A Virtual Learning Environment for Doing Business on the Internet

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1. Introduction

The power of the new Communication and Information Technologies influences human life and economy so deeply that makes all of us learners both as individuals and members of (real or virtual) learning communities and learning organisations in a learning society. Looking back at the communication and information technology history we could clearly observe that the main attention of researchers and technologists has been gradually moved from hardware to software, next - to human-computer interface, and now - to social issues related to global communication and collaboration. The Computer Mediated Communication leads to establishment of *virtual communities* formed on the basis of common topics of interest, collaborative work, business, or other joint activities. These communities cross the national and cultural barriers and demand for re-conceptualisation of the social life, including education and business.

2. Models for Distance Learning via Internet

There are two known models for distance learning with Internet - the *evolutionary* and the *revolutionary* models. A typical characteristic of the evolutionary model for distance learning is that the existing educational institutions create their own virtual complements

which allows them to offer the distance equivalent of their courses from the regular programme to a broader audience. In the revolutionary model a whole virtual educational structure is created with no real equivalent. A typical representative of the second model is GNA which is convincingly demonstrating how the information superhighways allow some futurist scenarios from utopia to become reality[5]. The aim of GNA is to create a fully accredited university with user group to aim at all the people in the world having access to Internet. A specific virtual educational environment is created allowing different access levels to the services and products of GNA. For example students using only electronic mail can receive only textual messages and resources while those with access to WWW may count on all the advantages of multimedia and electronic communication. A similar model is *Virtual Educational Environment* at the Athena Virtual On-Line University (VOU) in the USA, as well as the elaborations for the GENII project, which main goal is to create a virtual faculty for secondary school teachers and experts in education[2]. The developed virtual environment demonstrates the potential of Internet to stimulate the co-operative work of people who have never met face to face before, as well as the possibilities for virtual integration of higher and secondary school.

3. Business on the Internet Course Structure

The pilot Business on the Internet course is structured in two parts: *introductory part* and *study part*. The introductory part includes the course home page, introduction to the course, course outline, course micro-planning, evaluation and statistics, demo, authorisation. All components of this part have common frame structure as shown on Fig.1. The study part includes nine basic units containing the following sub-parts: a lecture, guest lecturers, tests, questions, case studies, essay, resource bank, discussions (see Fig.2) The units are designed for easy modification and they have a standard interface (see Fig. 3 & 4). They are also self-contained, manageable sections that can stand alone and are often interchangeable. A large unit could be further divided into sub-units each with its own objectives, activities and tests. For instance such a units could be the *Marketing on the Internet* and the *Legal Issues* units.. Learning objectives are short, clearly defined, measurable goals that students could achieve.

The *learning activities* are important parts of the lessons and they actually promote learning and move students towards specific objectives. Each specific student target group is offered selected readings. The students have on their disposal examination study hints on line with hypertext links to important course materials. This gives students an opportunity for active study, and also reminds the tutor of the direct linkages between the examination and the actual course material. The lecture notes are available on-line in total at the beginning of the course and they are refined during the course. Each student is assigned the task of constructing Web pages with a specific theme and their hypermedia reports could be published on a Web page. This allows both students and tutors to actively enrich the learning environment. The private correspondence among the students, tutors and experts is also encouraged. The guest lecturers are *hired* simply by including hyperlinks to their materials on the Web or by scheduling their on-line and asynchronous presentations. Students can present their reports online or publish them in a Web page. Online discussion groups are formed dynamically and some students are assigned to lead off discussion by using their research and assignments as basis for discussion. Special conferences are open and the students are invited to come up and discuss specific problems, case studies or proposals. Quizzes and tests given in each unit allow students to measure their own progress and mastery of the course components. A number of small projects linked to form a larger project are given to all students. The students can learn at their own pace. They also have the opportunity for free exploration using the resource banks attached to each unit as well as the course library. Web course materials and online interactive sessions are stored and later made available for further use in classes.

The Business on the Internet course could be viewed as a case study for instructional design principles for on-line courses as well as a technological framework for distance course implementation. The main technological platform for course delivery is the WWW integrated with other Internet services such as E-mail, computer conferencing, WWW interface to data bases, etc.

