THE ARCHITECTURE OF THE ON LINE TRAINING SYSTEM HTP-OLT

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Abstract: In this paper the architecture of a training system for the high tech products users is presented. The project is aiming at the realization of a multimedia program system for the training and self-testing for a large range of users regarding the use of a wide utility range of products. It is taken in view the realization of some programs for a easier configuration and development of some software modules oriented on categories of products. In the project, it is taken in consideration the development of a methodology of personalizing the presentations in different foreign languages, the realization of a class of graphic objects and presentation patterns, the development of some algorithms for auto test and computer assistance of using a product.

Keywords: e-learning, architecture, interactive training, multimedia

1. INTRODUCTION

It is observed that from some of the provided products facilities, only a small percentage are used by the user because of the hard understanding of the instruction manuals which come with product. In particular, the use of some expert terms makes it difficult the understanding of the instructions on how to use the products. The project is aiming at the realization of a multimedia program system for the training and self testing for a large range of users regarding the use of a wide utility range of products. The use instructions of any kind of product must be completed with a personalized multimedia presentation of use of all the facilities of that product. It is taken in view the realization of some programs for a easier configuration and development of some software modules oriented on categories of products. The resulted program is a interactive multimedia presentation of the use of all the facilities provided by a product. The presentation must contain graphical sequences, animation, video or audio in demo or step by step presentation. The video sequences can be realized with different kinds of software like Macromedia Flash for example. In the project, it is taken in consideration the development of a methodology of personalizing the presentations in different foreign languages , the realization of a class of graphic objects and presentation patterns, the development of some algorithms for autotest and computer assistance of using a product. It is proposed the realization of the software modules for the following types of products: cars, mobiles, medical devices, home devices (TVs, audio system, washing machines, etc.).It is to know that the presentations have a technical point of view and not a commercial or product advertising one.

Lately, at a global level, it is noticed a growth in the interest for the efficient learning process. For that purpose, there are many research programmes in Europe and USA which cover the e-learning and the development of efficiency in the learning domain. In the IT specialized magazines there can be found some statements like: <<if the methodology of learning would have developed as fast as the computer science, an engineer would be trained in few weeks rather than in 5 years>>. In the informational based learning domain there have started to appear some particular standards which are being continuously developed and to which it would be wished for the development associations in Romania to contribute. One of the well-known standards at present (2004) is the SCORM standard developed by ADL– Advanced Distributed Learning in USA (ADL Organization, 2004).

The purpose of the ADL initiative is to allow the access of some social-professional as large as possible categories to a high efficiency education, based on each individual's needs, which can be done at any time and place at a price as low as possible. In this context, it is envisaged the speeding up the development on a large scale of some cheap software products and the creation of the competences for this type of products. For fulfilling these goals, ADL has created <<The reference Model which uses Distributed Informational Objects –SCORM>> with the intention to create educational reusable objects named <<Learning Objects>>in the general domain of the educational system based on the computer and Internet. The SCORM standard describes the technical domain through which it can be assured the generation of a complete set of directing lines, specifications and standards.

The SCORM standard 2004 is continuously build on the base of Web oriented system named <<The model for the content grouping >> and <<The domain for time running>> with which it is realized the required teaching module (which can be a course, an instruction manual, or an interactive teaching model etc).

In SCORM 2004 there are evidential the changes in the following specifications and standards:

- The Data Model for the Communication by the Objects Content developed by IEEE
- The Interface for the script application programming for The Communication by Content and Running Services, developed by IEEE ECMA
- General Data (Metadata) for teaching objects developed by IEEE
- Extensible Mark-up Language (XML) developed by IEEE. The binding scheme for teaching objects with General Data Models.
- The wrapping of the content, developed by IMS (a Consortium for Global Teaching)
- Simple Sequencing, developed also by IMS
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The education oriented on individual needs offers the best results. A particular case less used in a systematic way is the case of learning the utilization of all facilities of some products of large usage which, at the moment, covers advanced technology, while the technological knowledge level of the users is quite low. In this case it is obvious that the initialization of some technical teaching has no sense, so it is necessary to be provided some personalized cheap teaching methods, easy to access and use.

