



# NIMI Online Learning System

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## Functional Requirement Specification (FRS)



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## Part A

### 1.1 Objective

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This software aims to provide Online Learning System (OLS) to NIMI customers, in addition to existing Instructional materials (books). Hence it seeks to publish the books through Internet in an electronic form with following two categories:

a) Digitization

Complete conversion of existing books into electronic format without any change in the content. The illustrations to be presented in enlarged view. Links to video Instructional Program produced by NIMI wherever available.

b) E-Learning

Conversion of the books into Lessons to be designed using Animation, Text, Voiceover, Graphics, Video etc.,

Both digitized content and e-Learning documents are to be made available in the Internet. This software seeks to provide user friendly interface for the end users with complete security to the contents of the documents in the internet.



## **1.2 Purpose of the Document**

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This document sets forth the baseline Functional requirements and detailed functional requirements of NIMI Online learning system. The requirements are designed explicitly with realism, execution process to undergo with the end user in mind. It is intended to serve as a basis for the execution. The document outlines and discusses the functional requirements.

## **1.3 Document Overview**

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This document contains two sections describing Functional Information in Part-A and Software Requirements in Part B.

## **1.4 Key Stakeholders**

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National Instructional Media Institute

Trainees of Industrial Training Institutes / Centers (ITIs/ITCs)

Trainers

Organizations / Institutions involved in Vocational Training

Persons aspiring to improve his/her skill competencies

## **1.5 Disclaimer**

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The information contained in this document is proprietary and exclusive property of NIMI except as otherwise indicated. No part of this document in



whole or in part, may be reproduced, stored, transmitted, or used for design purposes without the prior written permission of NIMI.

## **1.6 Privacy Information**

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This document may contain information of a sensitive nature. This information should not be given to persons and other than those who are involved in responding to this Tender Notice and persons who will become involved during the software development lifecycle.



## **2.0 Overview**

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The Online Learning System (OLS) to be designed for web platform shall be robust and scalable catering to the online users.

### Digitization and E-learning

The digitization of the course material is to convert the complete book available in print format to digital format with features like Navigational movement, internal search, bookmark facility, selective zoom in & zoom out of the images, zoom in & zoom out of pages and playing of video clips, if available.

The content pages of the digitized course should conform to the standards specified in digitization template.

E-Learning is conversion of the lessons available in the form of printed books into electronic format. The existing material would be strategies based on the content. The lesson to user shall be explained with on-screen text, Illustrations, Animations and Video clips. Each course module should have features like Navigational movement, text transcripts, Volume Control and playing video clips, wherever available.

The contents of each page should conform to the standards specified in e-learning template



The Customised Course Management System (CCMS) to be designed will form the management system encapsulating the following:

Online User Interface for web users to access the courses and for administrator to manage the courses.

A template for digitization containing minimum essential controls and functionalities.

A template for e-learning containing minimum essential controls and functionalities.

The template consisting minimum essential functionalities for digitization and e-learning, to be designed and developed. Templates to be designed should ensure smooth flow of access and control to the courses.

NIMI envisages developing the e-learning course contents and digitization courses using these e-learning template and digitization template respectively. Hence, these templates should provide all the necessary functionalities and interface to handle the course content and easy user interface to the web users and the administrators.

This web based application should be accessible in a secured manner via internet. The application should be compatible to Browsers like Microsoft Internet Explorer and Mozilla Fire Fox.

Both the templates shall be designed to support even the lower network bandwidth.



Digitization and e-learning courses shall be controlled by these standard templates one for digitization and the other for e-learning, so that there is standardization of the functionalities.

The courses shall be managed by the administrator to link it with the front end module so that the user shall view the availability of the courses. The front – end shall provide facilities for the user to browse, register, log in, pay for the course, navigate to the paid courses and shall also have the privilege to access any free course available. Only the registered and paid users are to be provided accesses to the secured contents of the Online learning system.

However other users are to be provided with free access to essential information like Home page, list of available courses, access to sample courses etc.