4. General Educational Model

The success of the separate individuals and organisations in the global economic and intellectual competition depends on their skills to quickly and exactly in the right moment to transform the available information into useful knowledge that can be used for learning, to take important management decisions. Employers demand that their workers should be able not only to memorise facts, but rather to learn new methods, new programs, new skills. The search and filtering of a huge amount of information is not an easy task and it is still not possible to optimally use the new technologic achievements.

For the purposes of the Business on the Internet course a student-centred educational model was chosen[10]. The education is based on electronic libraries and object-oriented multimedia resources rather on printed learning materials. Students can study on their own using aesthetically formatted and dialogue multimedia materials. They have to construct their own knowledge, to study individually according to their skills, interests, preferences and cognitive characteristics, to *learn how to learn*. Students can control their learning process, work in a team with the other students, take part in discussions and search for effectiveness of the learning. The tutors are students' *class-mates*, that help them find how optimally to cover and traverse the rich in information resources global information systems and to find the most suitable learning materials. The achievements of the students are assessed on the end result (product) basis, which can be presented, defended and published both locally and globally. The self assessment is encouraged. *Co-operative learning* and work are dominating over *the competitive learning*. The tutors can work individually as well as with small groups of students. The student can work in a dynamic and interactive multimedia learning environment where aside from the tutor and the other students he/she can communicate and work with his/her virtual friends from all over the world.

5. A Model for a Virtual Environment for Distance Learning via Internet

The Virtual Environment for Distance Education and Training (VEDET) combines the basic characteristics of both the evolutionary and the revolutionary models for distance learning via Internet[7]. The VEDET interface metaphor is based on the four types of learning organisations: a *virtual university*, a *virtual school*, a *virtual enterprise*, and a *virtual language learning centre*[1]. It includes also a *virtual student house* as well as a number of *virtual places and services*, that exist (or could exist) in the physical world, such as a *virtual library*, a *virtual exhibition and entertainment centre*, a *virtual electronic publishing office*, a *virtual help desk*, a *distance education brokerage service*, a *virtual student assessment centre*, a *virtual electronic document and software delivery service*, a *virtual course customisation service*, a *virtual transportation service*, a *virtual liaison office*, *a virtual public arena*, a *virtual post office*. The VEDET duplicates and extends some of the existing educational and training establishments and services, allows their better integration and enrichment. New virtual establishments, places and services could be developed and included in it as well.

The kernel of the VEDET is the virtual university, which will be described in more details. It includes the following main virtual places:

- an *administration office* where students can register and discuss organisational matters with the university staff;
- a *virtual lecture hall* (auditorium) where a lecturer could deliver a lecture for a certain virtual learning community;
- *virtual seminar rooms* where the virtual class can discuss matters related to learning topics.
- *virtual workshop rooms* where collaborative work/learning can take place;
- a *virtual reading* room that contains all locally prepared learning materials and other learning materials directly referred as student resource materials. It also has open gateways to the virtual school, virtual enterprise, virtual language learning centre, reading rooms, to the VEDET virtual library, and to other virtual libraries in the cyberspace. In the reading room students and teachers can discuss in pairs or in small groups issues, related to the learning materials.

The virtual university learning environment includes *branches* of most of the VEDET services, such as: *library*, *exhibition and entertainment centre*, *electronic publishing house*, *help desk*, *distance education brokerage service*, *student assessment centre*, *electronic document and software delivery service*, *course customisation service*, etc.

The virtual library has an integrated catalogue of locally available electronic books, papers, learning materials, and other electronic resources, as well as a gateway to other virtual libraries, such as the GNA Library[5].

