# VIRTUAL INTERACTIVE LEARNING ENVIRONMENT: INTEGRATION OF SOCIAL NETWORKING, E-COMMERCE AND LEARNING MANAGEMENT SYSTEM

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## Abstract

*The present invention relates to methods, system, architecture and design of a Virtual Interactive Learning Environment as an integration of Social Networking, E-Commerce and Learning Management System.*

## 1. Background of the Invention

[01] Social Networking websites provide services to users which aim to connect them with each other. The users usually share common interests or activities or might just connect as a part of school, college or a work community channel.

[02] E-Commerce websites provide facilities to users to purchase products or services using their platform. These sites generally fall in either of two categories, i. e. Pure-Click or Brick and Click websites.

[03] A Learning Management System is a software application which is used to publish and manage learning/training content.

[04] Learning is an integrated part of every field. Corporations, Academic Institutions, Techno-Commercial start-ups and Government Organizations in domains of BFSI, Pharmaceutical, FMCG, Health-care, Consulting and Educational departments spanning across the world, all require learning solutions for their clients & staff. With the advent of Web 2.0 and E-Learning, the need arises for a product which can be easily vested in by anyone, let alone educators, for all learning requirements. Companies are spending huge sums of money, time and efforts in getting their E-Learning requirements developed. Other than few specific courses, a set of general courses can be created which can be common for learning across many of such corporations. The existence of a similar pre-developed course is going unnoticed by the organizations resulting in creation of huge volumes of data of courses and wastage of time, efforts and money. Combining the features of Social Networking, E-Commerce and Learning Management System to create a single centralized web based platform leads to a resultant product for Virtual Interactive Learning which aims to provide a desired solution with an integrated approach to redefine learning. Using this system, users across the globe can buy and sell, general as well as specific e-learning courses, study online and also network with each other. Such a self-service model based system has high advantages and outcomes such as scalability, knowledge reuse, cost & time cutting, saving of efforts, adherence to standards, centralized & automated administration, portability, maximum return on investment and user-centric pedagogical innovations such as simplicity, interactivity and individually paced learning courses resulting in enhanced understanding of subjects and user retention.

[05] Such a system acts as a toolbox of web resources which present the right formula for enhanced learning with parallel & focused use of user-centric IT practices like modular & object-oriented programming, sharable dynamic content, open-source tools & technologies, leading global learning practices and advanced learning industry standards like SCORM & AICC. In its embodiments lies a clear cut innovative approach to provide a set of comprehensive functions like communication, collaboration and learning.

