

# **THE ROLE OF AN INTEGRATED E-LEARNING PLATFORM IN INCREASING THE PROCESS-MANAGEMENT EFFICIENCY**

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**Abstract:** This paper aims to present the steps taken and solutions implemented at the Cisco Networking Academy of the University of Bucharest in order to increase the process-management efficiency and the student satisfaction degree, mainly via the implementation of an own e-learning learning platform. The results are a significant improvement of work relationships, due to the fact that everyone's responsibilities are clearly defined together with the expectations for each employee. Furthermore, productivity tools enable us and our instructors to concentrate on increasing the quality of our students' learning experience in order to obtain even higher degrees of student satisfaction, retention, and promovability as a direct measure of teaching/learning success.

**JEL classification: I2, M15, O39**

**Key words: Instructor Experience, User satisfaction, E-learning platform, Management Module, Student Assessment,**

## **1. INTRODUCTION**

The University of Bucharest has been running the Cisco Netacad Program for 11 years, with increasing success each year. Based on this the University of Bucharest, Credis Academy has been appointed as the Local Academy of the year in Europe and Emerging Markets. This has led to a large number of students being enrolled at any given time in multiple places around the country. Combined with the high quality and flexibility expected from e-Learning programs at our University, managing the academy has become very time consuming. This paper presents the steps taken and solutions implemented at the Credis academy in order to increase the process-management efficiency and the student satisfaction degree, mainly via developing and implementing of an own online learning platform.

## **2. PUBLIC-PRIVATE PARTNERSHIP**

A well known skills shortage exists in the domain of ICT-Information and Communication Technologies. This shortage has two components: one is the shortage of certified persons and higher education graduates in the field of ICT and the other is that often higher education graduates' ICT skills do not meet industry expectations and requirements[3,4]. A reason for this is the fact that universities are more often than not reluctant or even resistant to change, are mainly focused on theoretical instead of practical aspects and sometimes are completely disinterested in the practical activities (the well known effect of the ivory tower)[2].

To compensate for this reality, big companies have developed their own training programs: CISCO NetAcad, Microsoft IT Academy, Oracle Academy, Adobe Academy. These initiatives benefit from high-end human and financial resources. Our experience concludes that universities are not able to mobilize such resources and thus could not develop similar high-quality, continuously updated course materials.

Applying the concept of Public-Private Partnership (PPP or 3P), our university has implemented the Cisco Netacad and Microsoft IT academy programs, being thus able to offer students the opportunity to participate in world class training programs in a field of high interest.

After 11 years of hard work, the results are more than satisfying: 3 national and 2 international awards including the “Local Academy of the Year” award received at the 10th year anniversary conference of the NetAcad Program in the Europe & Emerging Markets area. This area covers 130 countries and 4000 academies in Europe, the Middle East, Africa and Latin America. However, in the course of 11 years of activities we have experienced increasing difficulties in using the NetAcad website, especially as our number of students has increased exponentially.

### **3. THE NETACAD WEBSITE**

The official NetAcad website is the command center for the daily management activities of the CISCO academies. This system is used to coordinate student and staff activities. However, the initial forecasts on which the system's implementation was based do not seemed to have assumed academies could become as large as our academy has become in terms of number of students. This is why we encountered increasing difficulties related to the following issues:

- it is impossible to know the class history for a particular student,
  - it is difficult to contact students which have no public profile
- it is impossible to send custom e-mails to all students in one particular class,
- there is no scheduling/viewing system for practical hand-on activities,
  - there is no tracking system for students' progress through practical activities,
  - the user enrollment process is relatively difficult (manually/by username,
  - it is difficult to contact students which have no public profile.

Working with over 2200 students in 2008 alone and approximately 3300 in 2009 has prompted us to take measures to overcome these problems. As a result, we designed and implemented our own online learning platform for the Cisco Academy, platform that will be used in conjunction with the NetAcad website [1].

### **4. THE ONLINE LEARNING PLATFORM OF THE CREDIS ACADEMY**

The application we developed is divided in two parts: the Student Experience and the Instructor Experience modules. The Student Experience Module is an implementation of our vision of fully flexible student services in the learning process [5].

The Instructor Experience module is thought like an ERP. Enterprise Resource Planning (ERP) systems integrate (or attempt to integrate) all data and processes of an organization into a unified system. A typical ERP system will use multiple components of computer software and hardware to achieve the integration. A key ingredient of most ERP systems is the use of a unified database to store data for the various system modules [6, 7]. Our ERP system works on easing the work of academy instructors.

## 5. STUDENT EXPERIENCE MANAGEMENT MODULE

This module helps us manage the relationships with students. Figure 1 shows the home page of the CREDIS learning platform system with easily identifiable sections (Academy and ERP), as well as other general interest areas: (News, Polls, Current Activities). Users access the system with a username and password combination.