The use of information technology in education can solve the problems related to the personalized teaching because this can offer a real time preparation on demand, and adapted for individual needs at an acceptable price, with a consistent and sure content, and the results obtained in the education efficiency may be easy evaluated. The experience proves that the use of some multimedia interactive means leads to a large growth of the individual learning efficiency and allows easy self-testing of the knowledge.

For sure, any technical product comes with a very technical utilization manual and in many situation very hard to read and understand by users, without the knowing a technical vocabulary. There exists distributors and producers who have INTERNET sites, where one can find commercial description of the products and detailed technical specifications but very rarely utilization instructions.(www.canon.com, www.nokia.com, http://web.canon.jp/imaging/bebit-e.html, www.emag.ro). The continuously and fast growth of the number of the computers home connected to the Internet justifies the development of a multimedia interactive instruction system for the use of often used technical products. Also the system could be used for the computer assisted of some sophisticated running mode.

Such a system must allow:

- the use of a small number of technical terms by replacing them with graphical facilities;
- generation of some real time teaching instructions and at the users requirements;
- double way dialogs, between IT technology and users.

The ITS Technology has developed lately because of the evolution of the knowledge of the way the man learns and the computation power of nowadays systems.

2. THEHTP-OLT ARCHITECTURE

In fig. 1 the simplified architecture of the project is presented.

The main human actors involved in the project are:

- The managerial core;
- Project administrator;
- Software designer
- Functional models designer;
- Programmers;
- Graphical designer;
- Users;
- Technical, artistic and linguistic consultants.

To achieve the managerial objectives, the managerial core must ensure:

- Coordination of all activities by creating a realistic and rigorous schedule;
- Availability of necessary material, technical and human resources;
- Organization of round tables, seminaries, debates etc.;
- Organization of results interpretation;

- Availability of a good link with main beneficiaries (companies, distributors, users etc.);
- Definition of quality indicators and tracking if and how they are followed;
- Monitoring the impact of the site over the users and interpretation of the results for future evolving of the application;
- Realization of the documentation required to report the project completion;

The software designer represents a group of people which has the following tasks:

- Definition of the system architecture;
- Definition of the functionality of the system;
- Implementation of the conceptual model of the system;
- Choosing the software needed to implement the various models of the project;
- Conceptual and logical design of the database;
- Coordination of the activity of the programmers and designers.

The programmers will implement and test the code based of the specifications created by the software designer.

The designers will design and implement the reusable graphic objects as well as the presentation patterns, being persons with artistic abilities.

The model designer will generate the functional description of a specific product by using the results offered by the designers and programmers.

The project administrator will have the following tasks:

- Design, implementation and administration of the application web site;
- Web site security;
- Monitoring of the site usage;
- Evaluation of the level of user needs satisfaction

There were considered two categories of beneficiaries:

- Users whom needs for instruction must be satisfied; it is needed to take into account two categories of users:
  - Users with disabilities: (blind people, deaf people etc)
  - Speakers of a language that is different from Romanian.
- Producer companies, distributors, service companies etc. This category of beneficiaries can participate at the project implementation by offering technical documentation, consulting, sponsorship etc.

