Chapter 19

Creating Model of E-Course: As an Object of Computer-Aided Design

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ABSTRACT

Modern educational systems function is as a medium for rapid analysis of shared information (FASMI), which defines information as analytical. The chapter shows the purpose of such analysis systems: work with distributed data in global computer networks, production and processing of semi structured information and knowledge. The purpose of this chapter based on last publications professors Irina Sidorkina (Volga State University of Technology) and Vardan Mkrtichian (HHH University) create model and program of Development E-course – as an object of Computer – Aided Design (CAD). The development of the methods and programming tools of synthesis of the new design object combining the record of optimization criteria, adaptive and intelligent components of design, distributed information processing and the Internet-based interaction creates favorable conditions for automation and adds new system properties to the present-day CAD. Dr. Alexey Rybakov (Omega-R Inc.) was a designing a software on the subject of this chapter.

INTRODUCTION

Since the theoretical studies in the field of computer-aided design, and process data objects of cognitive destination are in the initial stage, the deductive form of the theory can be obtained by accumulation of lessons learned. In addition, there is no theoretical basis for the integrative aspects and their practical applications for intelligent and adaptive systems design in distance learning courses. Currently, this type of problem may be considered as a potentially promising. Despite the existence of some of the theoretical research and implementation of intelligent tools to support distance learning environments, theory and technology of system integration components to ensure there is no theory in CAD and in artificial intelligence. At the same time, it is important that the integration processes lead to the emergence of fundamentally new classes of systems. It should be noted that this applies not only to the sphere of intelligent CAD or training applications, but also of artificial intelligence in general.

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The evolution of computer-aided design objects with the development of the traditional methods of synthesis and interaction of distributed computing resources using the network while maintaining the interactive design led to the creation of a class of systems, the main feature of which is the process of obtaining object information technology a multimedia educational course. Continuation requires the organization of scientific research in the field of automation of the creative functions for a person using an adaptive and intelligent user interaction in an open educational space.

The development of the methods and programming tools of synthesis of the new design object combining the record of optimization criteria, adaptive and intelligent components of design, distributed information processing and the Internet-based interaction creates favorable conditions for automation and adds new system properties to the present-day CAD. These properties allow to combine heterogeneous information in a single project and to modify this information under intelligent manageability.

The paper deals with the problem of architectonical and organization issues of computer-aided design of the learning tools, some features of intelligent and adaptive technology application based on the latest information and linguistic tools being analyzed.

BACKGROUND

When analyzing the state of the affairs (Brusilovsky, Schwartz, Weber, 1996; Boikachev, Koneva, & Novik, 1994) in the field of creating distributed learning systems, it should be noted that there is a lack of formalization tools and sufficient theoretical foundation. Difficulty and labor intensity of distance educational courses design and success in CAD theory development and artificial intelligence systems, in particular in implementing training functions should be emphasized. Design automation systems based on the proposed classification (Koryachko, Kureichik, & Norenkov, 1997) by the type of the object are as follows: machine building and instrument-making products, technological processes, construction projects, organization systems. The project under consideration focused on electronic educational course is supposed to be referred to one of those types. Besides, the object depends on the type, variety and complexity. The connections between the elements are divided into the major ones, being the tree of the basic presentation of the material and secondary ones comprising the multitude of the additional material links to. The additional material is details of the presented in the basic scenario description of the problem domain or information not directly linked (or tenuously linked) with the theme of the course but used in the process of training to explain links and intersections of the studied problem domain with the other problem areas. This can be the presentation of the differing viewpoints on the subject matter and methods of problem domain presentation, etc.

Thus, we can make a conclusion on the possibility and even necessity of presenting the distributed learning course as an object to be designed with the tool ware and on the basis of the current CAD theory.

The structure proposed in the description of the process of the automated design of an e-learning course for distance learning comprises the following main elements, defined in detail within:

- Concepts, definitions, provisions aided design training course.
- System transformation project information.
- The process of computer-aided design in the information and linguistic environment changes.