Distance Learning Applications in Banking: The D-LAB Project

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Abstract

A project with the title "D-LAB: Distance Learning Applications in Banking" is underway in Greece, aiming at the design, implementation, evaluation and experimental use of a modern distance training system for delivering on-the-job training to bank employees. The project's primary contractor is the Union of Greek Banks. A team from the National Technical University of Athens takes part as a technology expertise provider. Three Greek banks also participate in the consortium. For the purpose of this project, a distance training system must be developed and the NTUA team has proposed three alternative solutions. The third solution, which is investigated in this paper, is a Distributed Distance Training System (DDTS) based on the new technologies, namely computer networks and networked hypermedia systems, and current pedagogical trends. DDTS is expected to cover the training needs of the banks participating in the project's consortium. A brief account of the project D-LAB, the requirements and the design of DDTS are presented in this paper.

1. Introduction

The rapid developments in the European monetary market, emanating mostly from the forthcoming currency coupling of European countries and the intense competition, render the need for vocational training of bank employees essential and urgent. In order to fulfill their duties, bank employees must be up-to-date with recent developments, current laws, practices, etc. Furthermore, the speed and effectiveness with which employees are trained is critical for a bank's activities, for its competence in the market and therefore for its viability. These reasons have urged Greek banks and their managers to change their traditional unfavourable point of view towards training, so that nowadays training is considered a significant part of a bank's strategic plan.

Distance learning, as a training method, seems to have the potential of overcoming constraints in time and place that the traditional face-to-face teacher-centered training method imposes, and thus to contribute in the improvement of the offered training. However, the success of the distance training approach is hindered by a number of factors, such as poor communication between the actors of the training process, troublesome updating of course material, etc. The use of new technologies, supported by the computer networks that banks already have, seems to be in the right direction because it facilitates the frequent updating of the learning material and guarantees homogeneity and a high level of interaction among the participants in the training process [Coll96, Kout96].

A project with the title "D-LAB: Distance Learning Applications in Banking" is underway by a consortium led by the Union of Greek Banks (UGB). The main objective of this project is to design, implement, evaluate and experimentally use a modern distance training system for delivering on-the-

job training to bank employees. This system will be based on the new technologies, namely computer networks and networked hypermedia systems, as well as on current pedagogical trends. It is intended to cover the training needs of the Greek banks that participate in the project's consortium and also to demonstrate the technical and economical viability of such an approach. A team from the National Technical University of Athens (NTUA) takes part as a technology expertise provider.

For the development of such a distance training system, the NTUA team has proposed three solutions, based on its experience from participating in two related projects, EONT [URL1] and MECPOL [URL2], within the SOCRATES programme [URL3]. The third solution is particularly interesting from the development point of view and for this reason is more elaborated in the sequel.

The paper is structured as follows. In section 2, a brief account of the current situation and trends in training in Greece, as far as training in the banking sector is concerned. In section 3, a brief description of the D-LAB project is made. In section 4, the three solutions for a distance training system for banks are presented. In section 5 the third solution is described in detail. The paper concludes with some brief remarks in section 6.

2. Current situation and trends in Greece

The current situation of education and training in Greek banks could be undoubtedly described as mediocre. There are no higher education institutes offering courses in banking, whereas only recently a couple of highest education institutes have formed departments offering related courses. The training needs of approximately 54,000 Greek bank employees are currently covered mostly by intra-bank training and some times by training delivered by specialized private companies.

Between 1982 and 1986, administrative Units for Education and Training were created in almost every bank of the public and private sector. These units have planned and organized a lot of intra-bank training seminars, most of which were organized in Athens. In parallel to this activity, since 1985 the UGB has organized a number of inter-bank training seminars in an effort to cover the training needs of banks with little or no training facilities. The methods that have been adopted for training are based on the oral presentation of the material, in form of lectures, and use exercises and written assignments as a supplement.

Distance learning has been used as a training method in other fields with great success. During the last few years, the UGB has organized a number of distance training seminars that were attended by approximately 1,000 bank employees. Although these seminars were delivered with the conventional method of distance training, based on printed training material and the telephone as the only means of communication between the trainees and the trainers, they have had considerable success. This has raised the interest of UGB for experimenting with modern distance training systems.

3. The project D-LAB

The project D-LAB is partially funded by the Greek General Secretariat for Research and Technology, under the research programme ΠΕΠΕΡ. The aim of this programme is the application of technologies and processes that are new to the Greek standards but have been successfully applied abroad. A long-term aim is the creation of an infrastructure for the development and demonstration of innovative products and methodologies of wide economic interest.

D-LAB is a partnership project between several actors of the Greek banking sector and the NTUA, which participates as a technology expertise provider. The project's consortium was formed on the basis of the partners' common interest in experimenting with the distance training method using the new technologies. The project is coordinated by the UGB. The complete list of partners is shown in Table 1.

Table 1. Participants in the project D-LAB.

