

Development of an Collaborative and Interactive Computational Application for Teaching and Use on the segment of "Experience Economy" of the Electricity Sector

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Abstract —Aiming on new or less experienced System Operators, and in view of the major renovations, and the dynamics of changes in the environment of the Power Sector, this paper summarizes the strategies used by the digital signal processing group (GPDs) of the Electrical Engineering Department, of the University of Brasília, UnB. In addition, the development and utilization of a web-based system of collaborative distance training based on learning objects, enabling capture, training and transmission of knowledge present in the Electric System Operation Eletrobras was described.

I. INTRODUCTION

A. Electric Systems

The station operator is the last line of defense against errors in real time operations, then the command is ran.

Currently, the minimum educational background for operators is technical high school. Operators' training is achieved in lectures in classroom and on simulators; internships (real time); and certification.

Thus, it is necessary a set of actions to train operators so that new situations can be quickly assimilated and resolved in real time.

Another motivator to be considered is the "Experience Economy", which is the knowledge accumulated by trained staff. Methodologies with this aspect have minimized the effects of loss of an experienced professional, resulting, for example, from retirement. Thus, simulators equipped with an knowledge base accumulated and adaptable, allow not only maintenance but also accumulation and evolution of knowledge by incorporating new techniques.

B. Computational Tools and Systems Training

Power system simulators are plentiful when it comes to System Operators. When you change the focus and look at the operation of power plants and substations, the universe of options is reduced drastically. Physical simulators, miniature power plants, and softwares for small installations are used in some training centers, but without much detail [1].

The framework of required training is even more evident [2], with increasing renewal of operators due to retirements or termination due to "turnover" of new entrants.

II. PROPOSED WORK

The originality of the system occurs in the form of an interactive game, capable of (i) generate real situations to train personnel using artificial intelligence techniques, (ii)

allow the operator interaction as if in situ, (iii) permit to be reconfigured and to store new methods and actions through a learning module, (iv) being easily used and transported, (v) generate a performance report, (vi) to stimulate levels of stress .

A. Definition of Goals

The objective of this project is to develop an interactive game system for training and qualification of operators, to work in substations and power plants of the National Interconnected System. The system will be provided with realistic three-dimensional graphics, interaction through smart-board, multimedia, and an intelligent system for automatic generation of study situations as well as scoring the operator.

III. METHODOLOGY AND SEARCH ROUTE

It was necessary a research and proposal for a technological solution to the platform for distance learning in order to carry out the construction of the application. Another important aspect will be to develop a prototype, followed by its test and performance evaluation.

V. PRELIMINARY RESULTS

Since this is a study that is under development, formative extraction of results was conformed to the case.

As a result of the deepening on the literature review on the subject of study, we obtained: a) a thorough review of the development of educational approaches in distance learning, giving views of principal authors, b) use of information technology in the teaching-learning, and c) a study of main features of platforms of distance education.

REFERENCES

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