In addition to the above, following essential features shall be provided in the proposed system:

- a) Search option
  - 1. To search within the NIMI Web page – care to be taken to ensure that the result would not show the contents of the courses for which user has not paid.
  - 2. Google search
- b) Book Marking of lessons
- c) Glossary



- d) Navigation buttons
- e) Voice control
- f) Video Control
- g) Access to FAQ's
- i) News Letter Subscriptions
- j) Feedback to the administrator, in case of any discrepancy encountered.

The system shall allow the administrators to manage the courses, update content, update the pricing and make the courses available to the users.

The Administrator shall be provided with the Management Information system (MIS). The feature should also include the tracking of the users, date-wise, subject-wise etc., The Reports that are generated should have the option to convert into PDF and Microsoft excel file formats

The data storage will be on a scalable database platform with the provision for high availability and security.

Proposed system should have the features for user authentication and authorization.

Also the contents of the web pages - both digitization and E-Learning should be secured in such a way that the users cannot Cut, Copy, Print and Download into any other storage media.



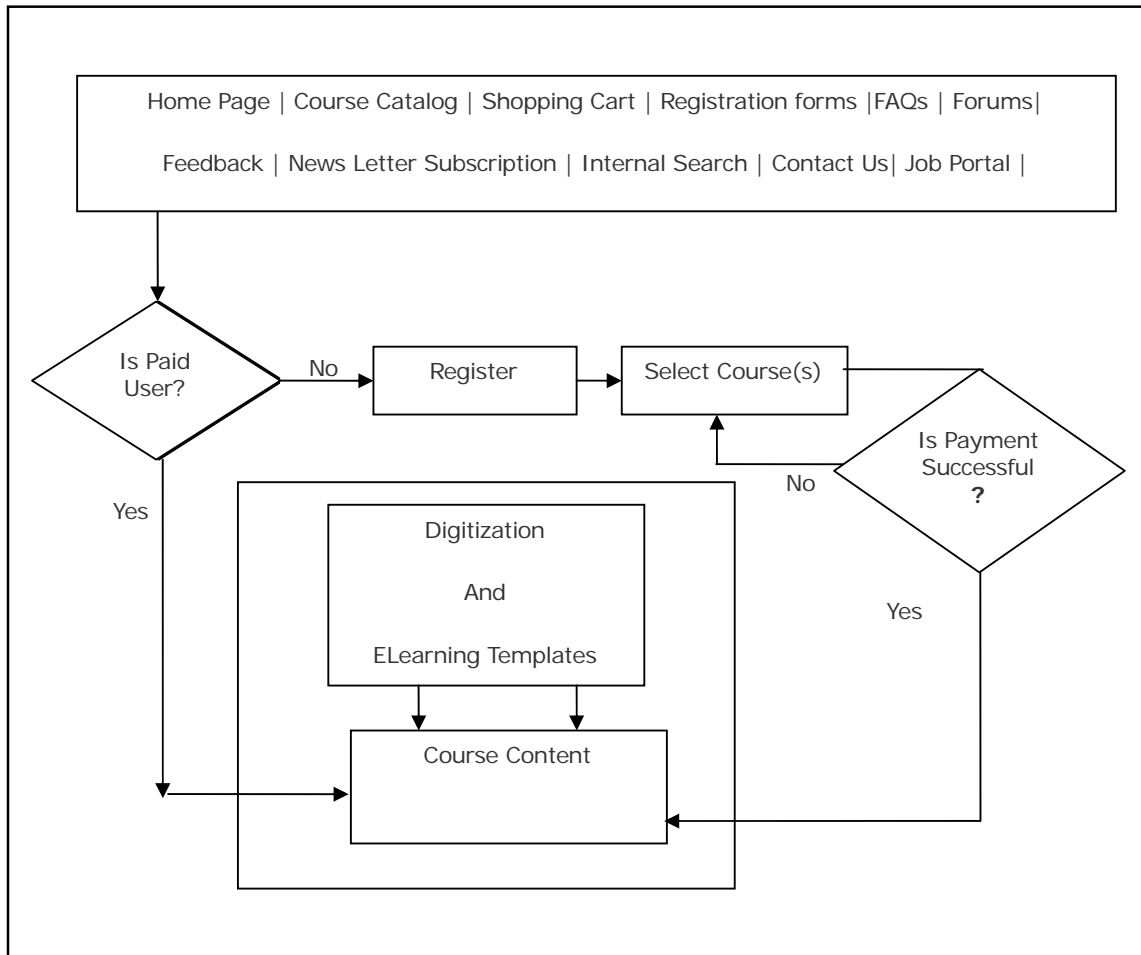
The system should delete all temporary data stored on the client side at the time of forced sign-off and auto sign-off, if any.