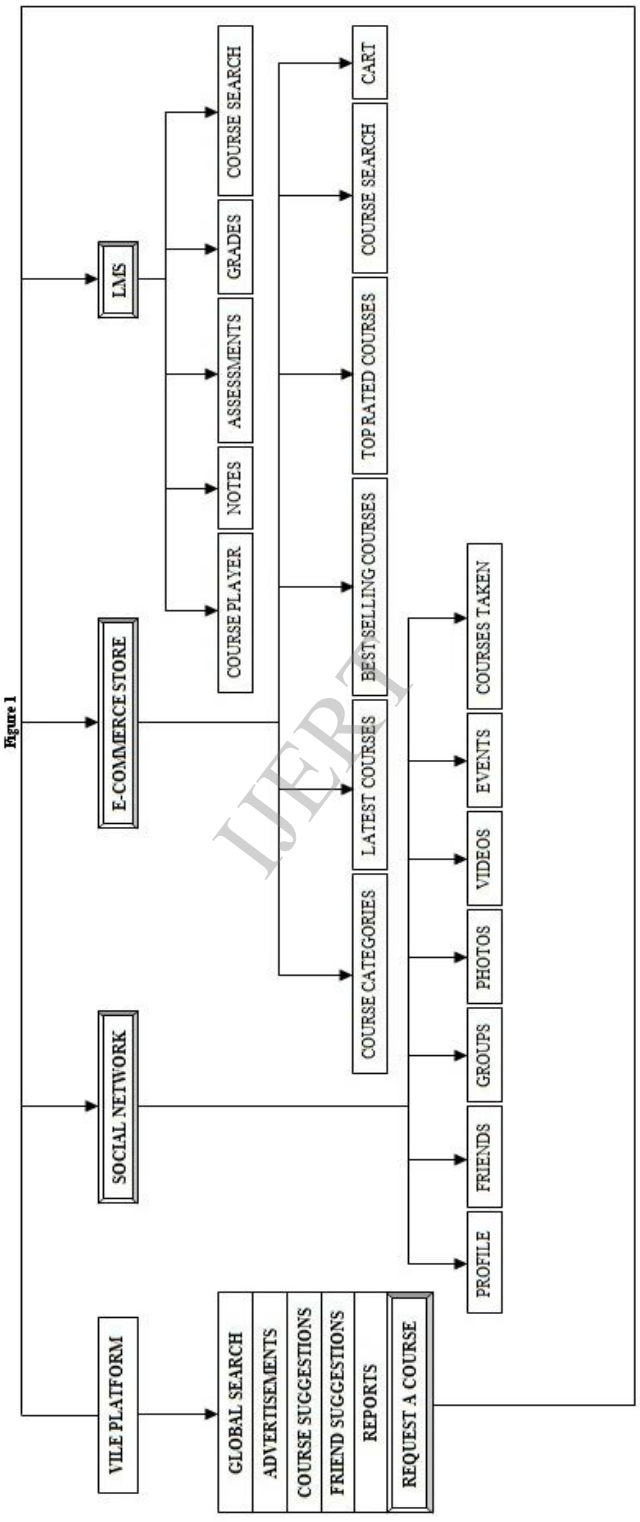



Figure 1

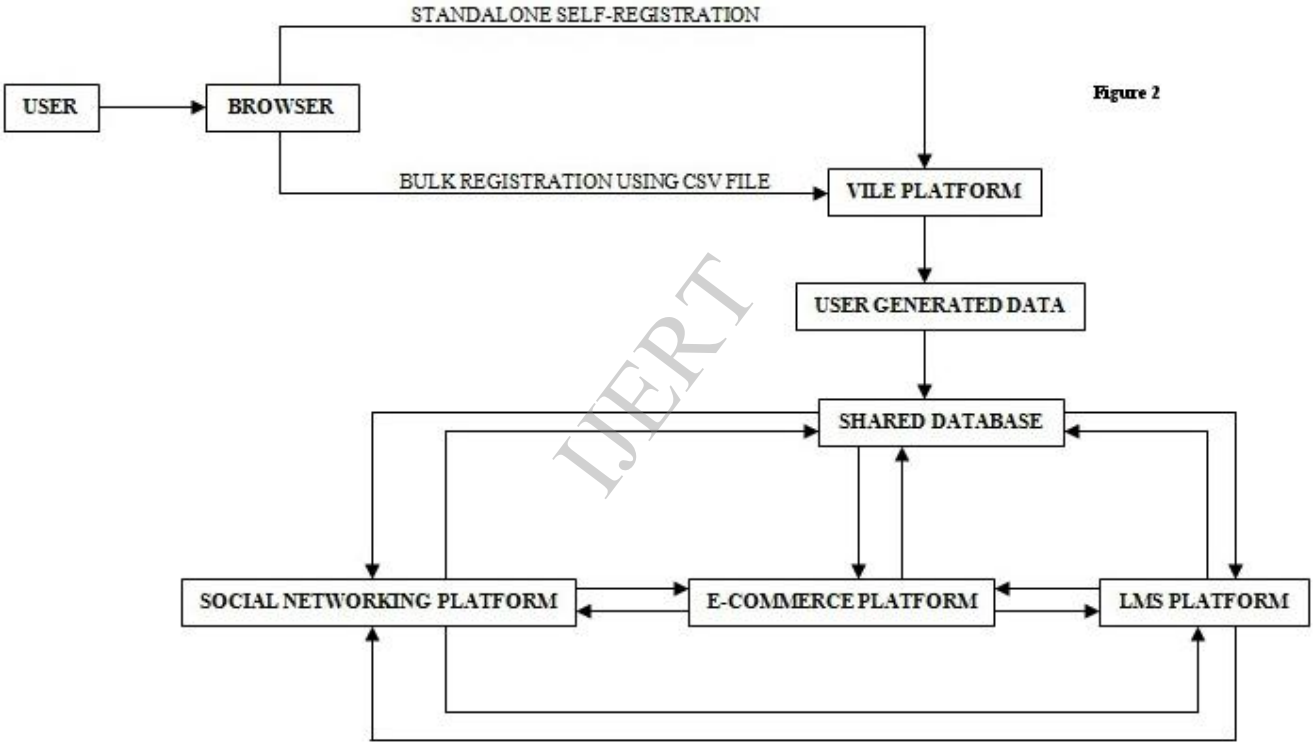



Figure 2

