GUJARAT TECHNOLOGICAL UNIVERSITY

(GTU)

INNOVATION COUNCIL (GIC)

Patent Search & Analysis Report

(PSAR)

Date of Submission : 23/09/2016

Dear **Rathod Harshrajsinh Vijaysinh,**

Studied Patent Number for generation of PSAR	:	**16BE7_130020107086_2**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	ERP,SaaS,Backend
3. Search String Used	:	ERP As SaaS and Backend
4. Number of Results/Hits getting	:	187

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	Computer/IT Engineering
6. Invention is Related to/Class of Invention	:	Related to system for exchanging information between both ends of systems
6 (a) : IPC class of the studied patent	:	G06F17/30569
7. Title of Invention	:	Method and system for exchanging information between back-end and front-end systems
8. Patent No.	:	US20110282969A1
9. Application Number	:	US13100974
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/US20110282969A1/en?q=erp&q=saas&q=backend
10. Date of Filing/Application (DD/MM/YYYY)	:	13/05/2010
11. Priority Date (DD/MM/YYYY)	:	13/05/2010
12. Publication/Journal Number	:	13/100974
13. Publication Date (DD/MM/YYYY)	:	17/11/2011
14. First Filled Country : Albania	:	United States

15. Also Published as

Sr.No	Country Where Filled	Application No./Patent No.
1	United States	20110282969

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	Iyer Vaidyanathan	Tempe, AZ
2	Gupta Vikas	Naperville, IL

17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	SEAL Innotech	APPSFREEDOM Inc

18. Applicant for Patent is : College

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

A system for exchanging information content between a back-end system within a restricted access environment and an end-user includes a front-end system and a manager node outside of the restricted environment, and an access node within the restricted environment. The front-end system executes a mini-application to output query data. The manager node receives the query data and applies business logic and connection parameters to generate a request for the information content in a first format. The manager node communicates the request to the access node in the first format. The access node converts the request to a second format particular to the back-end system, and conveys the request to the back-end system. Responses containing the information content are received at the access node from the back-end system. The access node converts the responses to the first format and sends information content contained in the responses to the front-end system via the manager node.

20. Specific Problem Solved / Objective of Invention

A retention management system identifies, analyzes, and evaluates student information collected by the enterprise resource planning systems and learning management systems. The retention management system applies an algorithm to collected information and locates students that are struggling before they are lost to attrition. The retention management system also provides tools to allow personnel at the academic institution to communicate with students, implement plans to correct current problems with student, and to predict and prevent future problems.

21. Brief about Invention

In the accompanying drawings, reference characters refer to the same parts throughout the different views. The drawings are not necessarily to scale; emphasis has instead been placed upon illustrating the principles of the invention. Of the drawings:
FIG. 1(https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00000.TIF/1.png) is a block diagram showing academic enterprise systems and illustrating the relationships between the users, the application server, the management systems, and stored data.
FIG. 2 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00001.TIF/1.png)is a flow chart illustrating the operations performed by the retention management system (RMS).
FIG. 3 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00002.TIF/1.png)is a flow chart that illustrates the steps for a user to manually create an early alert, intervention, or assign a follow-up.
FIG. 4 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00003.TIF/1.png)shows an exemplary main screen that is presented to a user after they access the RMS.
FIG. 5 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00004.TIF/1.png)shows a screen presenting an example of risk factors associated with a retention model.
FIG. 6 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00006.TIF/1.png)shows the retention action tab screen.
FIG. 7A (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00007.TIF/1.png) shows the early alerts tab screen.
FIG. 7B (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00008.TIF/1.png)shows the interventions tab screen.
FIG. 7C (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00009.TIF/1.png) shows

thefollowup
assignments tab screen.
FIG. 8 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00010.TIF/1.png)shows an example of an early alert screen.
FIG. 9 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00011.TIF/1.png)shows the student list tab screen.
FIG. 10 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00012.TIF/1.png) shows the student profile tab screen.
FIG. 11 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00013.TIF/1.png) shows the model results tab screen.
FIG. 12 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00014.TIF/1.png) shows the student relationships tab screen.
FIG. 13 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00015.TIF/1.png) shows the course schedule tab screen.
FIG. 14A (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00016.TIF/1.png) illustrates an example of an early alert submission form.
FIG. 14B (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00017.TIF/1.png) illustrates an example of an intervention submission form.
FIG. 14C (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00018.TIF/1.png) illustrates an example a follow-up assignment submission form.
FIG. 15 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00019.TIF/1.png) is a flowchart illustrating the steps for automatically generating alerts.
FIG. 16 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00020.TIF/1.png) shows screen providing an example of how to configure an automatically generated alert.
FIG. 17 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00021.TIF/1.png) shows screen illustrating an example an alert message associated with an automatically generated alert.
FIG. 18 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00022.TIF/1.png) shows a screen illustrating an example of an automatically generated alert.
FIG. 19 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00023.TIF/1.png) shows the early warning configuration screen.
FIG. 20 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00024.TIF/1.png) shows screen illustrating how different members of the university are granted different access levels to the retention management system based on their role within the university.
FIG. 21 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00025.TIF/1.png) shows screen illustrating an example of how concern types are configured.
FIG. 22 (https://patentimages.storage.googleapis.com/US20120233084A1/US20120233084A1-20120913-D00026.TIF/1.png) shows screen illustrating an example of how notifications are configured for different people.
DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