### **3.0 CCMS Requirement Specifications**

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This section is intended to provide the detailed functional requirements specification of the Customised Course Management System.

A model indicating the process of user registration, payment, and access to course content is given below: -



The proposed system to be developed should have the following minimal information or provision to access the details in the home page:

- About us
- Sample course
- Course Catalog



- Registration
- Sign-in
- New Arrivals
- Useful Links
- Advertisement Space
- FAQ
- Visitor Counter
- Contact Us

### **3.1 About Us**

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In this section users shall be provided with write-up information about NIMI. Write-up information will be provided by NIMI to the successful bidder.

### **3.2 Contact Us**

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Users should be given facilities to contact NIMI either through electronic mail or through postal communication. This should contain complete postal address of NIMI with email id. Provision to send electronic mail shall be made available to the user.



### **3.3 Sample Course**

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Irrespective of the user status (Registered and Paid user or unregistered user), all users should be provided with access to the sample courses of small duration of two Minutes (both digitization and e-Learning).

### **3.4 Course Catalog**

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Courses are grouped into categories like (1) Digitization and (2) E-learning. On selection of the category the system should display following details for each course from the database:

- Title of the course
- Price – One for Indian Rupees and another provision for US\$
- Duration of the course
- Topics covered
- Course Launch Date
- Course selection button

### **3.5 New Arrivals**

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In the new arrivals section, system should display the recently released titles. The Web application shall be designed to automatically select the list of courses released during the last 15 days from the database.



### **3.6 Links to other Website**

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Web page shall be designed to have links to DGE&T and NIMI Website.

### **3.7 Advertisement Space**

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A specific portion of the home page shall be left exclusively for the purpose of advertisement. Administrator should be provided with facilities to upload the necessary files to the web server for hosting the advertisement.

### **3.8 Counters & Last Update Date**

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At the bottom of the home page, it shall have a counter indicating the number of visitors who visited the website. Also at the bottom the last update date shall be displayed automatically from the database.

### **3.9 FAQs**

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List of frequently asked questions (static content) to be displayed to user.

### **4.0 Registration Process**

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If the user is interested in viewing the free contents of the website, registration is not mandatory. However if the user is interested in purchasing the course, registration process is mandatory.

Once the new user is interested in the courses, he / she must be provided with a registration form to fill their personal data. Proposed web application should



use proper controls to accept the data from the user to minimize or avoid the error in getting the data from the user. After successful registration, the user should be acknowledged with a welcome message through an electronic mail.

#### **4.1 Course Selection**

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All users should be provided with access to browse through the contents of the web site with simple easy to use navigation tools. In case of access to the course (both digitization and e-learning) the authentication and authorization to be carried out.

At the time of selection of the course to a cart, system should check whether the user has already registered. If not, system should redirect the user to complete the registration process.

An acceptance of the terms and conditions should be received from the user, and direct the user to payment options.

#### **4.2 Registration Data**

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Following essential data shall be captured from the user for registration purpose.

1. Title

This field is to select Mr./Miss/Mrs.

2. Name



3. Date of Birth
4. E-mail id (to be used by the user as login ID)
5. Password
6. Forgot Password question and answers
7. Communication Address
8. Telephone Numbers with STD code
9. Mobile Number
10. Agreement

A check box shall be provided for the user to accept the terms and conditions.

All the fields should have a prompter to inform the user to move the next step. These prompter will instruct the user and make the filling of the forms easier.

After the successful registration, system shall automatically send an email to the e-mail id filled in by the user for the registration confirmation.

### **4.3 Sign in**

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Web application shall have the facility for the registered user to access the list of paid courses for which he / she has already paid and other details. User credentials are to be verified using their User Identification and their password



specified by the user at the time of Registration process. Multiple sign-in should not be allowed.

