status updates on development, testing, and risks.
* **Monthly Steering Committee Meetings** – Review overall project progress.
* **Live Dashboards** – Track milestones, budget, and key deliverables.
* **Feedback Sessions** – Gather input from trainers and learners.

**How to Take Sign-off on UAT (Client Project Acceptance Form)?**

User Acceptance Testing (UAT) is the final step before LMS deployment. The process:

1. **Define UAT Scenarios** – Align with business needs.
2. **Conduct Testing with End-Users** – Trainers and learners test key features.
3. **Fix Reported Issues** – Address any concerns.
4. **Obtain Client Sign-off** – Use a formal **Client Project Acceptance Form** to confirm approval.

**Functional Requirement Specification ( Document 3 )**

Project Information

Project Name: Learning Management System (LMS)

Customer Name: APT IT

Project Version: 1.0

Project Sponsor: HR Department

Project Manager: John

Project Initiation Date: 20/03/2025

|  |  |  |  |
| --- | --- | --- | --- |
| Req ID  | Req Name | Req Description  | Priority  |
| FR0001 | User Login | Users should be able to log in securely. | High  |
| FR0002 | Course Management | Admins should create, update, and manage courses. | High  |
| FR0003 | Progress Tracking | Track learner progress, course completion, and scores. | High  |
| FR0004 | Automated Enrollment | Enroll learners automatically and send notifications. | Medium  |
| FR0005 | Scalability Support | Handle an increasing number of users and courses. | High  |
| FR0006 | Content Versioning | Enable easy updates and version control of content. | Medium  |
| FR0007 | Virtual Classrooms | Facilitate live sessions and offer one-to-one mentorship. | High  |
| FR0008 | Certification System | Evaluate learners and issue certificates upon completion. | High  |
| FR0009 | Cost Management | Generate reports on training costs and ROI. | Medium  |
| FR0010 | Mobile & Offline Access | Provide mobile access and offline learning options. | Medium  |

**Document 4- Requirement Traceability Matrix**

A Traceability Matrix is a document used in software development and project management to ensure that all requirements defined for a system are tested and validated at each stage of the development lifecycle.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Req ID  | Req Name | Req Description  | Design  | D1 | T1 | D2 | T2 | UAT  |
| FR0001 | User Login | Users should be able to log in securely. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0002 | Course Management | Admins should create, update, and manage courses. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0003 | Progress Tracking | Track learner progress, course completion, and scores. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0004 | Automated Enrollment | Enroll learners automatically and send notifications. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0005 | Scalability Support | Handle an increasing number of users and courses. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0006 | Content Versioning | Enable easy updates and version control of content. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0007 | Virtual Classrooms | Facilitate live sessions and offer one-to-one mentorship. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0008 | Certification System | Evaluate learners and issue certificates upon completion. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0009 | Cost Management | Generate reports on training costs and ROI. | YES  | NO  | NO  | NO  | NO  | NO  |
| FR0010 | Mobile & Offline Access | Provide mobile access and offline learning options. | YES  | NO  | NO  | NO  | NO  | NO  |

**Document 5- BRD Template**

The first document which we make in this is a document revision which help us understand the change made in the document over time. To ensures that all stakeholders have access to the latest version of the BRD, avoiding any confusion and maintaining consistency in documentation.

|  |  |  |
| --- | --- | --- |
| Date  | Version name  | Document change  |
| 21/03/2025 | 0.1 | Initial Draft  |

**Approvals**

Lists the names, roles, and signatures of the individuals who approve the document which ensures accountability and formal approval for the document before project initiation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Role  | Name  | Title  | Signature  | Date  |
| Project Sponsor  |  |  |  |  |
| Business Owner  |  |  |  |  |
| Project Manager  |  |  |  |  |
| System Architect  |  |  |  |  |
| Development Lead  |  |  |  |  |
| User Experience Lead  |  |  |  |  |
| Quality Lead  |  |  |  |  |
| Content Lead  |  |  |  |  |

**RACI chart**

 The RACI chart identifies the persons who need to be contacted whenever changes are made to this document. RACI stands for responsible, accountable, consulted, and informed.

**RACI** stands for:

* **R** – Responsible: Creates and maintains the document.
* **A** – Accountable: Takes ownership of document accuracy.
* **S** – Supports: Provides supporting services or content.
* **C** – Consulted: Provides input or advice.
* **I** – Informed: Needs to be kept updated.

It defines who is responsible and accountable for the content, providing clarity on roles and ensuring all relevant parties are involved appropriately.

**Business Goal**

The Business goal is to enhance online learning experience and to reduce administrative overhead for training which ensures consistent learning quality across department

**Business Objective**

The LMS is designed to meet the following business objectives:

* **Enhanced Accessibility:** Provide a mobile-friendly platform for learners to access courses from any device (desktop, tablet, or smartphone).
* **Automated Learning Management:** Reduce manual administrative efforts by automating course enrollment, progress tracking, and certification.
* **Personalized Learning Journeys:** Enable personalized learning paths based on user roles, performance, and preferences.
* **Improved Reporting and Analytics:** Offer real-time dashboards and reports for trainers, HR teams, and management to monitor learning outcomes and engagement levels.