PARTICIPANTS	***ROLE***
Union of Greek Banks (UGB)	Coordinator
National Bank of Greece (NBG)	Partner
Agricultural Bank of Greece (ABG)	Partner
Mortgage Bank of Greece (MBG)	Partner
Educational Center of MBG	Partner
INE – OTOE	Partner
National Technical University of Athens (NTUA)	Technology expertise provider

The main objective of the project D-LAB is the development of a modern distance training system for bank employees, based on the new technologies and pedagogical methods. The new technologies that will be used in the implementation of this system are computer networks and hypermedia systems. The project also aims at demonstrating the technical and economical viability of such an approach. The distance training system that will be developed must meet the following requirements:

- It must be equipped with efficient authoring tools to facilitate the development of training material and provide an easy way to manage and regularly update this material.
- It must facilitate the automation of administrative tasks, specify access and update rights for all users and have a friendly user interface.
- It must implement a communication channel, in which all trainees and trainers will participate and discuss electronically matters related to specific courses. The content of these discussions that take place, as well as all questions and answers, must be reusable.
- It must facilitate the users in their attempts to locate and access course related material that is distributed in the Internet.
- The training material must be widely available and accessible at the same time from many different locations. It must also be hierarchically structured and use hypertext links in such a way as to facilitate and guide the users.

4. Proposed solutions

Since the beginning of the project, the most important problem has been to specify the modern distance training system that will be used. The NTUA team has proposed three alternative solutions after investigating related research.

The first solution advocates the selection and adoption of a system similar to the ones used today by banks outside Greece for their training needs. Unfortunately, our experience in this area is very limited and this solution should be realized through investigation of the current situation world-wide. It might lead nowhere if such systems are not available today.

The second solution advocates the adoption of a commercial system for distance education, such as the ones used today in academic institutions world-wide. Web-based distance education systems, for example TopClass [URL4] or WebCT [URL5], are particularly suitable for the needs of this project, since they meet many of the requirements that were stated in the previous section.

The third solution advocates the development of a distance training system specially designed for the needs of banks. This solution will be further elaborated in the rest of the paper, as it is particularly interesting from the development point of view.

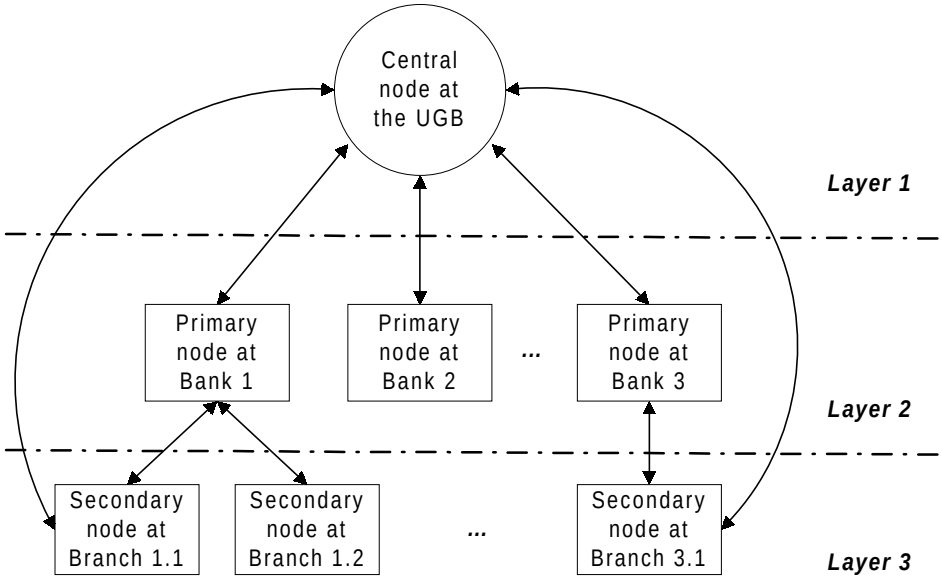

Figure 1. Layered structure of DDTS.

5. Implementation approach — the DDTS solution

According to the third proposed solution, a distributed system structured in three layers as shown in Figure 1 is envisaged for the needs of the project D-LAB. This system will be referred to in the sequel as "Distributed Distance Training System" (DDTS). Each layer will contain a number of nodes which will act as the system's servers. These servers will host the training material and provide other educational or administrative services.

The first layer will consist of a single central node, located at the educational center of the UGB, hosting the training material that is common to all banks. The second layer will consist of several primary nodes, one for each bank participating in the consortium. In each primary node the material of the central node will be mirrored, in order to improve access time and reduce the network load. In addition, primary nodes will host material specific to the needs of the particular bank or supplementary to the common material. The third layer will consist of several secondary nodes for each bank, distributed over the country. These will mirror parts of the training material and provide access to trainers and trainees.

DDTS will be based on the client-server architecture. Each node will contain a powerful server computer, which will host the training material and make it available to the users, who will operate a number of client computers. Such client computers will be connected to DTTS through LANs or modem lines, as shown in Figure 2.

The development of the required training material, its management and updating will be performed only in nodes of the first two layers. Subsequently, updates will be propagated to other nodes through the network. Such an architecture has the advantage of avoiding duplication of effort in preparing, maintaining and managing the training material. Additionally, it makes the access to this material very flexible.