#### **4.4 Purchase of the Course - Shopping Cart**

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This section provides the detailed information of the purchase of the course and the minimal expected functionality of the shopping cart.

Shopping Cart shall enable the user to buy the course for learning. The minimum essential functionalities are listed below: -

Add to cart: -

Add to cart will be the primary function to purchase the course. System shall be designed to check whether the user has already signed in or not at the time of selection of the first course in a session. If the user has not signed in, the system should re-direct him to sign in for verifying the user credentials.

System shall be designed to display the course catalogue information like Title, price in Indian currencies (and in US \$, if available), duration of the course, Topics covered, course launch date, Course selection control, etc.

On selection of the course selection button, user shall be redirected to display the cart contents like selected course title, total amount, duration, discount amount (if any) and Net amount payable by the user. Also it should contain two additional controls – (1) first control for continuing the selection of the other courses and (2) second control to save the cart and redirect the user for making the payment.



Users should be given an option to pay through any one of the following:

- a) Credit Card
- b) Debit Card
- c) Online Bank account
- d) Demand Draft

In the case of online payment, necessary credentials are to be verified by the system.

After the successful payment is made, system should generate a new Order number and provide a report containing essential details like his order number, date, Customer name, Address, Course title, Course Amount, Discount amount, Net Amount, Payment option, Credit Card/Debit Card Number, etc. System should send an automated order details to customer and NIMI through an electronic mail.

#### **4.5 Order Activation**

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Once the successful payment is made by the customer, administrator shall be provided with necessary user interface for accepting the order, generating the access code, forwarding the access code to email id of the customer and storing the access code in the database for user authentication. This access code would be used by the user to gain access to course contents



For both online payment and payments made by Demand Draft, this Activation process is mandatory. As the courses are designed to be accessed for a specific duration, the last / expiry date should be determined based on the course duration and date of first access by the user to read the course contents.

An automated email shall be forwarded to the user with an acknowledgement message, order details, and links to the respective pages in the website.

## **5.0 Course navigation for the registered user**

After the successful payment to the course, when the user logs in, the system should provide following information to the user:

- i. My Account
- ii. My Profile
- iii. Course Catalog
- iv. Logout
- i. My Account Option: -

This functionality will enable the user to view the purchases that have been made and also the status of the order. System should display all order details like Order No, Order Date, list of courses selected by the user, activation date, expiry / course validity ending date, etc. Also system shall be designed to display the history of user access logs (date and time). On selection of the



course listed, system should check the validity period and redirect to the first page of the selected course contents.

ii. My Profile:

About the customer information presented by the user at the time of registration like name, address, phone number etc.,

ii. Selected Course(s):

Selected Course(s) shall provide:

- a. The link to the paid courses.
- b. The purchase history
- c. The browsing history of the user includes the ip address, the date and time of learning etc,
- d. The time remaining for the course - duration / validity period.

iv. Logout:

The user shall be provided with a logout option to logout of the session.

## **6.0 Course Template**

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The templates to be designed for both digitization and eLearning modules should act as a container for the course content within the web application (CCMS).



NIMI envisages developing the e-learning course contents and digitization course contents using these e-learning template and digitization templates respectively. Hence, these templates should provide all the necessary functionalities and interface to handle the course content and easy user interface to the web users and the administrators.

## **6.1 Digitization Template**

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A template shall be designed for the digitization module and this will function as a container for the digitized lessons that will be developed separately which will be linked to the template by the administrator.

All the courses to be developed should conform to the digitization template standards and contents of the course should display within this template window. The essential and minimal functionalities which are common for the lessons and courses expected from the digitization templates are listed below:

- Window parameters like window height, width, background colour etc
- Minimizing and maximizing windows functions
- Navigation functionalities
- Enlargement of illustrations
- Book marking of the page
- Search options to search with in the current running course



- Functionalities to control the Video clips (if available)

Also template should monitor the idle time and sign-off the user automatically if idle time exceeds preset level.

