

# **Networked online learning for a distributed Master degree of information system management**

**Kimmo Salmenjoki, Anne-Maria Aho**

Seinäjoki University of Applied Sciences, School of Technology, P.O. Box 64, 60101 Seinäjoki,  
Finland

{[Kimmo.Salmenjoki](mailto:Kimmo.Salmenjoki), [anne-maria.aho@seamk.fi](mailto:anne-maria.aho@seamk.fi)}

**Abstract.** *The regional development in South-Ostrobothnia with respect to its internationalization, shared collaboration and enhancement of the degrees towards the SMEs and adult learning is overviewed. As a practical example of possible approach of sharing courses between universities, the setup and execution of a new Master degree with extended online learning in SeAMK (Seinäjoki University of Applied Sciences) is described in detail.*

**Keywords** *joint degree, SME, collaboration in education, online teaching*

## **1. Introduction**

In this paper we will describe how online learning can be used in degree studies for both local and non-local students within Finland. Like globalization for companies, the networked and shared modes of operation are becoming increasingly important for the higher educational units as well. The previous strong duality of the educational units and their degrees to universities and universities of applied science will be relaxed after the introduction of the Bologna process in EU. In practice, this separation is also softened further by the easier movement of the student and by the introduction of master degrees into the universities of applied sciences. Also, at least in Finland, the classical universities have moved towards becoming regional actors of R&D with stronger collaboration towards the local industries.

The region of Ostrobothnia (Western Finland) consists of three geographic and political areas: Northern (regions around Kokkola), Central (around Vaasa) and Southern (around Seinäjoki). Seinäjoki has a university center University Center Seinäjoki, UCS. This UCS consists of five separate units of five different universities (two from Helsinki, two from Tampere and one from Vaasa), see [19] for more details.. The settlement of the UCS in a unified campus in Frami[6] together with SeAMK makes a networked, multi-scientific arena for conducting high degree R&D together with related educational offerings. Regionally one of the main demands in education has been to have master degrees (and doctoral studies), both of which have been operating in Frami during the 2000s. Recently also most of the Southern Ostrobothnian actors in second degree education have been coordinated into the Sedu Seinäjoen koulutuskuntayhtymä, [14]. Sedu together with the strong regional Seinäjoki University of Applied Sciences (SeAMK), [13] are hosted by the Seinäjoen kuntayhtymä, which contains several communities from the South-Ostrobothnia region. SeAMK has activities in six different regional units Seinäjoki, Lapua, Ilmajoki, Teuva, Jurva and Ähtäri (Tuomarniemi). The aspects of the central Ostrobothnia can be seen in references [3,20]. The other wider international aspects have been considered in [1, 12, 18]. Based on globalization most higher educational institutes have to take up new roles as parts of regional, national and international networks of educational and R&D operation.

The UCS provides a modern arena for conducting shared education and research (similar to the Vaasa Higher Education Consortium in Vaasa [20]). The companies

have a demand for both new experts and research collaboration supporting their core business areas (mechanical engineering, production, food industry, medical services in South-Ostrobothnia). Also the new Seinäjoki Science Park [15] is physically located in the Frami campus area and is the virtual arena of the company collaboration in the region (for mainly SMEs related to ICT and technology). The industry players see the internationalization and globalization as one of the key changes in their business today. Both products, services and business processes would need to be considered and addresses in the networked knowledge society scope. Traditionally Finland has a huge basis of companies as SMEs (95% of all companies) mainly in Finland's high technology focus areas (forest, mechanical engineering, and electronics). For today's SMEs the introduction of EU provides totally new challenges in conducting the business in the globally networked economy. Besides the day to day hands on work the overall awareness and knowledge of the companies has to be improved. Luckily the level of national information society has been competent so far in Finland.

The following chapter will describe how a new master degree for established for these demands of the regional needs and describe its online execution. Besides the design of the curriculum, we address also the practical issues of running a nationally distributed studies, which might be useful also for the further considerations of the Baltic Sea Network BSN/Baltic Sea Open University BSOU networks.

## 2. *Master degrees in ICT for SMEs in Finland*

To answer the changes in internationalizing business, SeAMK introduced in 2006 a new master degree in computer science, with major in Information System Management (Tietojärjestelmäjohtaminen in Finnish, TIJO for short). In setting up this degree all the Ostrobothnian regional centers together with Tampere University of Applied Sciences planned the overall degree structure. Originally, there was also an idea to share different modules provided by the different host universities. The structure of the TIJO master degree in SeAMK is as follows:

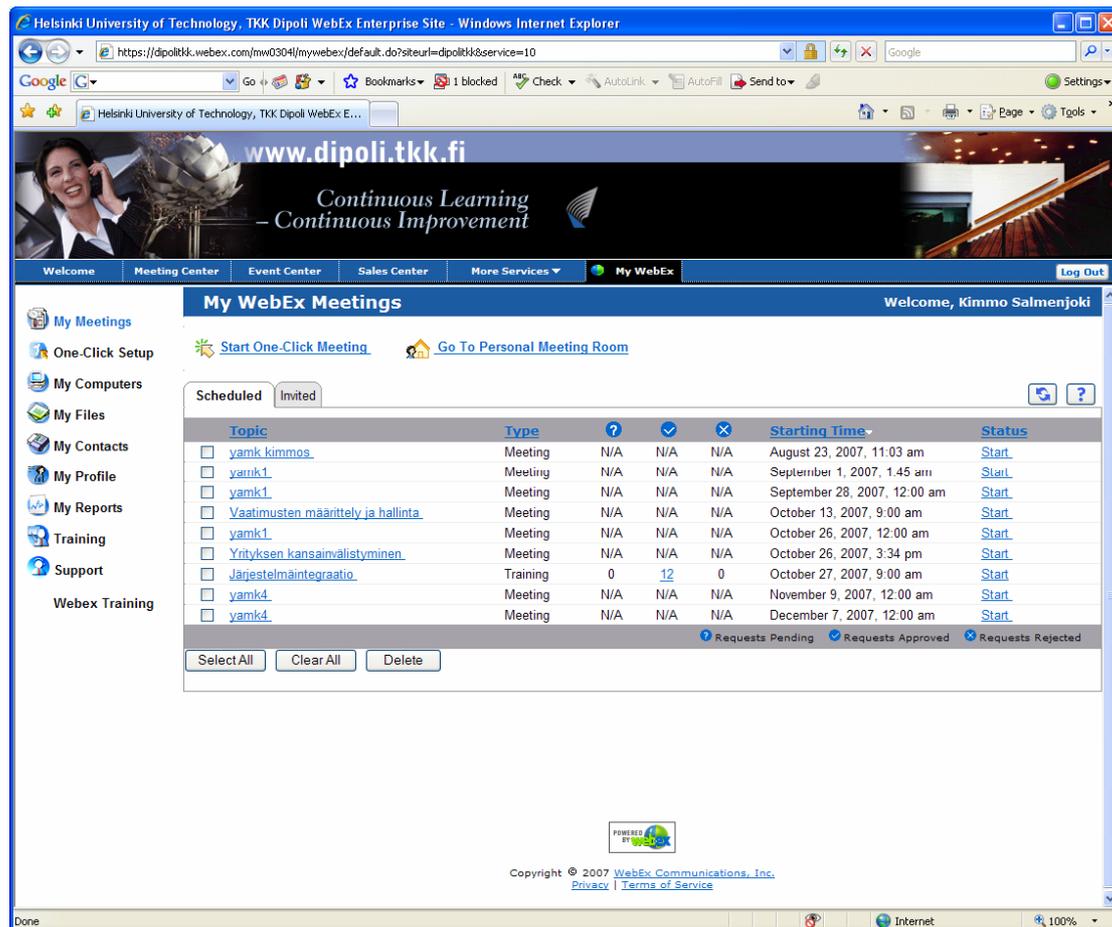
<b>Computer Science module (with 5 cu courses in)</b>	<b>Management module (with 5 cu courses in)</b>	<b>Thesis work (30 cu)</b>
Ebusiness management and development	Knowledge and expertise resources	(During all studies)
Software project requirement analysis	Research methods	<b>The thesis work</b>
Software modelling	Project management	(Is integrated into the course content)
Ebusiness software development	Company growth and internationalization	And combined with
System integration	Research seminar	Student's and his/her company/project work background)
	(And some voluntary studies 10 cu like Semantic web)	

**Figure 1.** TIJO master degree structure in SeAMK (total of 90 cu during two years of study during weekends and evenings)

The background of the students is a Bachelor degree either in business or engineering and three years of work life experience in industry. The two modules of Figure 1 form the content of the degree, which are customized with the individual and SME company backgrounds of each student. During the studies, the thesis work (with PBL [16]) is combining the students previous knowledge and present working environment (with ongoing company R&D projects) to the respective course content. This structure of the studies confirms also to [4], which gives the views of the big global companies for the EU level demands on higher education in ICT. In future years this content is developed evolutionally further to match the SME's and virtual organizations operational and strategic needs as they progress.