**Figure 3**

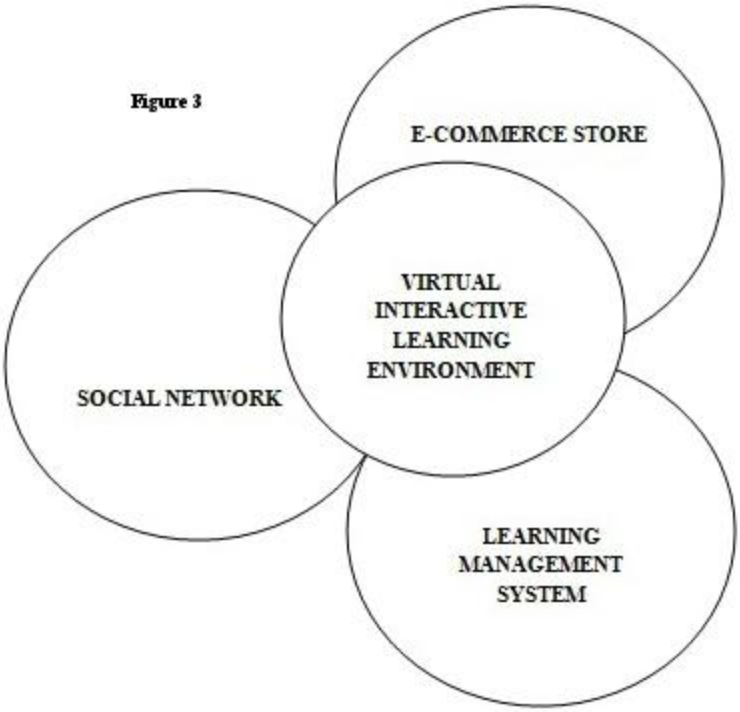
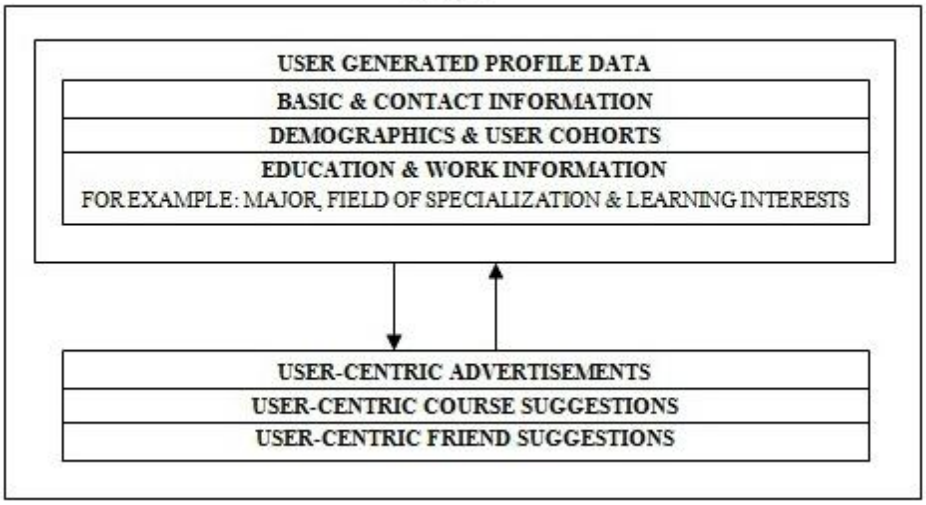