The virtual publishing office[8] offers customised publishing on demand of stand-alone and networked hypermedia materials, such as: electronic textbooks, courseware, bulletin boards and electronic conference facilities, videos and audio, lecture notes, lesson plans, teacher and student guides, training manuals, forms and questionnaires, presentations, class schedules, student and faculty lists, catalogues, advertisements, news, frequently asked questions, etc. The production will be directly supplied to the customers at any virtual place they are *located* at, such as: *virtual reading rooms*, *virtual libraries*, and *virtual bookstores*. The electronic books and documents could be distributed via the virtual electronic document and software delivery service to the VEDET virtual auditoriums, seminar rooms, workshop rooms, virtual café, as well as to the workplaces, homes, partner institutions and any other place, at any time. The customers can order publishing services and provide the resource materials needed - text, scripts, audio, images, logos, ideas for illustration and animation development, proposals for navigation and interactivity design, links to related Internet sites, requirements for instructional design[2]. The customers are offered an on-going support. The virtual publishing office could include a *scanning media station*, *photo-studio*, *digital video and audio studio*, *picture and icon galleries*, *graphical design section*, *instructional design section*, and other components that cover the eight phases mentioned above.

The virtual electronic document and software delivery service allows supply of learning resources at any time and any place *locally* and *globally*, to other *wired* virtual learning environments. A user (lecturer or administrator) can plan the learning resources flow and

the work-flow. For instance a lecturer can request certain learning resource materials needed for a distance education session to be delivered to all participants by the time the session starts. Such materials could be: a case study, a set of multimedia software envisaged to be used, the facilitator's transparencies (or the PowerPoint presentation), lecture notes, questionnaires.

The virtual electronic entertainment centre provides access to virtual museums, art galleries, aquariums, exhibitions, concerts, movies (on demand), group computer games, virtual tourism, etc.

The virtual help desk provides expert help, access to the teacher, school administration, support in specific activities, e.g. a software kit for flexible instructional modules design[9].

The virtual public arena is a place for informal talks, e.g. a *virtual cafe.* The virtual cafe can have a number of different *sitting-rooms*, e.g. separate sitting-rooms for students, teachers, parents, employers, as well as places for cross-meetings such as a cross-meeting sitting-room for discussing carrier opportunities between students, parents, and employers.

The virtual course customisation service deals with distance education course customisation and adaptation to the needs of *the local learning community*, by taking into consideration the local educational and training traditions, tutors, language, culture, and even the individual needs of certain learner.

The virtual liaison office takes care about administration and co-ordination of the international co-operation projects, as well as the student and staff *virtual mobility* schemes, e.g. students from Sofia could study and take accreditation for a course delivered by the University of Twente, a lecturer from the Kiev can virtually teach at the University of Exeter, etc.

The distance education brokerage service plays the role of a market place for educational services and products where any educational institution can do global marketing research for its own products as well as receiving an opportunity of ordering and *purchasing* educational products and services to be included in its own educational programmes and initiatives.

The virtual transportation service provides fast *shuttle-bus* transportation service between the virtual places of the VEDET and a *space-shuttle line* between different virtual environments. For instance one could take a shuttle-bus to rapidly move from the virtual university to the virtual enterprise, or a space-shuttle to *fly* from Sofia virtual learning environment to the one of University of Twente.

The virtual post office provides electronic news services, multimedia e-mail and listserv services, electronic journal subscriptions and delivery, postcards construction and delivery, etc.

The VEDET provides only the basic virtual spaces, resources, and services. The users could reconstruct the virtual space by adding new customised facilities, spaces, and services according to the learning process requirements. For instance for the purposes of a session of electronic commerce a new virtual workshop room could be created and *equipped* with educational resources, a *business Web pages development tool kit* software and electronic conference tools appropriate for collaborative projects[3,4,6] in marketing on the Internet, etc. Every user could create his/her own *personal learning environment* (PLE) at the client side of the client/server software model[7].

6. Conclusions

VEDET is based on strong integration of the virtual learning institutions where the virtual university as a main provider of educational products and services takes the key role. In case of Business on the Internet course the session begins at the virtual university – the have some lectures at the virtual auditorium, take part in discussions in the virtual

seminar rooms, go to the virtual reading room and the virtual library, visit the university virtual café. When needed students go to the virtual enterprise where they would solve some business problems such as: doing marketing research, designing a company presence on the Internet, designing an Intranet business solution, selling and purchasing products and services, etc.

