MOBILE EXPERIMENTATION
INNOVATING EDUCATION TO THE 'MOBILE PHONE' GENERATION

Ricardo J. Costa, Gustavo R. Alves

LABORIS / Instituto Superior de Engenharia do Porto
R. Dr. António Bernardino de Almeida 431, 4200-072 Porto, Portugal
{rjc, gca} @ isep.ipp.pt

Abstract: This paper describes an emerging concept, named Mobile Experimentation targeting the improvement of the learning/teaching process in engineering and sciences areas. It is a subset of the broader M-learning concept and a consequence of mobile technology evolution, i.e. the appearance of devices like Personal Digital Assistants, smart phones and mobile phones with improved features, namely Java support. Mobile Experimentation contexts call for software architectures based in Java technology that can accommodate not only the access through mobile devices but also through PCs connected to the Internet. The impact of this dual access type on the remote lab infrastructure is illustrated through a simple example based on a digital multimeter being controlled both from a mobile device and from a simple PC connected to the Internet. This last form of access is traditionally regarded as a Remote Experimentation scenario in opposition to the so-called mobile experimentation scenario, which is characterized by accessing a remote lab through a mobile device.

Keywords: Mobile Experimentation, mobile devices, M-learning

1. INTRODUCTION

The permanent technological evolution has been changing habits and attitudes. Technology has become a major change factor of global economics, allowing an easy exchange of information among different places and countries. The increasing pace at which information circulates has been improving people's lives, giving them flexibility to access knowledge. However, and at the same time, it promotes new changes, imposing more requirements for people to meet the demand of information and culture, in order to avoid being out of up-to-date knowledge.

While in the early transistor days (20th century) the radio, in the 20's, and the TV, at the end of the 50's, gave access to information, later, during the 60's, computers appeared. These started to be machines to process data in situations where man work was hard and difficult, namely in repeated tasks like calculations. Later on, in the 80's, the appearance of Personal Computers (PCs) with enhanced features, namely the possibility to display images, video, interactive contents, and others, triggered the feeling in the educational community that these devices could change the learning/teaching process. These facts are depicted in figure 1 that illustrates the technological evolution until the appearance of PCs.

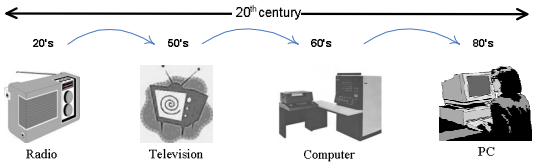

Figure 1: The technology evolution from radio to PCs.

As time went by, the Data Processing Era (1960 to 1980) gave place to the MicroComputer Era, (1980 until 1990), where PCs took an important role in many sectors of our society. It was during this last era, in the mid 80's, that PC features were seen as a benefit to education, namely as a complementary resource to improve the quality of the teaching/learning process. A new concept named Computer Based Learning (CBL) and defined as the local access to educational resources like demonstrations, video and audio, graphics and others, through a PC (Wikipedia 2005), emerged.