**Figure 4**



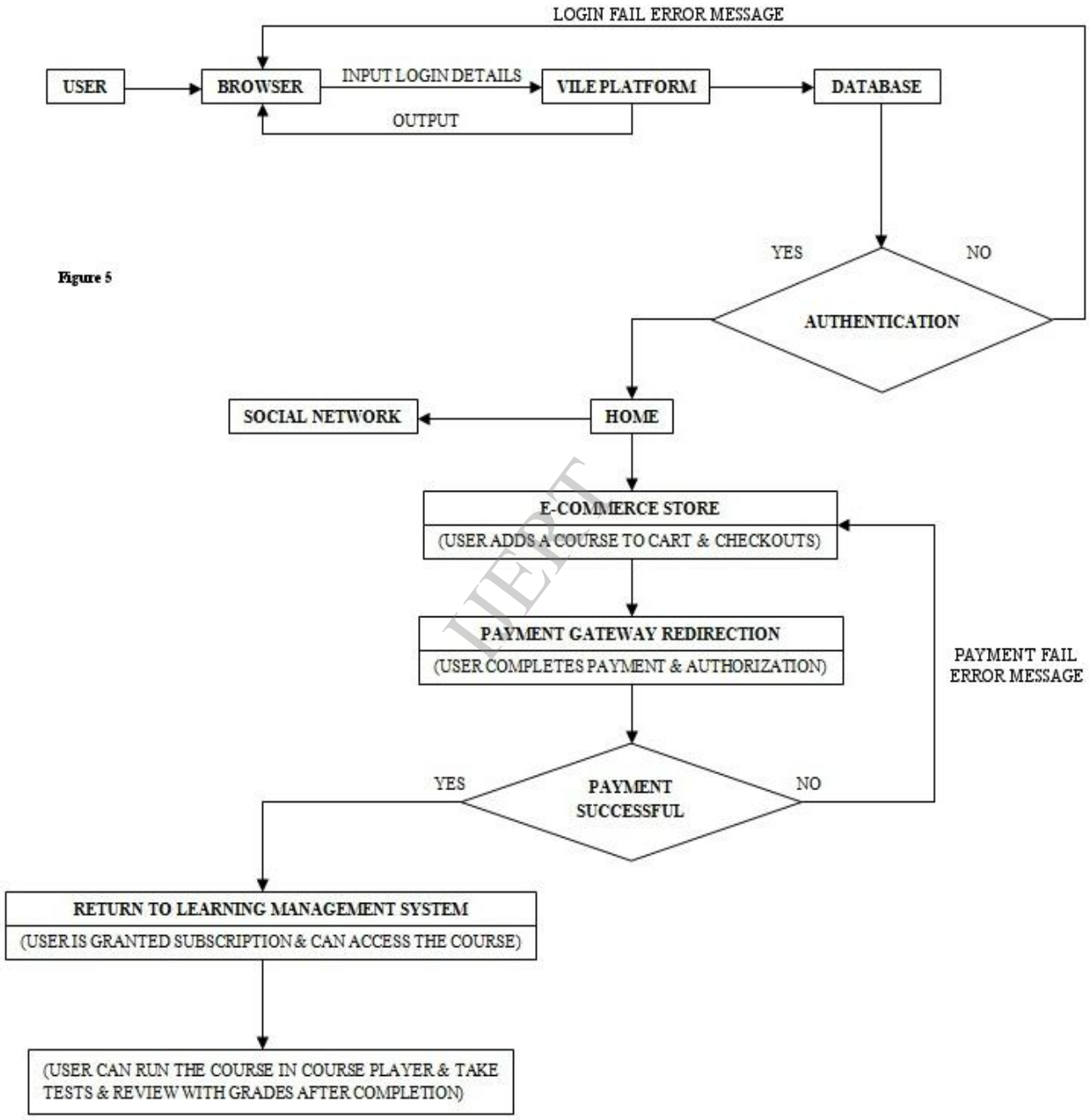



**Figure 5**

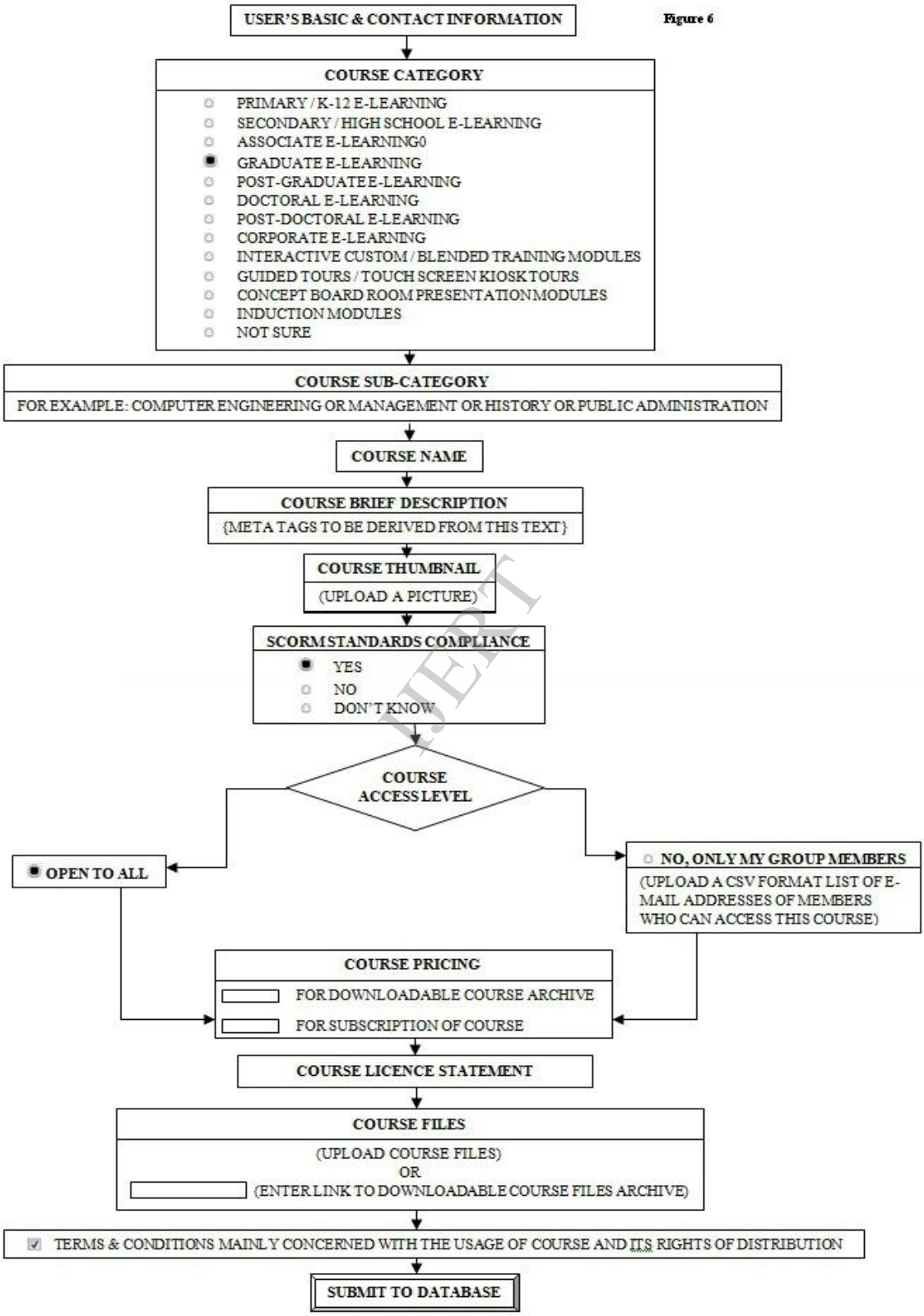



Figure 6



## 2. Brief description of the drawings

[01] Figure 1 is a schematic representation of the architecture and design of the proposed system.

[02] Figure 2 is a block diagram representing the data sharing process in the proposed system.

[03] Figure 3 represents mapping relationship of the data subsets of the components of the proposed system with the main functional identity.

[04] Figure 4 represents the metadata syndication in the proposed system.

[05] Figure 5 represents the flow of data through the proposed system from the input to the output stage.

[06] Figure 6 represents the pictorial flowchart of a typical request process to put a course in the proposed system.

## 3. Detailed description of the invention

[01] In embodiments of the present system as shown in the system architecture and design in the Figure 1, a global internet based Virtual Interactive Learning Environment (VILE) web portal system is provided. The system is designed as a combination of a Social Network, an E-Commerce Store and a Learning Management System (LMS). Each of the three partial systems viz, Social Network, E-Commerce Store and LMS carries its own set of features and functionalities which add about to produce a certain set of desired features along with a few stand alone modifications and design inputs in the combined VILE system.

[02] In embodiments of the proposed system, the user gets a Learning Management System under the global VILE environment, an E-commerce store to sell and purchase paid courses and a Social Network where the user has the ability to create his/her own pages, bios, business networking groups, photos, learning videos, events, activity & training partner profiles, invite or add friends, see what courses his/her friends are taking and create new course requests.