The *human computer interaction model* of the WWW based course on Business on the Internet interrelates with the course instructional design strategy. Students, tutors and administrators from different locations *inhabit* the virtual learning environment and can meet, interact, learn and work together, as if they were face-to-face. VEDET is interactive, flexible, open, distributed, accessible by distance, asynchronous, filtered, containing Web *road-maps* and course archives.

Acknowledgements

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BUSINESS ON THE INTERNET COURSE
Pilot version
With this course we are offering you to learn how to set up a business on the Internet and how to use Internet for your own business - for communicating, selling, marketing, doing research, developing human resources, establishing customer relations, banking, etc. You are free to set your own learning direction and will have enough control on the learning process. With the final project you will demonstrate your own ability to use the necessary skills and to publish your own ideas into the Course Web pages.
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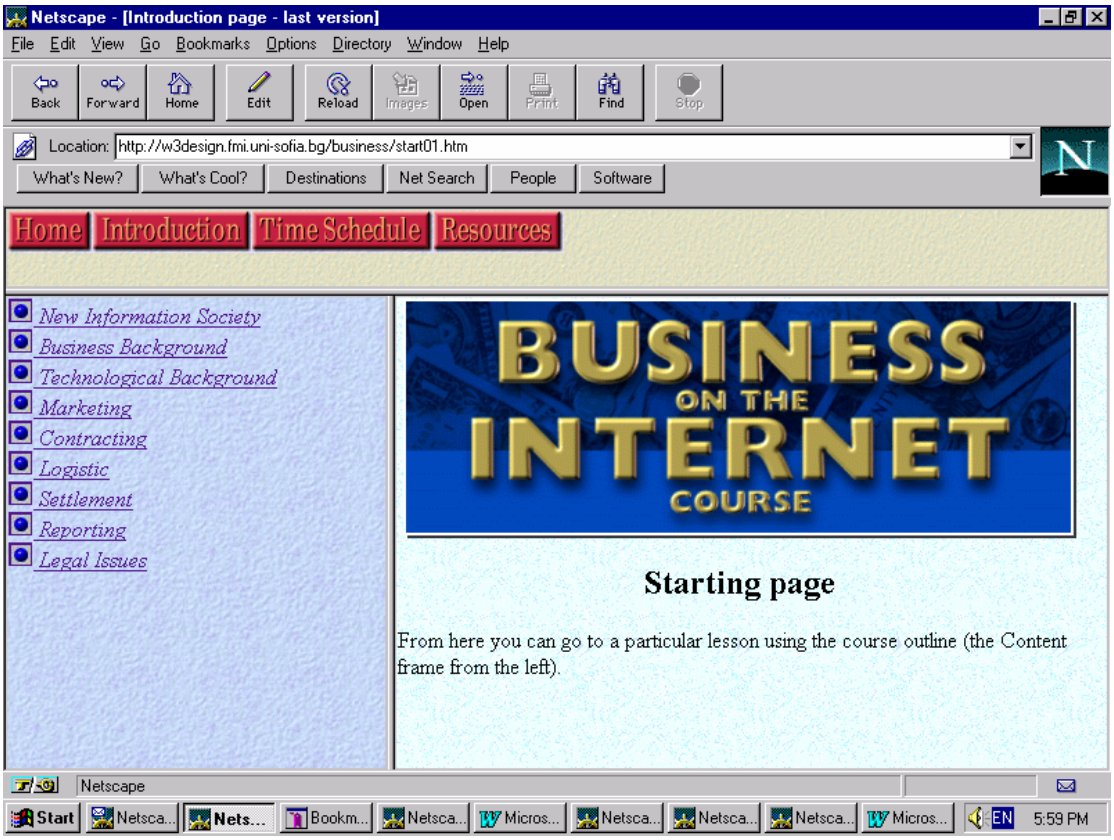
Fig. 1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Contracting
Logistic
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BUSINESS ON THE INTERNET COURSE
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Fig.2

