

# **A SOFTWARE PLATFORM FOR EDUCATIONAL BOARD GAMES**

**Boyan Bontchev**

## **ABSTRACT**

Educational games such as quizzes, quests, puzzles, mazes and logical problems may be modeled as multimedia board games. In the scope of the ADOPTA project<sup>1</sup> being under development at the Faculty of Mathematics and Informatics at Sofia University, a formal model for presentation of such educational board games was invented and elaborated. Educational games can be modeled as special board mini-games, with a board of any form and any types of positions. Over defined positions, figures (objects) with certain properties are placed and, next, there are to be defined formal rules for manipulation of these figures and resulted effects.

The model has been found to be general enough in order to allow description and execution control of more complex logical problems to be solved by several actions delivered to/by the player according some formal rules and context conditions and, in general, of any learning activities and their workflow. It is used as a base for creation of a software platform providing facilities for easy construction of multimedia board games and their execution. The platform consists of game designer (i.e., a game authoring tool) and game run-time controller communicating each other through game repository. There are created and modeled many examples of educational board games appropriate for didactic purposes, self evaluations, etc., which are supposed to be designed easily by authors with no IT skills and experience. By means of game metadata descriptions, these games are going be included into narrative storyboards and, next, delivered to learners with appropriate profile according their learning style, preferences, etc. Moreover, usage of artificial intelligence agents is planned as well – once as playing virtual opponents of the player or, otherwise, being virtual advisers of the gamer helping him/her in finding the right problem solution within given domain such as discovering a treasure using a location map, finding best tour in a virtual museum, guessing an unknown word in a hangman game, and many others.

**Keywords:** Quiz, quest, board game, model, e-learning, software platform  
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Boyan Bontchev  
Faculty of Mathematics and Informatics  
Sofia University "St. Kl. Ohridski"  
5, J. Bourchier Blv., 1164 Sofia, BULGARIA  
e-mail: [bbontchev@fmi.uni-sofia.bg](mailto:bbontchev@fmi.uni-sofia.bg)