Figure no. 1 – Home page

If the user chooses to access the “Academy” area, Figure 2 shows the first page of this area, which includes links as: My profile, Study materials, Classes, Accounts, Activities, Feedback and Forum.

The Activities Area hosts one of the innovative process changes that the CRM has allowed us to implement: we are now able to separate classes as they are defined by the NetAcad website from the actual lab activities that students need to do in order to complete the course.

Figure no. 2 – My profile area

Formerly, the system worked as follows: students were enrolled in classes, practical activities were scheduled for each class and students needed to participate in the practical hands-on lab activities in order to complete the course. This was a setback from

the concept of total flexibility of e-Learning (anytime, self-paced, on-demand) because students needed to attend instructor-scheduled labs.

We decided that we needed to find a solution to allow full flexibility, not only for the theoretical part of the courses. Using the learning platform we are now able to schedule lab activities according to student demands (with the most sought after labs being scheduled more often) and allow students to register for whichever lab they need, in whichever time slot they are able to participate.

This way, the need for students to complete practical activities was separated from the classes defined on the NetAcad web system, hence allowing students to take the course at a self defined pace. The learning platform allows us to track student activities and decide whether a specific student has completed all the tasks needed for course finalization.

Furthermore, this option also allows us to give students access to additional learning resources in the form of Cisco Press Books in an orderly and scheduled fashion. Students register for access to specific books the same way they register for access to hands-on labs. This way, we are able to ensure that no student comes to our library to find there are others already reading all the available copies of the specific title he or she wanted to access.

The latest addition to the scheduling module is that students can now register for self-study hands-on labs (as opposed to the former instructor-lead hands-on labs) as well as for remote access to real equipment using the NetLab interface. Self-study practical activities are useful because they develop a very strong sense of responsibility in students and are the real implementation of the 'problem-based' learning model

Another significant improvement that our platform allows in the management of students is that now we can easily track one student's course history. Using the NetAcad website it was impossible to know which courses the selected student had previously attended. If one needed to identify this information, one would need to literally browse through all historical classes of that course and search for the student's name.

Currently, the Accounts Area (Figure 3) allows us to select any student and easily see what courses and when he or she took them. Furthermore the NetAcad website did not allow us to select a student and register him or her for a new class (course), but required us to select the new class and then manually search for the students to be registered into it. The Accounts area on our platform allows us to identify students and then register them for whichever class they require, and send them customized full-HTML emails.

The screenshot shows the 'Accounts Area' of the NetAcad platform. At the top, there is a navigation bar with 'ACADEMY | ERP |' and several menu items: Administrators, CREDIS Instructors, Highschool Instructors, Students, Operators, Advanced Search, and Uni. A sidebar on the left contains a list of navigation options: Admin Home, My profile, Courses, Rules, Mail templates, Classes, Accounts, Activities, Online Courses, Feedback, Promotions, Statistics, News, Forum, and Backups. The main content area is titled 'Students list - 1 to 10 of 2798'. Below the title, there is a 'View 10 records per page' dropdown and a 'submit' button. The table below has columns for Name, Username, Phone, Email, Company, and Date. Each row includes a checkbox and 'edit' and 'delete' buttons. The table lists 10 students with their details. At the bottom of the table, there are navigation arrows and a 'Show all records' link. Above the table, there are buttons for 'Enroll in class', 'Details', 'Reset password', 'Send email', and 'Fidelity Points'.

<input type="checkbox"/>	Name ▲	Username	Phone	Email	Company	Date	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Abaza Marius	abaza_marius	0740231928	marius_abaza@yahoo.com	CREDIS	13/02/2007	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Abdoun Amal	amal.abdoun	0724603313	amal.abdoun@yahoo.com	CREDIS	28/09/2007	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Abdul-Razak Al-Tercheh	al-tercheh.abdul	0722222222	abady21@yahoo.com	CREDIS	21/02/2007	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Achim Alexandru-Nicolae	achim_alexandru	0763634348	achim_alexandru@yahoo.com	TAXA	23/01/2008	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Achim Gh. Marius George	marius_achim	0723113481	marius_achim@yahoo.co.uk	CREDIS	29/09/2008	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Adam I.A. Alexandru Valentin	alexandru.adam	0726 062542	s0zastee@yahoo.com	TEHNOLOGIA INFORMATIEI	16/10/2008	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Adamovici Alexandru-Emilian	adamovici_alexandru	0741424661	adamovicialexandru@gmail.com	CREDIS	12/06/2007	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Adelin Corneliu Nicolae	adelin_nicolae	0726454807	niculae_adelin@yahoo.com	CREDIS	22/11/2006	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Adeseye Adenike Ogunyebi	adenike_adeseye	0743134492	nikki4pats@yahoo.com	TAXA	30/10/2008	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Adjudeanu B. Emil Marius	emil_adjudeanu	740304125	emil_adjudeanu@yahoo.com	CREDIS	26/09/2008	<input type="checkbox"/>	<input type="checkbox"/>

Figure no. 3 – The Accounts Area

As it is easy to observe in Figure 4, within the “Study Materials” section, instructors may add, edit and delete additional study materials structured by course name which students can then easily find and access. The NetAcad website does allow instructors to upload materials but in a unorganized fashion – in a unique pool. This makes it hard for students to find materials from their own instructors. With the Study Materials area we have solved this issue too.