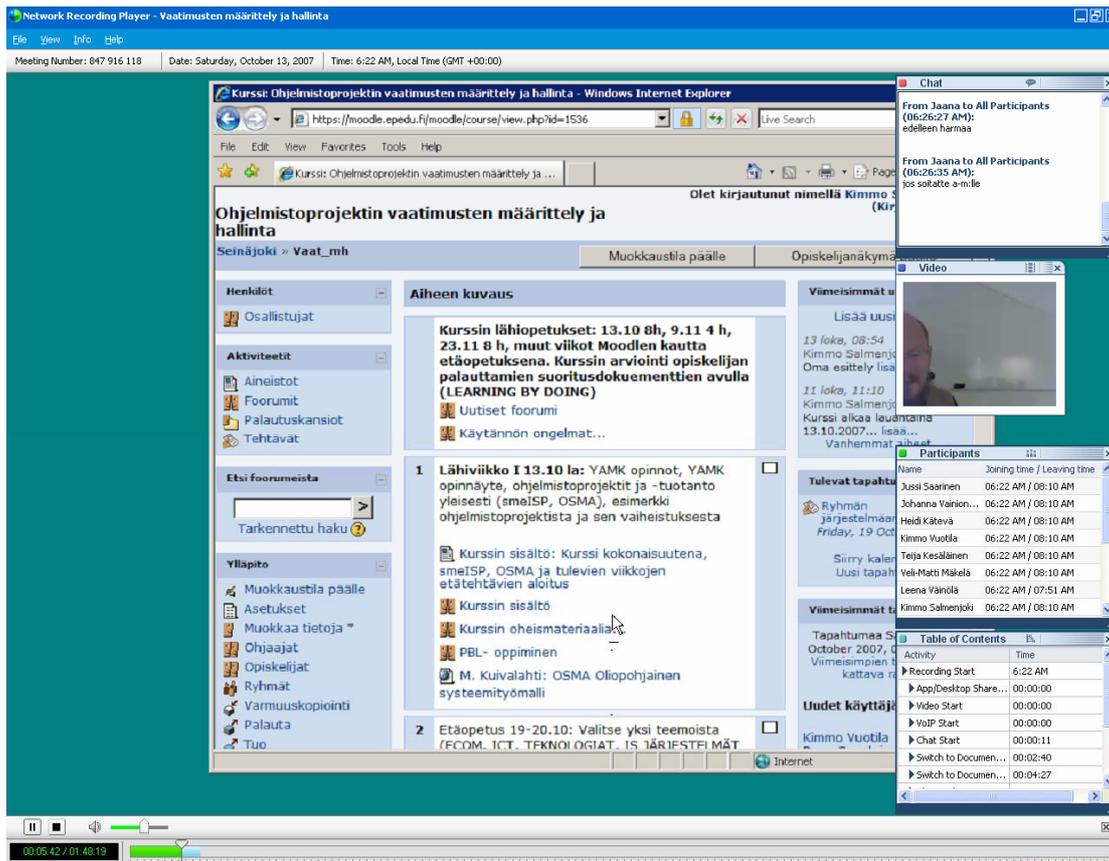
### 3. *Distributed resourcing with online learning tools in TIJO degree program*

Globalization is also changing the operation of the educational field: roughly half of our TIJO students are not located in Ostrobothnia, but somewhere else in Finland (Helsinki, Tampere, Joensuu etc.). So for the content of the lectures we have been using the WebEx environment supplied by the University of Technology (HUT), [7]. As example, a teacher view of the system is



**Figure 2.** Teacher offline view of courses in WebEx

For the students WebEx provides the study material (in Moodle or web), whiteboard, chat, and interactive A/V view of the classroom like in the next screen copy:



**Figure 3.** Student view for e-learning with WebEx with real time videoconferencing and Moodle

Technically the system has been very reliable and easy to use- with normal difficulties of any conferencing system (like Marratech or Adobe Connect). For delivering the material and student/teacher and student/student interaction we used simultaneously Moodle environment (like in Figure 3 above).

Besides the virtual online learning the students are collected to ‘in vivo’- meetings in Seinäjoki from time to time. For the present 2<sup>nd</sup> year students one intensive course in Semantic web was held in FH Wuerzburg - Schweinfurt, Germany by Prof. B. Breutmann during September 2007.

#### **4. Conclusions and further studies**

For the TIJO master degree the study groups consist typically of 12-15 students. Half of these students are online, while the other half sits in a classroom in Frami. Most students (individual exceptions where work superseded studies) have been able to follow the curriculum and courses either in Frami or virtually online. The first group of students will finish their studies during the spring of 2008. The student’s different backgrounds make the degree both difficult and interesting: difficult to coordinate and design (the thesis is the integrating factor for the differences- which makes both the process and results of the thesis work varied)- and interesting, as the students have a strong experience in global high technology industry already. The continuing development of the degree will be described in follow up papers.

For the BSN/BSOU this degree provides an example of conducting shared courses (the teacher could be equally distance based as the students!) online. This should be

easier to execute continuously than Intensive Programs like [8]. This paper has given some possible technical approaches of e-learning that would be needed to really benefit from the BSN partnerships in the future prospects of the wider BSN/BSOU/Baltic Sea International Campus BSIC networks. In the multi scientific aspect, also the different groups of students having different courses could be used mutually as CASEs of PBL based study: like for example in a course of Business English the other course of Web authoring, where the students are preparing company web pages, would provide a case study of communication in English, where both the producer and consumer ends of intercultural communication could be met by separate student groups of respective courses, see for example [10].

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