[03] VILE aims to invent a clear cut innovative approach to compellingly present the essence of learning in a pro-active manner. VILE is based on the open wiki architecture and thus user generated content and digital self-expression helps in reducing learning & training costs with maximum ROI. Anytime anywhere access ensures increased engagement in learning and better results.

[04] In embodiments, the design of such a system can be based on but not limited to Coldfusion, Microsoft .NET, Java/J2EE, PERL, Python, PHP, Ruby on Rails or some other development platform on Linux/Windows environment with database design using MS SQL, My SQL, Oracle or some other query language.

[05] Aiming to provide a set of comprehensive & scalable functions like communication, collaboration and learning as a global service platform system, parallel & focused use of user-centric IT practices like modular & object-oriented programming, sharable dynamic content, open-source tools & technologies, leading global learning practices and advanced learning industry standards like SCORM & AICC can be incorporated in the design and development of the system. Moreover, modern technologies like distributed programming, hadoop etc. can used in the design implementation or the system can be exported to a cloud based hosting to provide it as a Software as a Service (SaaS) application.

[06] In embodiments, a user accesses the VILE system using a web browser application. Using the registration link, the user can register himself/herself in the system using a valid email id. The user is presented with a form to input his/her first name, last name, email id and then provide a username of his/her choice. The username should be unique and a query is run through the database of the system to check its availability. The AJAX/Javascript based search results is shown to the user. If the username is not available, the user is provided for suggested usernames to choose from else the user can enter another username. On choosing the username, user is asked to choose a password which should be secure enough for the system according to a pre defined set of rules. Voice/Audio Captcha server is used to verify the user. User is then presented with the privacy policy, terms of service, use and conditions upon whose agreement the user is registered in the system. Email ID and username form the identity of the user and are unique in the system for every user.

[07] On successful registration, a verification link is sent to the user's email which should be opened by the user to complete the registration process after which the user can log into the system. The e-mail functionality of the system can be set up by using but not limited to SMTP, Sendmail, PHP Mail Function or other e-mail server application. The user's login credentials i.e. the username and password along with the other information submitted by the user is stored in a centralized database of the VILE system which is shared with the three major functional entities of the system viz., social network, e-commerce store and LMS as shown in Figure 2. Apart from this stand alone self registration, bulk registration can also be done to create user accounts using data in a CSV file format and importing it in the system.

[08] User can access the system using a web browser and post registration, can login in to the system using the login link on the VILE system's home page. The authentication mechanism of the VILE system user with the centralized database can be managed by but not limited to RADIUS, PAM, Shibboleth, LDAP, CAS, Open ID or any other mechanism. Further use of web services like SSO, XML-RPC, JSON-RPC, SOAP, cURL, WSDL, AMF-REST, RTMP for Actionscript, NNTP and distributed hypermedia ensures smooth data sharing and transfer and supports the mapping relationship in the VILE system with its sub-entities, Social Network, E-Commerce Store and Learning Management System as shown in Figure 3.

[09] First time login prompts user to complete his/her Personal Profile Data such as Basic & Contact Information, Demographics & User Cohorts and Education & Work Information such as Major, Field of Specialization during Undergraduate/Graduate School and Learning Interests. This information can be updated/edited by the user at any later stage. The profile data generated hence forth is used as metadata to generate and syndicate user-centric advertisements, course suggestions and friend suggestions as shown in Figure 4.

[10] In embodiments of the present system, the user mainly gets a blend of advertisements, course suggestions, global search, friend suggestions and course request provision under the global VILE environment. Under the Social Network, the user can create profile, add friends, chat with teachers, invite fellow friends to doubts clearing sessions, create groups, discussions & events, add blogs, browse around to check the learning videos and photos and view what courses his or her friends are taking. Under the E-Commerce Store, the user gets the category wise sorted market place of courses of different types and subjects, an AJAX/Javascript based search module for locating courses by passing the search query in the field, information about latest, best selling, highest rated and top bought courses as well as a shopping cart. User can enroll himself/herself in various courses; buy study materials offered by various members either as downloadable course archives or as subscription based enrollments. User can add the course in the shopping cart and checkout to make payments by entering his/her payment information. User is then redirected to a payment gateway such as Pay Pal where after complete payment authorization, user is granted subscription and access to the bought course as shown in Figure 5. User's payment information is stored in a secure manner so that in future, if user wants to buy another course, the payment gets automatically credited from his/her account at his discretion. Under the Learning Management System, the user can browse through different courses which he/she has access to, study online in the dynamic and interactive course player, take notes, attempt tests, assess students as teachers and export grades. Together the three entities constitute the complete system architecture of the proposed system as shown in Figure 1.

