Chapter XI
An Integrated Architecture for Supporting Vocational Training

C. Bouras
Research Academic Computer Technology Institute and University of Patras, Greece

E. Giannaka
Research Academic Computer Technology Institute and University of Patras, Greece

Th. Tsiatsos
Research Academic Computer Technology Institute and Aristotle University of Thessaloniki, Greece

ABSTRACT

E-learning and Web-based training have evolved over time from a newborn trend for complementing the learning process to a major form of education and training for supporting mainly geographically scattered users. The basic aim of this chapter is the description of a platform for open and distance training, which is mainly focused at supporting the needs of Vocational Training Centers as well as of institutions providing life-long adult training and learning. In particular, the issues that this chapter focuses on are vocational education and training characteristics and requirements, the current situation and technological trends in ICT-supported VET, the development framework and processes while it also proposes basic vocational training services and the system architecture of the integrated platform. The presented platform aims to provide services of both synchronous and asynchronous and collaborative distance learning.

INTRODUCTION

Information and communication technologies (ICT) have been considered, from the early beginning, a facilitator to education and knowledge. The evolution of these technologies in combination to the emerging of new technologies over time as well as the high degree of familiarization of indi-

viduals with their use offer advanced possibilities for learning and training. To this direction much research and work has been realized for defining the basic components an e-learning/training system should have as well as for extracting the basic needs of the users that these systems target. However, learning and training, can be applied to a wide variety of fields and areas, each of which is accompanied by some special characteristics related to the field of learning/training, the tools needed for the realization of the training process as well as the familiarization of the target audience to the selected technologies. Most of the technologies used for providing and supporting distance learning and training need to address a variety of challenges, which are related, among others, to the provision of education to an increasing number of users as well as the training with, and in fast, changing technologies, and improvement of the instructional systems (Herremans, 1995).

One of the cases where Web-based training can be effectively adopted is the vocational education and training (VET). At the beginning, the main goal of vocational education and training was to prepare trainees (workers or students) for entry-level jobs in occupations requiring less than a baccalaureate degree. However, as stated by Levesque et al. (2000), "The last decade, this purpose has shifted toward broader preparation that develops the academic, vocational, and technical skills of students in vocational education programs." The introduction and incorporation of ICT in vocation training for the development of new and advanced ways of training and learning emerges as a necessity in the rapidly changing technological society. Furthermore, advanced technologies for training (simulations, communication, collaboration and assessment tools) can increase the array of learning opportunities both for the trainees and the trainers (OVAE, 2006).

Currently, there is a great number of tools and systems developed for providing and supporting Web-based training processes. In their vast majority, these systems choose either a synchronous, asynchronous or collaborative mode for achieving their goal with little or no integration and combination of these modes. The basic aim of this chapter is the description of a platform for open and distance training, which is mainly focused at supporting the needs of vocational training centers as well as of institutions providing life-long adult training and learning. The presented platform aims to provide services of synchronous, asynchronous and collaborative distance learning into one integrated system.

The chapter is structured as follows: Section 2 presents the background on vocational education and training, in terms of the current situation on ICT-supported VET as well as on the current trends in online VET technologies. Section 3 describes the basic vocational training features characteristics and requirements so as to define the differences and modification in regard to other types of education and for extracting the needs and motivation of the target users. The section that follows presents the framework for the support of vocational training, which is built upon the basic needs of the targeted users. Section 5 describes a set of proposed services that such a system should provide and support, based on the requirements, features and characteristics of a VET system, described in the previous section. Section 6 is engaged to the description of the system architecture, in terms of the logical view of the static structure of the architecture, the dynamic behavior of the system in terms of the specification of the system behavior, collaboration of components for achieving the system behavior and the physical view of the Web-based training system related to the deployment of the system. Section 7 summarizes and concludes the chapter, while section 8 presents the planned next steps.

BACKGROUND

There are many definitions for vocational education and training (VET). According to Wikipedia