## **6.2 E-Learning Template**

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Another template to be designed for the eLearning courses that will function as a container for the eLearning contents when displayed to the user. This template should have following essential functionalities and controls for

Displaying Text

Animation

Lessons menu

Volume control

Mute control

Text Transcript (Voice over the Text)

Book mark

Navigation buttons

Replay of the animation (if animation is available in the selected lesson)

All the courses to be developed should conform to the eLearning template standards and courses should run within this template window. Similar to



digitization template, e-Learning template also should have the functionality to automatically sign-off the user if the idle time exceeds the preset level.

## **7.0 Functional Requirements required for the Administrator**

A separate web interface shall be designed for the administrator that facilitates him to monitor the system. Administrator should be provided with necessary facilities to upload the contents, images, animations and other relevant files to the web server. As indicated in the order activation section, Admin shall be provided with functionalities to activate the orders. Admin shall be provided with the feature to answer the FAQs and upload the required content for the forum.

Admin shall be provided with access to all the Reports and import of the database from the web server.

Access to the administrator account shall be restricted using Login credentials with user id and password.

Administrator shall be provided with functionalities to create, modify and delete the course categories and course data.



## Part B

### **8.0 Software Requirement**

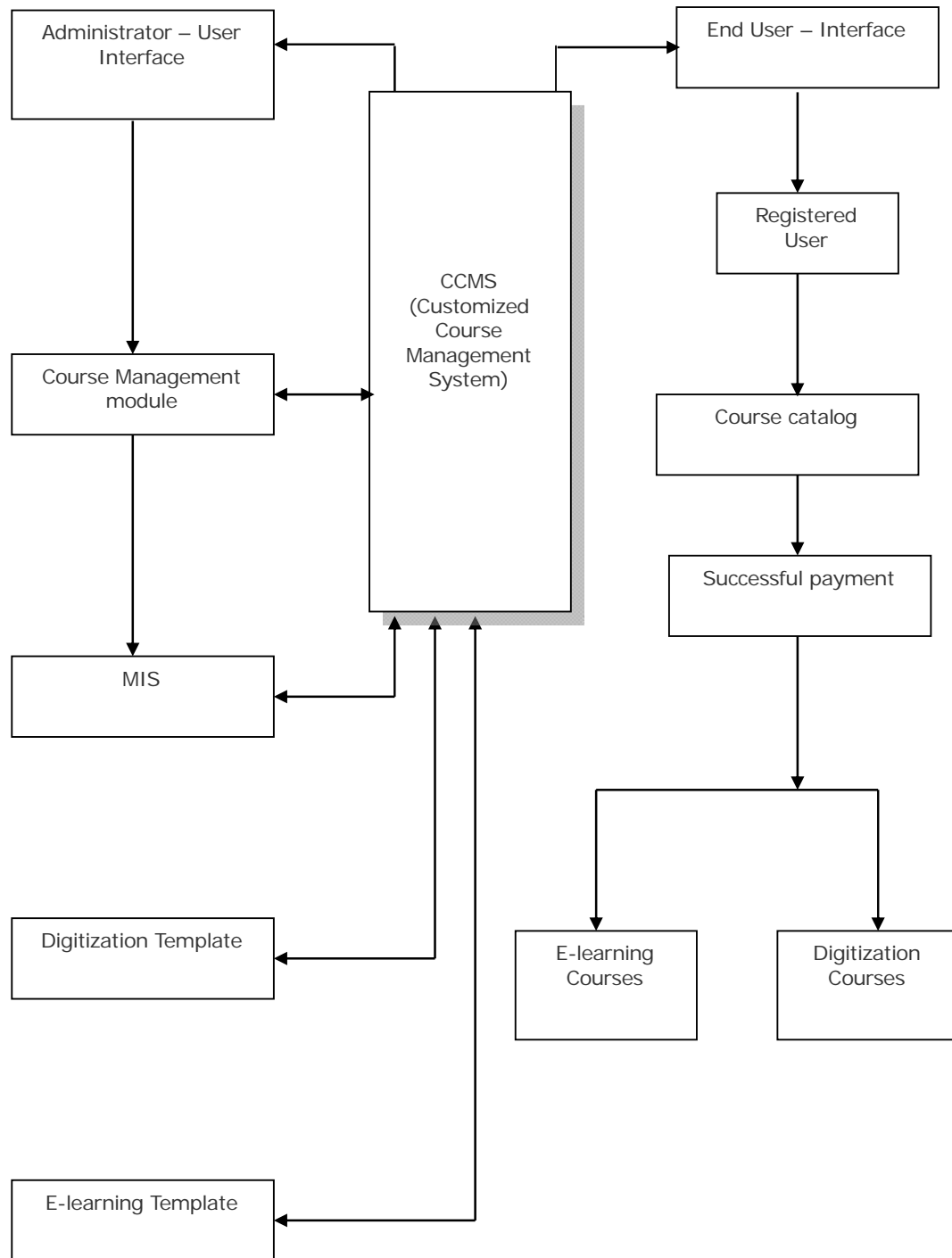
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This section provides the information about the software requirement, an abstract user interface with the system and functionalities involved.