Welcome andralada Logout  
Retype your password in order to login to

ACADEMY | ERP |

Instructor Home  
My profile  
Study materials  
Courses  
Rules  
Classes  
Accounts  
Activities  
Feedback  
Forum

Learning materials list - 1 to 10 of 68

<input type="checkbox"/>	Course	Name	Link	File	Intensiv		
<input type="checkbox"/>	CCNA 1	Chapter 1 ppt presentation	http://80.96.49.249/credis/Materials/CCNA1/s1_ch1.ppt		0	edit	delete
<input type="checkbox"/>	CCNA 1	Chapter 2 ppt presentation	http://80.96.49.249/credis/Materials/CCNA1/s1_ch2.ppt		0	edit	delete
<input type="checkbox"/>	CCNA 1	Chapter 3 ppt presentation	http://80.96.49.249/credis/Materials/CCNA1/s1_ch3.ppt		0	edit	delete
<input type="checkbox"/>	CCNA 1	Chapter 4 ppt presentation	http://80.96.49.249/credis/Materials/CCNA1/s1_ch4.ppt		0	edit	delete
<input type="checkbox"/>	CCNA 1	Chapter 6 ppt presentation	http://80.96.49.249/credis/Materials/CCNA1/s1_ch6.ppt		0	edit	delete
<input type="checkbox"/>	CCNA 1	Chapter 7 ppt presentation	http://80.96.49.249/credis/Materials/CCNA1/s1_ch7.ppt		0	edit	delete
<input type="checkbox"/>	CCNA 1	Cisco prep center	http://forums.cisco.com/eforum/servlet/PrepCenter?page=main		0	edit	delete
<input type="checkbox"/>	CCNA 1	Packet Magazine 3rd Quarter 2006	http://80.96.49.249/credis/Materials/packet20063.pdf		0	edit	delete
<input type="checkbox"/>	CCNA 1	test			0	edit	delete
<input type="checkbox"/>	CCNA 1	program FWL			0	edit	delete

trafic RANKING

Figure no. 4 – The Study Materials Area

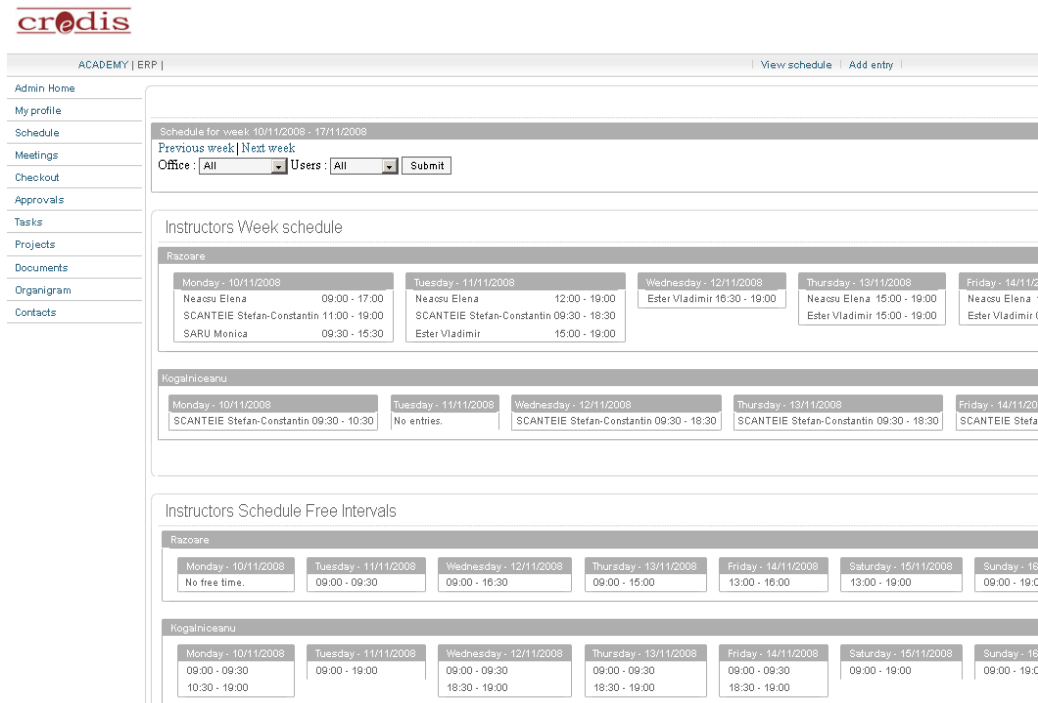
## 6. INSTRUCTOR EXPERIENCE MANAGEMENT MODULE

This module helps us integrate all data and processes of the Local Academy into a unified information system. The entry point of this area includes the following sections: Instructor Home, Instructor Profile, Schedule, Online Courses, Meetings, Check Out, Approvals, Tasks, Organizational Chart, Projects, Documents and Preferred Supplier contacts. These areas resulted from our need to centralize and open up management for our entire academy's staff.

