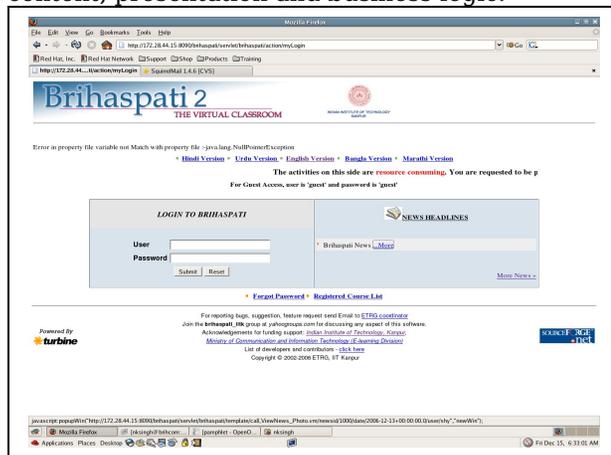


OBJECTIVE

This project executed at IIT Kanpur, aims at developing a platform-independent highly scalable content delivery system for web-based e-learning system (codename: Brihaspati-2). It enables instructors to enhance on-campus learning by sharing course materials, having class discussions, and making assessments on the web. It can also be used to deploy e-learning content for off-campus learning which can be self as well as mentored.

ARCHITECTURE

This content delivery system (Brihaspati-2) is implemented in java using Turbine¹, an open source framework, as secure web application. This conforms to the Model View Controller (MVC) paradigm which aims at separating content, presentation and business logic.

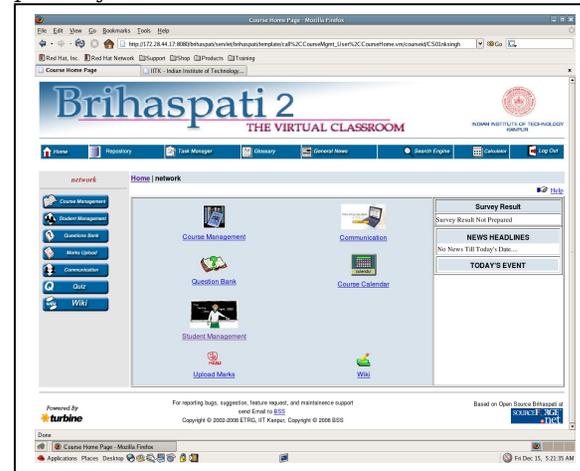


ENTITIES

There are five possible entities in the system at present. These are administrator (for the learning management system), instructor (primary and secondary), student and content author. Each course can have one single primary instructor and any number of secondary instructors. Additional instructors can be added to or removed from a course by the admin at any time. The removal of primary instructor, also leads to removal of

¹ <http://jakarta.apache.org/turbine>

course from the system. This structure resolves the IPR issues involved in any academic environment, where same course might be taught by different instructors in different semesters or academic years. In this system, each course is bound to its primary instructor. You can have two courses with same id and name, but with different primary instructors.



SALIENT FUNCTIONS (INSTRUCTOR AND STUDENT)

Content publishing: Instructor can upload/publish content in any format, he desires, directly to the course. He can also upload the material to content repository and then publish it in one or more courses simultaneously. Instructor has option to run a SCORM packager and package the developed content as SCORM package which can then be deployed in Brihaspati or any other LMS. This has been achieved by integrating Reload² in Brihaspati.

Chat and Whiteboard: The users can communicate online. Of course, they have to be logged on at the same time for this. The instructor can make drawings using freehand as well as predefined graphic components in the whiteboard

² <http://www.reload.ac.uk>

along with the chatting. This makes live discussion over internet, more effective³.

Student management: The instructor can manage students' details in his own course, including addition, deletion and modifications.

Backup: The instructor can also take backup of the course material. In case of server crash, this can be restored with the help of administrator.

Remote course: Instructor can sell (buy) course contents to (from) other institutes using Brihaspati-2 LMS installed at those institutes.

Surveys: Admin can setup surveys to take feedback for the courses. It can be used to evaluate the instructors. The feedback can be seen by the instructor, which will help him improving his instructions.

Question Bank: Under Question Bank Repository, instructor can create module wise question bank of various types (true/false, short answer type and multiple choice type).

Academic Evaluation: The instructor can conduct online test. Assignments can be submitted online and graded. The students can be partitioned into group for various group based learning activities.

There are many other functionalities available to both students and instructors e.g., search engine, news, glossary, mail, discussion board, marks view (marks upload for instructor), task manager, calendar - personal and course specific, personal area for keeping material, facility of sharing the uploaded material in personal area, course specific wiki for collaborative content authoring

³ Live interactive classroom over internet is being developed under project codenamed Brihaspati_sync. See the other flier for more details

by the instructors and students. The system supports bookmarks for each user. The system now support storage quota implmentation which can be used to restrict the use of storage space in personal area (default 200 MB) and course area (default 500 MB) separately. These numbers can be modified by administrator for specific installations. Recently, online academic registration module has also been added for students and courses to minimize dependency on adminstrator.

FUNCTIONS (ADMINISTRATOR)

Admin creates new courses, registers Instructors and students. He can also backup/restore the course material, along with many other management tasks like List Management (view all courses and users), Communication, Event Management (conducting surveys in the courses).

GUI LANGUAGE

Brihaspati has been modified architecturally to support multiple GUI languages. In the current distribution, we have Bangla, English, French, Hindi, Marathi, Teleugu,Urdu, Italian, Russian and German as the supported languages. Development in more languages e.g., Korean is in progress.

Use in IIT Kanpur

Since IInd sem 2003-04, all the courses offered in the institute are also being provisioned on Brihaspati. All the students and instructors can use this. In case instructor desires, he can also make this material visible to world outside IIT Kanpur, by enabling guest account for his course.

What more in future?

1. SCORM⁴ (shareable content object reference model) player implementation.
2. Extension to Multiserver architecture.
3. Web service architecture to discover and use functionalities available over web.

⁴ <http://www.adlnet.org>

How to go about creating content?

- Be object oriented.
- Each course is collection of these independent standalone object (also called Learning objects); collection of these makes the learning material.
- Learning objects should be updated periodically to make them reusable objects.

URLs

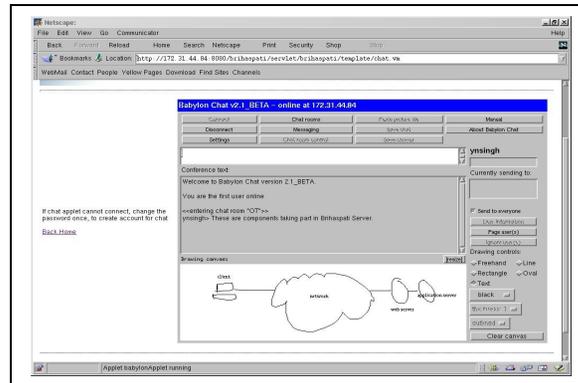
<http://brihaspati.sourceforge.net/>

Current installation used by institute

<http://202.141.40.216:8080/brihaspati/servlet/brihaspati/>

The project is listed on sourceforge.net. See url <http://sourceforge.net/projects/brihaspati> . The source code and binaries can be donwloaded from this site.

Bug report, feature requests, suggestions and discussion can be posted at moderated group brihaspati_iitk@yahoogroups.com Alternatively one can send an email to yensingh@iitk.ac.in



For support services/ customization you can Contact

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