#### **8.1 Overall Description**

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Indicative solution architecture has been given below. The interface provides means by which users would interact with the system. The user interface provides means to provide inputs to the system and receiving output from the system.





## 9.0 Specific Requirements

### 9.1 External Interface Requirements

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The Customised Course Management System is the integral part in communicating to the online user and administrator.

The access to the course content is restricted to only paid users. The minimal essential data to be captured are:

1. Title

A drop down list box to select Mr. Miss, Mrs.

2. Name

The User name of the user needs to be filled in the text box provided.

4. Date of Birth

A calendar control to fill the date of birth field shall be provided.

5. Email id

A text field shall be provided to capture the e-mail id of the user. This email – id shall be used by the user to sign in into the system.

6. Password

A text field shall be provided to capture the password of the user; on submission of the form the system should verify the authenticity. If the



authenticity process fails, necessary user control and functionality shall be provided to recall the user id and password.

On successful attempt of the Forgot Answer, the password shall be automatically mailed to the user.

## **9.2 Administrator**

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This section is intended to provide detailed information about the functionalities of the Administrator. The Administrator shall be provided complete control of the entire online system for uploading the course data, order management and taking reports. The CCMS will provide a separate link for Administrator to Login.

The detailed Functionalities for the administrator are listed below: -

- i. Administrator settings
- ii. Course Management
- iii. News Management
- iv. MIS and Reporting

i. Administrator Settings: -

The administrator shall be provided with necessary user interface and functionality to modify the admin password.

ii. Course Management: -



Course Management feature will enable the Administrator to manage the course files that are developed. The Administrator will be provided with the web user interface for updating the essential course details like create/modify/delete category and similarly for courses.

Once the course contents are uploaded in the server the Admin uses the Course Management Tool to update the course parameters like

- Course ID
- Title of the course
- A Brief Description of the course, which will be viewed in the thumbnail view by the user.
- Detailed Description of the course, containing the topics covered in the course.
- Cost of the Course (Provision for Both Indian Currency and US Dollars shall be provided).
- Course duration and other necessary data.

iii. News Management

Administrator shall be provided with a user interface facility to update a list of recent news.



iv. MIS and Reporting

The proposed system shall be designed to provide all MIS reports. It shall have the facility to export customer and product data from the data base into excel or PDF format.

### **9.3 User Inter face for the Course Template**

---

This section provides the detailed requirement of the course template. Since the courses are developed in two modes namely digitization and e-learning the courses will be controlled by two course templates separately. The functionality of the course templates are provided below: -

#### **9.3.1 Digitization Course Template**

---

Digitization Course Template will control the entire course content pages. The template shall provide the following essential functionalities: -

i. Maximize and Minimize

This option will enable the user to maximize and minimize the course content of the content window.

ii. Complete Zoom in and Zoom out

Complete Zoom in and out option will zoom in or zoom out the entire content page. The Maximum and the minimum zoom can be specified.



iii. Enlarged view of the Illustrations

Users shall be provided with the necessary controls to enlarge the view of the illustrations available in the lesson page.

iv. Book Mark

Using necessary controls user shall be provided with bookmarking facility.

v. Search

Necessary controls shall be provided to fetch the result within the course.

vi. Glossary

This option will open a pop up window and the content will be displayed in alphabetical order.

vi. Next Previous and Goto

This function shall enable the user to navigate to the next and previous pages. The Next button should be disabled during the last page of the content. Similarly, in the first page of the content previous option should be disabled. GOTO option shall navigate the user to the specific page.

vii. Time Out

Since the duration and the validity of the course are based on the time, If the user system is idle for a preset level, a prompter will pop-up to intimate the user that the system is idle and whether the user would like to continue the



course. If the user does not respond for few minutes (for example 3 minutes) the session will log off automatically. If the user clicks the continue button the course shall continue and the prompter will disappear.

