Implementation Checklist

Architecture / Infrastructure & Cloud ( )

Learning Management System (LMS) ( )

Personal Assistant learning Chatbot & AI ( )

Data Warehouse / DB & Analytics ( )

Customer Experience ( )

Integration & API ( )

Version Control , CI/CD & Backup ( )

Analysis (E - Learning Platform)

Architecture / Infrastructure & Cloud

With the growing need for higher computing power, memory and storage space , cloud is almost always the top solution , due to the scalability of computing resources by allowing businesses to scale the resources dynamically according to their needs . Besides scalability, cloud also provides many options for managing and optimising infrastructure which allow businesses to take the complexity of managing the servers and hardwares out of the picture and purely focus on running the business. Also, most cloud solutions do offer in-built softwares and developer services to help with designing data ingestion / AI pipeline which allows businesses to speed up development / optimization and focus on delivering quality products.

With this in mind, Cloud might be the best fit for the platform rather than running it on - premise . Running the platform on cloud would help to save cost and save time because by utilising cloud, it is often pay-as-you-use (Relatively low starting cost) , and the infrastructure is also often taken care of, all we need is to add/remove resources or configurations based on the volume of collected customer data from the LMS (Learning Management System) and also AI needs . Comparing it with on-premises, we would need to purchase servers, hardwares, and many essential items so the starting cost might be high and managing & maintaining them would be a nightmare without proper knowledge and the right person for the job since it is relatively complex. And, since there are many developer services in-built, pipelines could be streamlined to ensure better performance.

While developing the german assistant chatbot (Mini version) , i initially wanted the chatbot to also generate a pdf file or an image file after translation with additional prompt but in order to run it, it would require a large amount of memory and also CPU due to the nature of specifically open source self-hosting/highly customizable & trainable Gen-AI / LLM . Unfortunately, my virtual machine running on my local machine is incapable of running and building the application which is disappointing.

Learning Management System (LMS)

LMS is basically the pillar of the E-Learning platform. The LMS would be responsible for generating E-learning content, managing the content, managing achievements and rewards, collecting and managing customer information. Content generated could be games, slides, music and various media with help of professionals or domain experts to inspire ,motivate and challenge learners while teaching effectively . Adding and Removing content could also be done within the scope of LMS .

Learners would also be rewarded with badges , certificates and maybe points for doing well in the content offered through the LMS. Finally, the most important component of the LMS would be to collect and manage customer data which is critical for customer retention and improving customer

churn rate. By managing the customer information, learners can update roles ,permissions , enrollment OR disenrollment in/- courses , track learning progress and personal development.

Personal Assistant learning Chatbot & AI

Having a multi-modal personal assistant learning chatbot as part of the E - Learning platform allows the learning process to be more interactive , active and fun. The Learners could engage with the chatbot when they do not know something , joke or communicate as if the chatbot is a real person through talking, typing and uploading file/s.

Powered by a multi-modal Customizable SLM / LLM (Small/large language model) and various other AI helper agents, the chatbot would be able to understand natural language (multiple languages) , read files and recognize sounds. Thus, able to generate multi language responses and even generate image/s based on the prompt provided .

Besides multi-modality, the knowledge base and rules of the chatbot could be customizable which means that the users or learners could freely customise on how the chatbot will interact.

Also, the chatbot will also introduce several advanced features which allow the users or learners to also interact with certain elements of the GUI and administration for example enrolment of courses, perform updates, setting learning goals, sending notifications and more.

Data Warehouse / DB & Analytics

Data is increasingly critical in a business environment, allowing businesses to leverage the power of analytics to make business decisions. With an overall view of the business performances based on patterns & trends in data, business owners can provide better customer experiences , thus making profit in the process. Data based decision making is increasingly important and popular which makes analytics a component that cannot be neglected .

From the collected data from the LMS , customer & various data will be transferred and stored into the data warehouse and / or transactional databases (depending on circumstances) via the data pipeline.

Provided that the information is stored in the data warehouse and/or databases. Through in-built analytics software/services provided by the cloud and/or various external visualisation tools , analytics could be built . With the information presented through analytics, we can make rational decisions by measuring customer experiences , learning development , churns and other important factors that can contribute to the success of the e-learning platform.

Customer Experience

Customer Experience is related to the graphical user interface (GUI) and the interaction between the customers or users with the E - learning platform. Since the GUI and performances will be directly facing the customer and often the first impression , it is as important as other components mentioned .

So, it is incredibly important to have a great yet simple and uncomplicated design and framework to ensure that customers and users are able to access and navigate the E-learning platform with ease . Besides that, to ensure a smooth user and customer experience , we can integrate various testing methods and methodology which includes functionality tests, integration tests , unit tests, user acceptance tests, prototyping tests and other related tests into the development cycle.

By integrating better testing , and better understanding customer and users expectations, customer experiences can be optimised and delivered with high satisfaction. Thus saving time,effort and money by reducing the need for major rework.

Integration & API

In regards to integration & API (Application Programming Interface), we are referring to the payment gateway API and many other external API Services we can integrate as part of the E-Learning platform.

By allowing different integration, we could for example manage customer payment details and accept payment through various payment gateway API providers , bridging the platform with other API to further improve services and / or the LMS when required.

Version Control , CI/CD & Backup

In order to tackle the issue of costly mistakes / glitches and /or bugs in software and the growing emphasis of software quality within constraints of budget, resources and time, we could implement version control, CI/CD and backup as part of the development cycle.

In a likely scenario, we would probably be having a private git node on cloud to manage our ever changing development and staging build for version control and also in a way, our backup in case of emergency.

By having a proper version control setup, we could protect ,maintain and manage our source code through gatekeeping (having someone responsible to keep track of changes or change requests to the code base) . Also, to ensure a clean and healthy code base, we can integrate different open source software engineering tools on top of our version control setup to assist in performing build automation, tests automation and code / security scans. With the following setup, we could be pushing out changes rapidly while monitoring for any functionality flaws or code breaks.