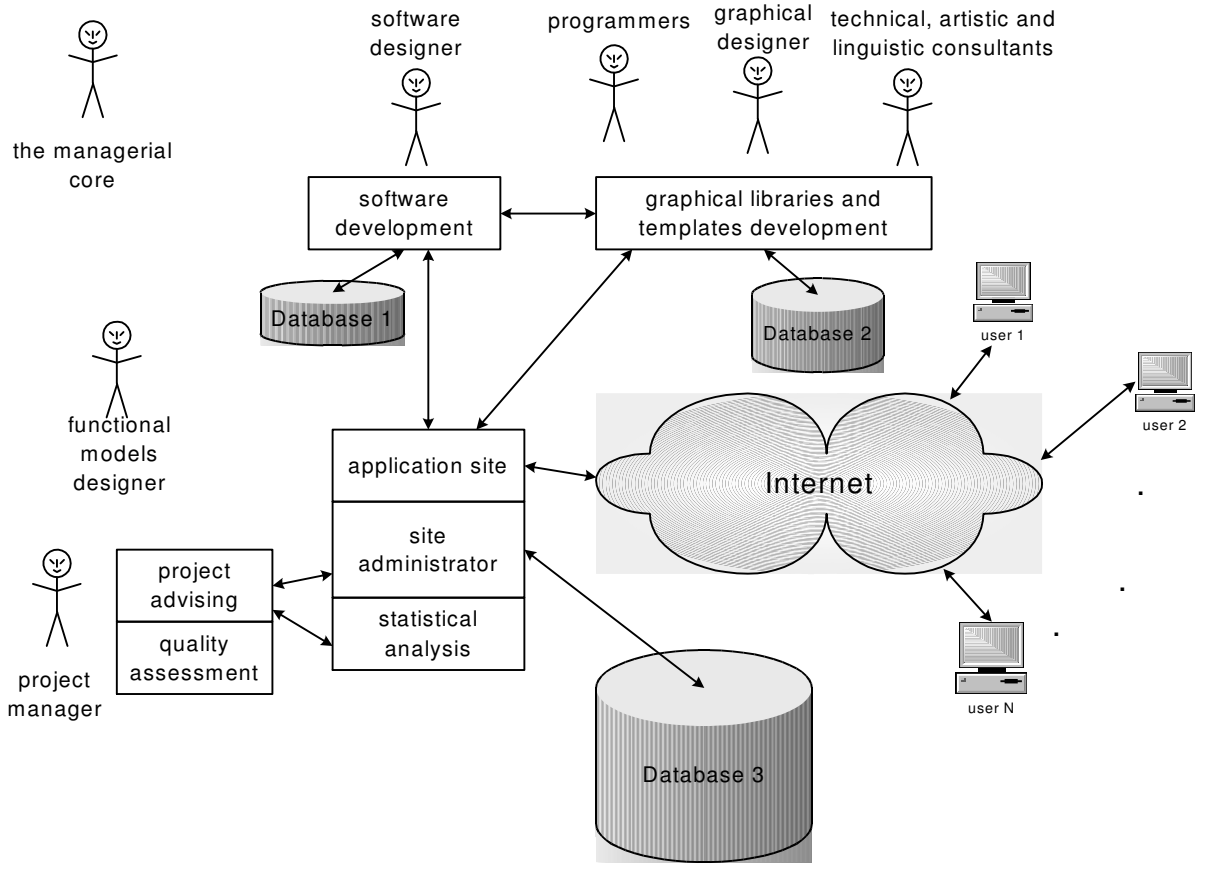

Fig. 1

The application can be used in three forms:

- DEMO - for a global presentation of a selected product;
- SELECTIV - for a detailed, step-by-step presentation of a selected function;
- COMPUTER ASSISTED UTILIZATION - when the user specifies only the result he wants to obtain and the concrete conditions;
- SELFEVALUATION - when the user desires to test the level his knowledge in selected product utilization.

The developed software will contain:

- an application development module;
- an application personalization module;
- a module for queries management;
- a statistical analysis module.

The application development module must permit:

- The generation of training sequences for all considered products;
- The generation of animated DEMO sequences;
- The automate resizing of text labels for each used language.
- The presentation and evaluation of the self test.

The graphical library must contain all the graphical objects used in the application development.

Database 1 contains the test data for the software development.

Database 2 contains graphical libraries and a dictionary for the key words in several languages.

Database 3 contains all the data for the implemented applications, data concerning the activity on the site etc.

3. CONCLUSIONS

The HTP-OLT project is a new kind of e-learning, dedicated to the training of a great number of users with minimal technical knowledge in the use of high tech products. The users with physical or psychical disabilities are also taken in account. The architecture of this project permits a continuous development of the project, adding new facilities and evaluating on-line the level of usefulness.

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