### **9.3.2 E-learning Course Template**

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E-learning Course Template will control the entire course content namely, animations, audio in addition to the navigation. The essential function of the template is mentioned below: -

i. Listing and Selection of Lesson Menu

Template shall be designed to list the lessons provided by the course content. On selection of the course, user shall be provided with necessary functionality to display the lessons. On selection of the lesson system should display the starting page of the lesson selected by the user.

ii. Volume Control

Template shall have a Volume control to reduce and increase volume of the audio when required.

iii. Mute

Template shall provide the mute control to disable the audio provided in the course content.



iv. Text Transcript

Text transcript function will display the voice over script that is being read. This will act as subtitle of the voice over.

iv. Book Mark

Template shall be designed to have more than one bookmarking facility

v. Glossary

This option will open a pop up window and the content will be displayed in alphabetical order.

vi. Next – Previous

The template should be designed to have a navigation functionality to move backward forward and to a particular page.

vii. Replay

Template shall include necessary controls for replaying and controlling the animations (if available in the content).

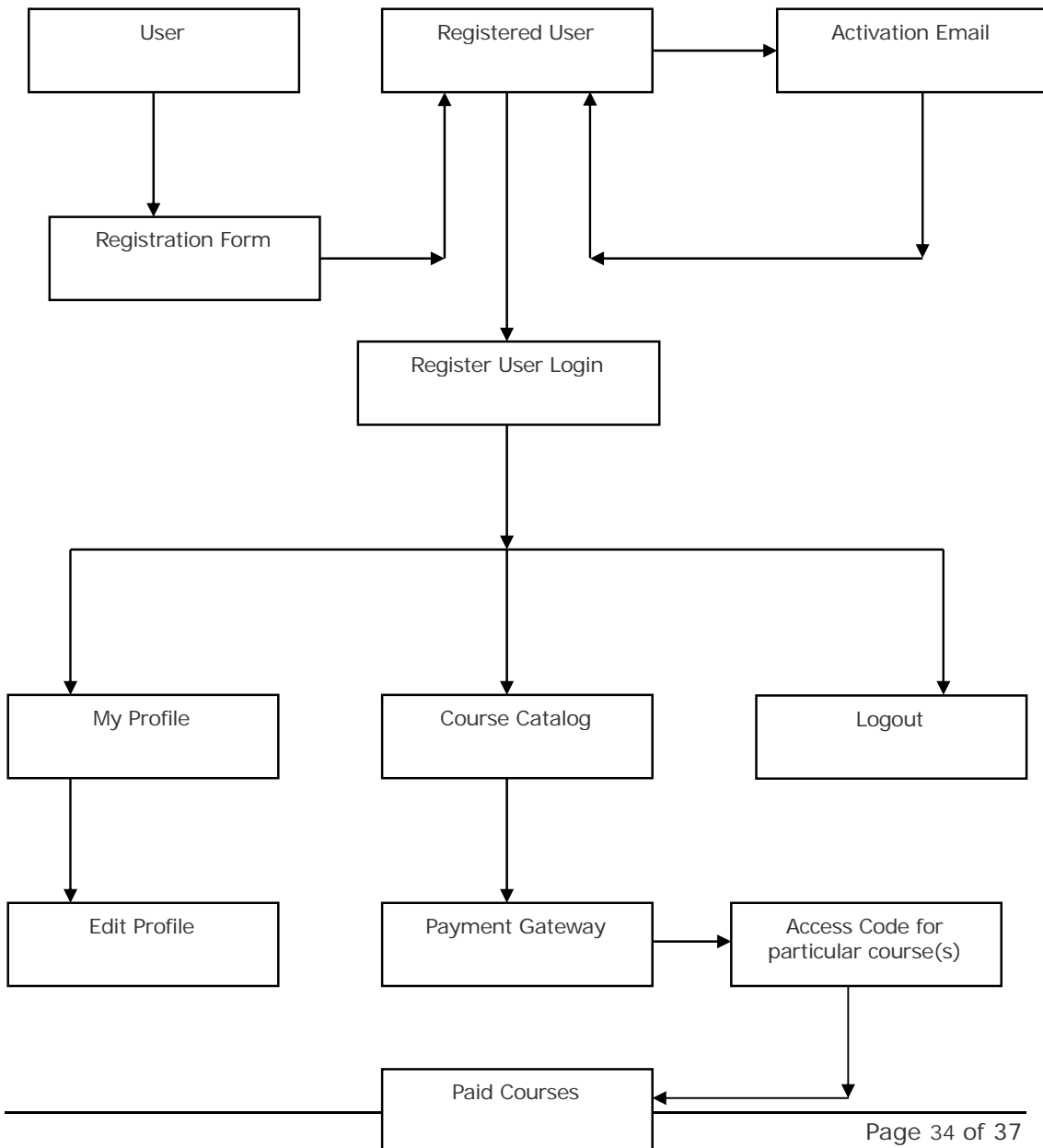
vii. Time Out

The duration and the validity of the course are based on the time. If the user system is idle, a prompter will pop-up to intimate the user that the system is idle and whether the user would like to continue the course. If the user does not respond for few minutes (for example 3 minutes) the session will log off

automatically. If the user clicks the continue button the course will continue and the prompt will disappear. This function will save the waste of time that elapses and also the server's traffic

## 9.4 Navigational Structure for End User

The navigational flow of the end user is depicted below: -





## **9.5 Hardware Interface Requirements**

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Online learning system is a web-based application. A personal computer, with internet connection, internet browser (internet explorer ver 6.5 and above and Modzilla Firefox ver 2.0 and above), and Adobe Flash player 8.0.

## **10.0 Software System Attributes**

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Security:-

The system should resist accidental or deliberate intrusions, when users operate on the system. If the system does not resist accidental or deliberate intrusions, then important data – such as credit card number, id number, username, etc. – which belongs to user, shall be stolen by hacker.

