

## COMPREHENSIVE ANALYSIS OF EXISTING LEARNING MANAGEMENT SYSTEMS (LMSs)

Status: Accepted by Holger Lindberg Jørgensen May 23, 2992

<b>Name of institution</b>	University of Southern Denmark
<b>Type of institution:</b>	<p>University</p> <p>The University of Southern Denmark, with campuses located in the southwestern part of Denmark – i.e. Funen and Southern Jutland – is a research and educational institution with deep regional roots and an international outlook. Reaching even further south, the university offers a number of joint programmes in co-operation with the University of Flensburg just across the Danish-German border. Contacts with regional industries and the international scientific community are strong.</p> <p>Every day approximately 1,100 researchers in Odense, Kolding, Esbjerg, and Sønderborg are engaged in the search for new knowledge and insight, while 15,000 students are working to further their education. The University of Southern Denmark offers comprehensive programmes in four different faculties – Humanities, Science and Engineering, Social Sciences, and Health Sciences. It incorporates 32 institutes, 11 research centres, and a well-equipped university library.</p> <p>The University offers a wide range of traditional disciplines as well as a broad selection of business and engineering studies. In recent years the number of options available has been considerably expanded. Examples include the introduction of a very successful Journalism programme in Odense, Information Science in Kolding, and a Mechatronics Engineering Diploma programme in Sønderborg. The educational environments on the Jutland campuses have also been strengthened through the creation of new programmes such as History and Public Health Science in Esbjerg, Danish and English Language Studies in Kolding, and a variety of engineering programmes in Sønderborg. Moreover, the University of Southern Denmark is the only university in Scandinavia that offers a degree programme in chiropractic studies (Clinical Biomechanics). (<a href="http://www.sdu.dk/E/GeneralInfo.html">http://www.sdu.dk/E/GeneralInfo.html</a>)</p>
<b>Address:</b>	
<b>Telephone</b>	
<b>Fax</b>	
<b>Email</b>	
<b>URL</b>	<a href="http://www.sdu.dk/indexE.html">http://www.sdu.dk/indexE.html</a>
<b>Name of training</b>	Holger Lindberg Jørgensen <a href="mailto:hlij@sitkom.sdu.dk">hlij@sitkom.sdu.dk</a>

<b>manager:(Optional)</b>	He represents the centre for foreign languages and vocational studies under the university's open learning department. (Danish: erhvervsproglige studier under åben uddanning)
<b>LMS used</b>	Changed from COM-C to Blackboard in the beginning of 2002.
<b>URL of LMS</b>	Information about COM-C could be found via <a href="http://www.uni-c.dk">http://www.uni-c.dk</a> <a href="http://www.blackboard.com">http://www.blackboard.com</a> Blackboard also has a Danish user group ( <a href="http://www.blackboard.dk">http://www.blackboard.dk</a> )
<b>Language of LMS</b>	
<b>Number of years in use</b>	We have used various LMS systems for online education since 1995.
<b>Other LMSs used</b>	We started with a DOS-based system called BettyCOM and changed later to a Windows-based system named EDWIN. Both systems were developed by UNI-C. Our third system was FirstClass. Later we applied COM-C, which also was developed by UNI-C.
<b>Number of students in the system</b>	About 240 students in our department are now using BlackBoard. In addition, all the universities 15000 students have individual user accounts to BlackBoard.
<b>Number of courses available</b>	In total, 110 of the university's courses use BlackBoard.
<b>Typical duration</b>	
<b>Number of tutors in the system</b>	About 50-60 tutors are teaching courses that are primarily offered online.

*This analysis is divided into six parts.*

**1 Course development tools**

**2 Student support tools**

**3 Tutor support tools**

**4 Administration (student database and records)**

**5 Technology (quality of software)**

**6 Price**

**1 Course development tools**

**1.1 Course creation.** How satisfactory was the LMS for course creation?

Each teacher is responsible for development of the course content. Some teachers do however collaborate in the development process.

**1.2 Structure and didactic flexibility - openness.** In the creation of course materials did the LMS permit didactic flexibility? Was the structure open to differing didactic possibilities?

**1.3 Teacher user friendliness.** How easy was the LMS to use by teachers and course developers?

So far, the teachers have been offered little training as online tutors. It has basically been learning by doing. They could contact an experienced online tutor for advice. The organizational support available to the tutors is still very limited, but one short course for online tutors has been developed. The colleges and centres have individual responsibilities for online teacher training. Our college has developed an online discussion forum for online tutors.

1.4 *Support for graphics, audio and video, moving image.* Did the LMS support the provision of graphical materials, moving images, audio and video in the course content?

Some teachers develop the course content with only word processors. Few apply advanced content creation tools.

1.5 *Questioning, assessment, assignments.* What provision was made by the LMS for student questioning and assessment and the design of student assignments?

## **2 Student support tools**

2.1 *Interactivity possibilities.* What provision does the LMS make for student interaction?

2.2 *Online student-to-student communication (synchronous and asynchronous).* What facilities does the LMS provide for student communication to other students and how successful is it? Is both synchronous and asynchronous communication between students supported?

2.3 *Online student to tutor/institution communication (synchronous and asynchronous).* What facilities does the LMS provide for student communication to the tutor and to the institution's administration and how successful is it? Is both synchronous and asynchronous communication supported? Are these support services available 24 hours a day?

2.4 *Resources, library, references.* What facilities does the LMS provide for student acquisition of resources required by the course, especially library resources and references to required readings?

2.5 *Feedback on work and assignments.* What is the quality of provision of feedback to students on their work and assignments?