22. Key learning Points

Academic enterprise systems are used to manage student and business information at colleges, universities, high schools, and other academic institutions. The systems are used to manage student information such as enrollment, class registration, courses information, grades and financial aid information as well as business information such as payroll, room scheduling, professor course assignments, billing, and budgeting, to list a few examples.
Learning management systems are examples of academic enterprise systems and are sometimes referred to as content management systems, learning content management systems, managed learning environments, learning support systems, or online learning centers. Regardless of the name, the purpose is to provide web-based tools and strategies to supplement or replace traditional classroom learning and student management tools. The systems allow the institution's personnel, including administrators, faculty, and advisers, to update grades, assign online quizzes, track attendance, and create and monitor course groups. Likewise, the learning management systems can populate student and faculty accounts with courses, schedules, course descriptions, class lists, contact information and provide 24-hour access to course documents, announcements, links, syllabus, discussions, and online chat for students and the institution's personnel.
Similarly, business information is managed by academic enterprise resource planning (ERP) systems. The enterprise systems manage business information such as payroll, invoices, billing, budgeting, and other similar business functions required to keep an academic institution operational.
Academic institutions are always concerned with student attrition. When a student withdraws from an academic institution there is certainly a loss of revenue to the institution, but more importantly, it suggests a failure. As a result, personnel at many institutions are dedicated to engaging at-risk students in hopes of reducing attrition. In fact, retention systems have been developed to identify at-risk students. Systems are available that access student grades in order to identify the students that are at-risk.

23. Summary of Invention

Many of the existing retention systems exist separate from the learning management and academic ERP systems that are common to academic institutions. This impairs their performance since they do not have access to all student data that might be relevant to identifying at-risk students. Moreover, it impairs the usability of the retention systems from the standpoint of the institutional personnel since they must learn and then access a new and separate system.
The present invention is directed to a retention management system. The retention management system analyzes the information collected by the enterprises resource planning systems and learning management systems and identifies critical factors that lead to the loss of students. The retention management system is able to evaluate students based on academic, financial, and social risk factors to determine which students

aremost in danger of attrition. The system is also able to manage the workflow associated with engaging at risk students and then tracking their progress.

In general, according to one aspect, the invention features a workflow method for student retention management. The method comprises enabling users to create alerts concerning retention issues for students and displaying the alerts to institutional personnel including types of the alerts and student names for the student for whom the alerts were created.

In embodiment, the types of the alerts include academic, financial and social types. More specific examples include academic grades and academic attendance.

The alerts are preferably displayed along with dates of creation, users submitting the alerts and relationships of the users to the students.

In the preferred embodiment, users can assign follow-ups for the alerts including designating assignee to perform the follow-ups. A status of the follow-ups are tracked as being pending or completed. Preferably, users can also add interventions with the students including specifying types of interventions performed.

In operation, users can select students and then display alerts associated with the students and also possibly follow-ups and interventions associated with the students.

In general, according to another aspect, the invention features a system for student retention management. The system comprises a user interface that enables users to create alerts concerning retention issues for students and a retention management system that displays the alerts to institutional personnel including types of the alerts and student names for the student for whom the alerts were created.

In general, according to still another aspect, the invention features a workflow method for student retention management. The method comprises enabling users to create interventions concerning retention issues for students and displaying the interventions to institutional personnel including specifying contact with the student for whom the interventions were created.

In general, according to still another aspect, the invention features a system for student retention management for managing interventions concerning retention issues for students.

In general, according to still another aspect, the invention features a workflow method for student retention management. The method comprises enabling users to create follow-ups concerning retention issues for students and displaying the follow-ups to institutional personnel including personnel designated to perform the follow-ups. This can also be characterized in terms of a system.

In general according to still another aspect, the invention features a method of generating alert messages in an academic retention management system. The method comprises retrieving and displaying student information, enabling selection of students, enabling the population of alert forms with information related to retention concerns with respect to the selected students, and submitting the alert forms to the retention management system to create corresponding alerts.

The above and other features of the invention including various novel details of construction and combinations of parts, and other advantages, will now be more particularly described with reference to the accompanying drawings and pointed out in the claims. It will be understood that the particular method and device embodying the invention are shown by way of illustration and not as a limitation of the invention. The principles and features of this invention may be employed in various and numerous embodiment without departing from the scope of the invention.

24. Number of Claims : 32

25. Patent Status : Published Application

26. How much this invention is related with your IDP/UDP?

< 70 %

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

A User can also add deadlines to the followups. Alert Generation can also be made automatic so each time user has not to worry about generating alerts. and also the principles and features of this invention may be employed in various and numerous embodiments

Page