**Business Rule**

The LMS will adhere to the following organizational rules, policies, and standards:

* **Role-Based Access Control (RBAC):** Users will have access to features and content based on their assigned roles (e.g., Admin, Trainer, Learner).
* **Certification Guidelines:** Automatic issuance of certificates upon successful course completion.
* **Compliance Standards:** Compliance with relevant data protection laws (e.g., GDPR) and industry-specific regulations.

**Background**

The organization currently relies on a manual, paper-based system to manage its learning and training processes, resulting in inefficiencies and a lack of real-time insights. Inconsistent training quality, difficulty in tracking learner progress, and delays in generating reports have highlighted the need for a comprehensive digital learning solution. The proposed LMS is expected to address these challenges by:

* Automating administrative processes.
* Standardizing content delivery across departments.
* Enhancing learner engagement through interactive content.

**Project Objective**

The objective of this project is to implement a robust and scalable LMS that meets the organization’s learning and development (L&D) needs. The system will:

* Deliver e-learning content in a structured and engaging manner.
* Provide real-time analytics for tracking learner performance.
* Integrate with existing enterprise systems such as HRMS (Human Resource Management System) and ERP (Enterprise Resource Planning) platforms.
* Ensure compliance with internal policies and industry standards.

**Project Scope**

The scope of this project defines the functionalities that will be developed and delivered within the LMS.

* **In-Scope Functionalities:**
	+ User registration, authentication, and role management.
	+ Course content creation, management, and delivery.
	+ Assessment, grading, and certification.
	+ Progress tracking and reporting.
	+ Mobile and web application interfaces.
	+ One to one mentorship
* **Out-of-Scope Functionalities:**
	+ Custom integrations beyond defined enterprise systems.
	+ Multilingual support in the initial phase.

**Assumptions**

The success of the Learning Management System (LMS) implementation is built on several critical assumptions. These assumptions are considered true during the project lifecycle, but any deviation from them may impact the overall success.

1. **Stable Internet and Device Availability:**
It is assumed that users will have consistent access to reliable internet connections and compatible devices to interact with the LMS effectively.
2. **Timely Content Readiness:**
Course content and learning materials will be available and reviewed by Subject Matter Experts (SMEs) before the content migration phase.
3. **Commitment from Leadership:**
Senior management will provide ongoing support, ensuring the project is prioritized and resources are allocated as needed.
4. **User Willingness to Adopt the System:**
Learners, trainers, and administrators are expected to embrace the new system, with minimal resistance to change.
5. **Integration with Existing Systems:**
It is assumed that integration with enterprise systems (HRMS, ERP) will be straightforward and not require extensive customization.
6. **Compliance with Regulatory Standards:**
The LMS is assumed to comply with applicable data protection regulations and industry-specific guidelines, ensuring legal and operational compliance.

**Constraints**

The LMS project operates within defined limitations that affect its timeline, budget, and scope. Recognizing these constraints helps set realistic expectations and guides decision-making throughout the project.

1. **Fixed Project Budget:**
The project budget is pre-defined and must cover development, licensing, training, and ongoing maintenance costs. Any unplanned enhancements will require additional approvals.
2. **Strict Timeline for Implementation:**
The LMS must be operational within 6 months to align with the organization’s training calendar, leaving little room for unexpected delays.
3. **Limited Resource Availability:**
Internal teams, including SMEs, IT support, and project managers, have limited bandwidth to allocate to the project alongside their other responsibilities.
4. **Defined Scope of Features:**
The initial phase will focus on core LMS functionalities such as course management, assessment, and reporting, while advanced features (e.g., gamification) will be considered for future phases.
5. **Technology Platform and Compliance Requirements:**
The LMS must adhere to strict security protocols, data privacy regulations, and system compatibility standards to maintain compliance and protect user data.
6. **User Role and Access Limitations:**
Role-based access control (RBAC) will be implemented, limiting users to their respective roles. Expanding these roles or permissions beyond the initial scope may require additional development time.

**Risk**

The implementation of the LMS involves potential risks that could impact project outcomes. Identifying and mitigating these risks early can minimize disruptions and ensure a successful rollout.

1. **System Downtime or Performance Issues:**
Unexpected technical failures or server outages may result in service interruptions, affecting user access and learning continuity.
2. **Integration Challenges with Enterprise Systems:**
Difficulties integrating the LMS with existing platforms (HRMS, ERP) could lead to data inconsistencies and workflow disruptions.
3. **Resistance to Change from Users:**
Employees and trainers may resist adopting the new LMS, leading to poor utilization and diminished ROI if change management efforts are insufficient.
4. **Data Privacy and Security Breaches:**
Failure to meet regulatory compliance standards or prevent unauthorized access could result in data breaches, leading to financial and reputational damage.
5. **Scope Creep and Uncontrolled Changes:**
Unplanned feature requests or changes beyond the initial scope can lead to delays, increased costs, and missed project deadlines.
6. **Missed Deadlines and Project Delays:**
Unforeseen challenges in content migration, testing, or user training may push back project timelines, affecting overall delivery schedules.

