# CS 255 Module Two Assignment

# (Daniel Loranger)

## Functional Requirements

| **Functional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
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| The LMS shall support plug-in customizations | Having all functional modules built in a plug-in fashion will allow user customization and allow external developers to expand the framework relieving the engineering team of doing repetitive customizations at the customer site. | (Lynn, 2023) |
| The LMS shall allow users to customize their automated notifications. | Every user will need/want different notifications from the system ranging from coursework reminders, to grade submission deadlines, to billing reminders.  Not all reminders will apply to every user and thus need to be customizable. |  |
| The LMS shall include Dashboard content at each layer | Given a student, teacher or administrator will likely need to interact with multiple courses and modules (such as payment processing) throughout the educational process.  It is good to keep the university level experience on one dashboard, then work downward to a financial dashboard, or course specific dashboard. | (Lynn, 2023) |
| The LMS shall include the ability to create new learning content | Being able to develop new content will enable faculty to bring seminars, presentations, or external materials and ensure proper functionality within the LMS. | (Lynn, 2023) |
| The LMS shall utilize user roles and permissions. These roles will directly affect the visual presentation of information in an optimized fashion based on the information to be presented. | based on traditional roles such as student, faculty, administration, each user needs to be represented with applicable limitations. Proxy users for commonly supported tasks such as registrations, electronic payments, etc. need to be supported | (Lynn, 2023) |
| The LMS shall have automations for reporting | The ability to preschedule certain tasks is critical to help administer a learning system. Being able to automate graduation reviews, send out semester grades, run academic status (for grants/etc.) are essential functions for administration users. |  |
| The LMS GUI shall support multiple schemes (Dark mode/light mode/High contrast) | Users need to be able to customize how the content is presented to fit their environment and viewing platforms. |  |
| The LMS shall support multiple concurrent learning modules. | Learners are reasonably expected to be studying multiple learning modules concurrently during an academic session (3-4 classes per session is typical).  The tool must support being able to work on all active modules at any given time or state (switch from one course to another easily) |  |

## Nonfunctional Requirements

| **Nonfunctional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
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| The LMS shall utilize state of the art data security with regularly published updates. | Data security and privacy needs to be a top priority for every modern system. The level of security directly impacts the liability of the school when breaches occur (not if, when…) | (Lynn, 2023) |
| The LMS backend shall be designed to be scalable using cloud systems. | With the modern use of an LMS, its imperative that the system be scalable to reach larger audiences in multiple locations. To support this, scalability is a must have. |  |
| The LMS shall support SCORM and xAPI files | SCORM and xAPI are the most common utilized content containers which will allow maximized content access. | (Lynn, 2023) |
| The LMS shall reside on a tier III data center infrastructure | Reliability is critical for trust. If a user needs access 10 minutes before something is due, the system cannot be offline. With world wide users, there will never be a good time for an outage to occur. A tier III data center guarantees a down time of less than 1.6 hours per year. | (Hatzenbuehler, 2024) |
| The user Interface shall be via a modern web browser. Direct support for the top 3 USA browsers at the time of development start is required. | By definition a modern user of an LMS will always access such tools via a screen. Rather than create a custom GUI, it would be more secure, robust, and development efficient to utilize existing browsers that are independently certified as secure and are maintained independently for security patches. |  |
| The LMS shall be implemented on a Linux server utilizing a paid Kernel support option such as RedHat. | Linux servers are the industry norm for cloud backend services while also offering the widest availability in existing datacenter resources. With a paid kernel support option available, any future security or kernel level issues can be addressed thru trusted maintainers. |  |

## Assumptions

| **Assumption** | **Rationale for Requirement** | **Source(s), APA format** |
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| The users will need to access the system on both a traditional computer and a mobile phone/tablet with a smaller screen. | In the modern world, users are turning more toward mobile devices for news, entertainment, and general internet access. Being able to support the mobile platforms well is a key to long term usability. |  |
| The user will have access to internet and will not need offline content caching. | With the recent globalization of internet thru satellite providers, it is becoming a reasonable assumption that users will be connected to the internet in one form or another at all times. This allows for real-time data flow and thus cached data should be minimized to immediate needs and objects that are highly unlikely to change such as logos, help pages, etc. |  |

## Limitations

| **Limitation** | **Rationale for Requirement** | **Source(s), APA format** |
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| The LMS will not provide non-English translations. | Development in multiple languages will greatly slow down the releases and feature developments.  Developers are typically limited in their multi-lingual skills which can lead to translation errors, and other cultural mis-interpretations. The localization is best left to the customers in these regions to provide their own translations as native speakers. |  |
| The LMS will not natively support non-visual accommodations. | Visual accommodations are required as per above in the form of color schemes, font adjustments, etc.  Support for screen readers and other accommodations for non-visual adjustments add significant complexity and difficulty in test automations.  Non-visual accommodations are expected to be implemented thru the use of a supported plug-in that will be independently developed. |  |

Sources  
Lynn, K.-A. (2023, September 18). *Top 29 learning management system features*. LearnUpon. https://www.learnupon.com/blog/lms-features-overview/

Hatzenbuehler | SVP, A. (2024, June 17). *Breaking down data center tier level classifications* . CoreSite. https://www.coresite.com/blog/breaking-down-data-center-tiers-classifications