The Schedule area (Figure 5) is used by instructors to register the days and time slots on which they will be in the academy. This helps management easily see if there are any overlapping or uncovered time slots. This area is also connected to the Check-out area, where instructors confirm after they have done an activity. Upon confirmation, the actual time worked is added to the instructor's monthly time-sheet report. At the end of the month, instructor's pay is calculated on the basis of their time-sheets.

The Tasks area allows inside users to assign tasks to colleagues. For example: each instructor has specific targets for certifications which are set together with management. These targets appear in the Tasks area in the form of 'get CCNP certification

by January 1st 2008', etc. Each user that accesses the tasks area will see all the tasks that were set for him or her and all the tasks he or she set for the colleagues.



**Figure no. 5 – The Schedule Section**

The Meetings area allows middle and top management to request operational meetings on a certain subject. Management creates a meeting in this area, designates the persons that should attend the respective meeting and then emails are sent automatically to the invited persons. Upon receipt of an invitation email, the invited persons are required to login to the application and confirm or deny the invitation to the specific meeting. If an invited person chooses to deny an invitation, he or she must provide a good reason for their denial and also suggest different options for rescheduling the meeting.

The Approvals area is mainly used for two purposes: one of them is leave of absence or holidays and the other is authorizing purchases. Until recently the academy's work schedule was the same with the University of Bucharest, However we have found that the university's holiday model is not ideal for the Cisco Academy.

The whole university is in holiday for the entire month of August and for some 2 weeks around Christmas and New Year's Eve and some other week around Easter. The Academy has found that numerous students would like to have continuity of activities over the summer period, and that is the reason why we have chosen not to allow everybody to get their holiday in the same period any longer.

The Approvals area of the platform is used by instructors to apply for holiday periods, and they are allowed to ask for a maximum of 10 working days at a time. In this first year of existence we have chosen to allow instructors that ask for simultaneous holiday periods to reach an amiable solution.

The other use of the Approvals area is for authorizing purchases. Sometimes instructors or administrative staff feel a need to purchase materials in order to improve their activity. However, a balance should be maintained between staff's perceived needs

and the financial resources keeping in mind the strategic objectives of the academy (future investment for development). This is why any purchases need to be authorized by the immediate superior rank. This means that staff's requests are approved by middle management and each division's budget is approved by the Academy Manager. Division Budgets are approved every quarter. Each middle manager (Head of a Division) is in charge of their budget.

The Organizational Chart area is very useful to give the entire staff very clear overview of the academy. The chart shows the way the academy is structured, the specific tasks and responsibilities of each employee, their immediate superiors, the command chain, and the level of resources each person can mobilize. Each node of the chart has an associated job description which includes tasks and responsibilities.

The Documents area contains the general interest documents of the academy: Internal Rules and Regulations, procedure manuals and user manuals for every specific application that employees access.

The Preferred Supplier contacts area keeps records of the academy's usual suppliers and contractors, so that when an employee needs to purchase products or services, they are easily directed to tested and trusted suppliers or suppliers with which we have preferential contracts.

## **7. CONCLUSIONS**

Although this is a highly academic environment (an IT academy hosted by a University) we found that the most effective way of designing our processes is the business way. That is why we have developed business specific tools and have customized them for our academic activity.

Direct results are a significant improvement of work relationships, due to the fact that everyone's responsibilities are clearly defined together with the expectations for each employee. Furthermore, productivity tools enable us and our instructors to concentrate on increasing the quality of our students' learning experience in order to obtain even higher degrees of student satisfaction, retention and promovability as a direct measure of teaching/learning success.

Our large number of students (we are in the top 3 academies by number of students in the world and the first in our country) together with the high numbers of returning students are a clear proof of our achieved student satisfaction.

Our instructors and administrative staff now need less time for repetitive, administrative tasks like enrolling students, checking their payments, etc. and can focus more on content delivery and customer satisfaction surveys, student feedback on organizational and academic issues, etc.

Some other positive results of using our learning platform are:

- all Academy's activities are better defined , structured and organized;
- increased satisfaction degrees among students as well as our own staff
- significant cost-reduction due to less time consumed with non-productive activities.

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