DDTS can be implemented using as infrastructure the Internet and the second-generation networked hypermedia system HyperWave [Maur96, URL6]. Internet offers a large number of services, contains a real treasure of information and is widely used and available today [Hesslop 1994]. HyperWave possesses characteristics that facilitate the development of distance training systems. Specifically:

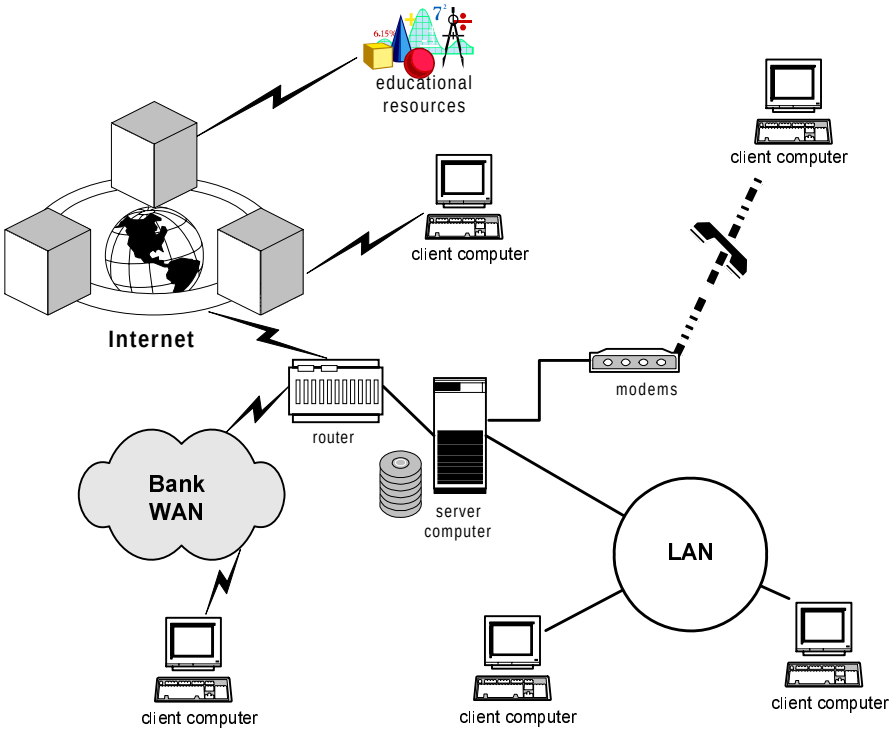

Figure 2. Schematic view of DDTS.

- It is a scaleable distributed system, in which the stored data can be placed at a variety of sites. There is no need for a central, dedicated server with huge amounts of disk storage.
- It is interoperable with other first generation hypermedia systems, such as WWW and Gopher, and with other popular Internet services, such as Telnet and FTP. Browsing, authoring and administration can be performed using standard HTTP clients or custom application development tools.
- Objects can be added to the system piecemeal as they are constructed. The system is based on an object-oriented database containing documents, links and object information.
- Hyperlinks are stored separately from documents, allowing users to attach links to otherwise read-only documents. In addition, hyperlinks are automatically checked for consistency.
- It is a multi-user system, allowing people with an organization to work together simultaneously and collaboratively. It utilizes access rights for every collection of hyper-documents.
- It supports integrated search engines for full text and object attributes.
- It supports Java and JavaScript, which can be used in order to create applications that extend a server's functionality and improve user-friendliness.
- It is multilingual.

DDTS will support various modern pedagogical methods, such as collaborative, conversational (student-student and student-teacher) and student-centered learning. Apart from hosting and electronically transferring the educational material, the network will also allow the exchange of asynchronous hypermedia messages, as well as synchronous live communication (chatting and teleconference) between trainees and trainers.

6. Discussion

Distance training based on systems utilizing the new technologies of computer networks and networked hypermedia systems will undoubtedly modernize the way in which training is offered in banks today. The problem is how to build systems that will exploit the great potentiality of these technologies in combination with current pedagogical trends.

Of the three proposed solutions towards a modern distance training system for banks within the D-LAB project, the first is by far the easiest. The second solution seems easier than the third, but the adaptation effort that is needed, in order to make it suit the banks' requirements is hard to be estimated without a thorough investigation. The third solution is the hardest but the most promising, given that the proposed system will be specially developed for the banks' needs.

Acknowledgements

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`http://hyperg.softlab.ntua.gr/EONT/`

[URL2] MECPOL Project.
`http://www.idb.hist.no/mecpol/`

[URL3] Socrates Programme.
`http://europa.eu.int/en/comm/dg22/socrates.html`

[URL4] TopClass.
`http://www.wbtsystems.com/`

[URL5] WebCT: World Wide Web Course Tools.
`http://homebrew.cs.ubc.ca/webct/`

[URL6] R. Mauth and R. Friedman, "BYTE Magazine Picks Best Products at CeBIT '97", *BYTE*.
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