## **3 Tutor Support tools**

3.1 *Tracking students - database questions.* How user friendly is the LMS for tutors wishing to track their group(s) of students and retrieve data from the student database?

3.2 *Group management tools.* What facilities are provided by the LMS to the tutors for managing their group(s) of students?

3.3 *Preparation of questions and assignments by tutor.* How successful is the LMS in providing tutors with user friendly and didactically successful tools for the design of student questions and assignments?

3.4 *Course planning for students (monitoring pace).* What tools are provided by the LMS to tutors to enable them to monitor and plan student progress?

3.5 *User-friendly administrative systems between tutor and institution.* What provision does the LMS make for successful tutor to institution communication?

#### **4 Administration (student database and records)**

4.1 *Enrolment procedures and fee paying.* What facilities does the LMS provide for student enrolments, course allocations and payment of fees?

The tuition is basically financed by the state. However, further and continuing education is partly financed by student tuition fees.

4.2 *Passwords and security.* How successfully does the LMS handle student access to the system and the security of all student interactions with the system?

4.3 *Student records database.* How successful is the system's student database, especially for data storage and data retrieval.

STADS is the dominant student management system in Danish Universities and colleges. All Danish universities except from the universities of Copenhagen and Aarhus use it. The system is developed by WM-Data in collaboration with the universities. STADS already holds much student data that the LMS-systems need. Hence, integration or export of data between STADS and LMS-systems would be very useful. These features are however not well developed yet.

4.4 *Examination and certification records.* What structures are provided for recording of data and results leading to examination and certification?

We ought to do some changes with the examination system to be more supportive of online education. It should be more projects oriented, and we should have a system with fewer, but larger exams. Online examination today is problematic, so we tend to offer traditional exams in online courses – even if the students are located in other countries. We have though organized face-to-face exams at the Danish embassy in Tokyo and at certain locations at the Faeroe Islands and Iceland.

4.5 *Course, class and tutors database.* What facilities are provided for administration of courses, classes and tutors?

#### **5 Technology (quality of software)**

5.1 *Server - hardware and software options.* What is the quality of server hardware and software options? How is the system integrated with existing software?

I perceive BlackBoard as a serious partner that treats its customers well. It is an advantage that it is a large, international company. It hasn't any representative in Denmark, so we must deal directly with the U.S. It provides a 24-hour hotline for support. We needed some support to implement the special Danish characters in the systems.

BlackBoard seems to grow in the Danish market. COM-C and FirstClass are two alternative, major players. Another system developed in Denmark is named something like SiteScape.

5.2 *Client - hardware and software options.* What is the quality of client hardware and software options? Does the system permit metatagging?

5.3 *Flexibility of didactic structure; updating, adaptability.* Is the didactic structure flexible or is it determined by the technology? How adaptable is the technology to updates and to new technology that becomes available to the market?

As I see it, the university has not a view on standards for e-learning. There is not much standardization work going on in Denmark. The universities have autonomous responsibilities for their e-learning strategies. A national initiative to establish a Danish Virtual University broke down as a result of disagreement between the involved partners. The only result seems to be a planned portal providing information about e-learning initiatives.

5.4 *Limitation of size (number of students, courses, tutors..)* How satisfactory is the LMS for handling varying numbers of students, courses, tutors? How does it cope with 100, 1000, or 10000 students and large course databases?

5.5 *Speed of system.* How is the speed of the system and student satisfaction? How does it cope with downloading courses and high bandwidth materials?

## **6 Price**

6.1 *Cost of the LMS (Learning Management System).* What is the cost of the LMS to the institution?

6.2 *Annual fee.* What fees have to be paid annually for the system by the institution?

6.3 *Student Enrolment fee (100 students, 1000 students, 10000 students.)* How do fees to use the LMS vary when the student base is 100 students, 1000 students, 10000 students? Is online invoicing available?

6.4 *Maintenance costs: staff involved in management, IT specialists, trainers, etc* What is the maintenance cost to the institution of the LMS and what staff resources are needed to maintain it and keep it functioning?

6.5 *Training of teachers and learners and system users.* What costs are involved in staff and student training to use the LMS system?

### **Conclusion: Overall evaluation:**

It has not been easy to introduce new LMS-systems so often, but I think we have handled the situation well. Personally, I have been involved in the two latest switches. It seems to me that the reasons for the decisions to switch have been enthusiasm for new technology among the decision makers. New features have fascinated them. This has resulted in too many switches and too frequent readjustments for both the administration and the users.

The switch from FirstClass to COM-C was based on a wish for a completely web-based system. First Class was an OK system, but it was a problem for both the administration and the users that it required installation of some client software at the local PCs. COM-C also featured some more administrative options than First Class.

The switch from COM-C to BlackBoard was partly due to a common e-learning strategy among the institutions that recently merged to form the University of Southern Denmark. It was also due to the fact that Blackboard is gaining market share in Denmark. The fact that we now have a system that we operate ourselves reduces the external costs, since the universities employees handle the operation. As I understand it, Blackboard is also easier to integrate with our student management system STADS. However, the integration is still a real challenge.

**What features would you like to see included in this LMS in the future?**

I would like to see better and more interactive course content in the future. I would also like to see more and better synchronous communication. We have made some experiments with videoconferences, which also could be available as streamed files. I hope that we can have future use of web-cameras and better integration of audio and moving pictures.

Finally, I would like to see more national and international collaboration, especially among institutions in Scandinavia. In my opinion, it is important to collaborate, since it is very expensive to develop online courses.