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Home Introduction Time Schedule Course Outline Resources Discussion Glossaries
Advertising and Marketing on the Internet
Introduction
What does make it different?
Forms of Electronic Marketing.
Intermarketing Program.
Attracting Customer attention by Your Homepage.
Value Added Marketing
Marketing Applications
Examples
Advertizing and Marketing on the Internet
Objectives
Given WWW resources after completing this chapter you should be able to:
Explain what are differences between classical marketing and marketing on Internet
Name the benefits of Internet marketing
Lecture Notes Guest Lecturers Test Questions Case Studies Essay Resource Bank
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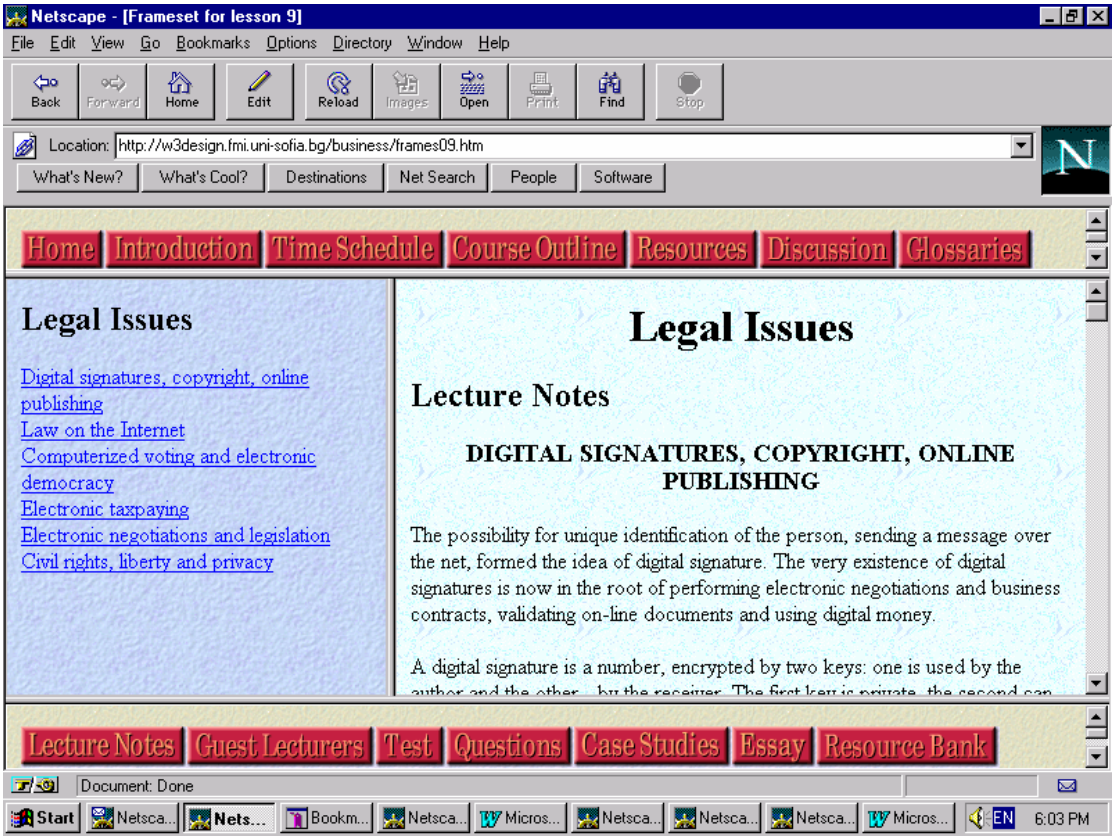
Fig.3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Legal Issues
Digital signatures, copyright, online publishing
Law on the Internet
Computerized voting and electronic democracy
Electronic taxpaying
Electronic negotiations and legislation
Civil rights, liberty and privacy
Legal Issues
Lecture Notes
DIGITAL SIGNATURES, COPYRIGHT, ONLINE PUBLISHING
The possibility for unique identification of the person, sending a message over the net, formed the idea of digital signature. The very existence of digital signatures is now in the root of performing electronic negotiations and business contracts, validating on-line documents and using digital money.
A digital signature is a number, encrypted by two keys: one is used by the
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Fig.4