The Course Content shall get stored in the temporary data of the user computers. The functionalities Cut, Copy, File Save, File Save As, Print Functionality should be disabled.

The Third party online security system should be implemented with the online learning system.

Maintainability:-

When the system is used, new requirements may emerge. When these requirements arise, the system should be changeable and scalable to accommodate these requirements for maintaining the usefulness of the system.



## **11.0 Non-Functional Requirements and Standards**

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The Online Learning system shall be multi-tier, web based solution (have web based front-end for users and for system administrative functions), with the centralized database.

The Application will be w3C complaint. The courses that are developed for e-learning will be SCORM 2.0 standard. The proposed solution will be architected and designed using the principles of Service Oriented Architecture (SOA)

The System will be compatible with all leading web browsers especially with Microsoft Internet explored 6.0 or above and/or Mozilla Firefox 2 etc.,

The portal interface design will answer the needs of its users. Stake holders and citizens will approach the portal from a number of different perspectives. The Portal design should enable a variety of approaches and respond with a number of methods for searching, linking information and services.

The system would require Adobe Flash player on user's personal computer other than software normally associated with web browser operation. All functional areas will employ consistent look and feel across all functions.

The Online Learning System will have Drop down Menus, Command Buttons, and Pop-up Windows and other navigational aids to make the system efficient and easy to use.

The menus will have standard drop-down lists wherever possible for standard values to be selected by the user.



## **12.0 Testing**

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The web application shall be designed, developed and tested. All the test cases shall be submitted to the NIMI. NIMI will provide sample content for digitization and e-learning CCMS testing. Successful vendor has to design a digitization and e-learning module and submit to NIMI

## **13.0 Documentation**

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The web application proposed shall be properly commented at appropriate places within the source code. A copy of Application Manual shall be supplied to NIMI.