[11] Other additional features that can be incorporated in the system to increase its functionalities are open source editors to enable user of the system to edit his/her content by embedding code snippets such as Tiny MCE, JCE, X Standard or other editor platforms, Dropbox, Flickr, Picassa, Amazon S3, Web OAV, You Tube, GD Library repositories, Google Docs, Alfresco Depositories, Box.net, Facebook and Gmail integration by the use of third party independently developed APIs and widgets.

[12] The system comprises a host of features such as Groups, Events, Blogs, Wikis, Discussion Forums,

Surveys, Workshop, Lessons, Notes, Reports, Activities, Webinars, Calendars, Messaging, Chats, Labels, Mailing Lists, Newsletter, RSS Feeds, Data Marts, Grades, Assessments, Skills-Gap Analysis, Glossary, Quizzes, Attempt States, Time Trackers, Navigation, Bookmarking & Auto Continue Options, Completion Status Aggregation, Feedback and Content Packages Distribution via Import, Export, Publish, Back up, Restore or Reset of Data.

[13] The security of the system and prevention of Service Denial Attacks can be managed by employing practices such as HTTP Security, SSL, Filters, Host Monitoring during Remote Instances Configuration, Errors Reporting, Comments' Logs & Statistics and keeping Memory Limit on File Uploads.

[14] In the embodiments, the present system aims to become a web based global and open to all platform which anyone can join for his/her learning needs. Certain paid courses can be made available on the system which can be joined by paying a certain fees payable on both subscription and downloadable course archive/package buy out basis. Courses which are dedicated to certain corporations will be accessible only by their members.

[15] In the embodiments of the present system, any user can request a course/provide content complying with SCORM/AICC standards to be put on the system using the Course Request Form of the system. The Course Creator or the user who requests the course can always exercise his/her choice or decision on the fees of the course and its accessibility level, that is, who can access the course from his/her group members or the entire public base. Typically, a Course Request Process for the proposed system is shown in Figure 6. A user accesses the Course Request Form using the link provided in the system's interface. A user is then provided with fields to enter his/her basic personal and contact information if the user is not a registered member of the system. If the user is already a member, then he/she can access the form after login in the system so that the basic personal and contact information is fetched from the system database itself. User then has to choose the Course Category, give a Course Sub-Category, Course Name, Course Brief Description so that Meta Tags can be derived to provide search facilities and course suggestions to other users, Course Access Control Provision List, License Statement, Course Pricing and necessary Course Files. If the Course is not SCORM compliant then the necessary files of the course have to be converted into a SCORM compliant package before it can be run on the Course Player of the Learning Management System. If the course is free and open for all to access, it will be available in the LMS environment itself else it can be accessed by the desired user by paying the fees of the course from the E-Commerce environment of the system.

[16] The main advantage of the three tier architecture of the system is that the security of the user is never compromised and his/her privacy is never invaded. In embodiments, such a system requires users to be categorized according to certain roles belonging to certain cohorts such as Teacher/Mentor, Student, Course Creator, Course Manager and/or Administrator. Moreover, there exists continuous Roles Overriding & Switching because Teachers of one course can be enrolled as a Student in another course with content shared/featured for them depending on their Location/Language choice. Independent LMS, E-Commerce Store and Social Network functioning as entities of the system with their data synched/mapped with the main system helps in achieving these requirements. The main system has the locus of control which enables only the authentic course users to review, rate, comment or post the course such that its sales profile in the E-Commerce Store is not affected. And all the users who are accessing a course in the LMS or have common learning goals are not automatically added as friends in their Social Network Profile as they may or may not be acquaintances with each other. The functioning and operation of such a system with secure mechanisms in a smooth manner can be done by using techniques such as Timed Subscription & Link Expiry, Peers Tracking, IP Restriction using Trackers & Blockers, Session Handling and Notifications. Such a self-service model based system has high advantages and outcomes such as scalability, knowledge reuse, cost & time cutting, saving of efforts, adherence to standards, centralized & automated administration, portability, maximum return on investment and user-centric pedagogical

innovations such as simplicity, interactivity and individually paced learning courses resulting in enhanced understanding of subjects and user retention.

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