**Business Process Overview**

This section provides a comparison between the current system (AS-IS) and the proposed Learning Management System (TO-BE), highlighting the inefficiencies in the existing system and showcasing how the new LMS will streamline and automate processes.

**(AS-IS)**

The current system for managing training and learning activities relies on manual and paper-based processes, leading to inefficiencies and inconsistencies. Key limitations of the existing system include:

1. **Manual Student Registration:**
Student enrolment is handled manually, resulting in delays, errors, and administrative overhead.
2. **Paper-Based Assessment Management:**
Assessments and quizzes are conducted on paper, making it difficult to track, grade, and analyse results efficiently.
3. **Limited Progress Tracking:**
Tracking learner progress is a time-consuming process that requires manual data collection and reporting.
4. **Inconsistent Learning Delivery:**
The absence of a standardized content delivery mechanism results in inconsistent learning experiences across different regions.
5. **Difficulty in Updating Course Content:**
Course updates and modifications require reprinting of materials and manual distribution, which slows down the learning process.
6. **Lack of Real-Time Analytics:**
The current system does not provide real-time insights into learner engagement, performance, and training effectiveness.

**(TO-BE)**

The proposed LMS introduces an automated, centralized, and user-friendly platform that addresses the limitations of the existing system. The key improvements include:

1. **Automated Course Management:**
Course creation, enrolment, and content updates will be managed automatically, reducing manual efforts and errors.
2. **Digital Assessment and Grading System:**
Assessments will be conducted online, allowing for automated grading, feedback, and result analysis.
3. **Real-Time Progress Tracking:**
The LMS will track learner activity in real time, providing detailed analytics and performance reports to administrators and trainers.
4. **Standardized Learning Delivery:**
The system will ensure consistent course delivery across departments, improving the quality and effectiveness of training programs.
5. **Efficient Content Updates:**
Course materials can be updated instantly and pushed to all learners, ensuring timely access to the most current information.
6. **Intuitive User Interface:**
The LMS will offer an intuitive and responsive interface, ensuring easy navigation for learners, trainers, and administrators.

**Business Requirements**

This section outlines the detailed business requirements derived from stakeholder inputs, categorized by priority and area of functionality. These requirements guide the development and implementation of the LMS.

**Functional Requirements**

Functional requirements define the core capabilities and features that the LMS must provide to meet business goals.

1. **User Authentication and Role Management:**
Secure login, registration, and role-based access control (RBAC) for learners, trainers, and administrators.
2. **Course Creation and Management:**
Ability to create, modify, and organize courses with multimedia content, quizzes, and assignments.
3. **Progress Tracking and Reporting:**
Real-time tracking of learner activity, performance, and course completion status with detailed analytics.
4. **Assessment and Certification Management:**
Online assessment capabilities with automatic grading and certificate issuance upon course completion.
5. **Communication and Notification System:**
Automated notifications, reminders, and announcements for learners and administrators.
6. **Content Upload and Version Control:**
Easy upload of learning materials with version control to ensure content accuracy.

**Non-Functional Requirements**

Non-functional requirements define the system’s performance, security, and scalability standards to ensure a seamless and secure learning environment.

1. **Scalability and Performance:**
The system should handle a large number of concurrent users without compromising performance.
2. **Data Security and Privacy:**
Implementation of encryption, multi-factor authentication (MFA), and compliance with data protection regulations (e.g., GDPR).
3. **System Availability and Uptime:**
High system availability (99.9% uptime) to ensure uninterrupted access to learning resources.
4. **User Experience and Accessibility:**
A responsive and intuitive user interface that adheres to web accessibility standards (WCAG 2.1).
5. **Integration with Third-Party Systems:**
Seamless integration with enterprise platforms such as HRMS and ERP to streamline workflows.
6. **Backup and Disaster Recovery:**
Regular backups and a robust disaster recovery plan to safeguard data and ensure business continuity.

**List of Acronyms**

A comprehensive list of acronyms and their meanings used in the document to ensure consistency and understanding.

|  |  |
| --- | --- |
| Acronym | Full form |
| LMS  | Leaning management system  |
| ERP  | Enterprise Resource Planning  |
| API  | Application performance Interface  |
| RBAC  | Role Based Access Control  |

**Glossary of Terms**

**A glossary defining key terms and concepts used throughout the document, enhancing clarity for all stakeholders.**

**Learning Management System (LMS):** A digital platform used to create, manage, and track training programs and learning content.

**Role-Based Access Control (RBAC):** A security mechanism that assigns system access based on user roles.

**Related Documents**

This section references other relevant documents that provide additional details and support the BRD.

1. **Functional Specifications Document (FSD):**
Detailed technical description of the system’s functionalities and features.
2. **Requirement Traceability Matrix (RTM):**
A matrix that maps business requirements to corresponding system functionalities to ensure that all requirements are met.