ABOUT THE PROJECT

The APOGEE project plans to create a solution that will fill the lack of a simple but effective open source software platform for easy building of educational video games by non-IT specialists and, on the other hand, to meet the needs of a large number of adaptive video games for learning in different learning disciplines. The goal of the project is to create an open software platform to build intelligent, customizable, customizable, 3D video maze-based games with smart virtual characters that help the player, and validate it through a practical experiment to build a prototype of a game with a storyline about the medieval history of Bulgaria. The platform will be implemented along with a methodology for easily creating smart adaptive educational video games by non-IT specialists, which includes:

- A labyrinth description approach in a metadata-managed editor, including visual construction of the labyrinth structure, a declarative game description, and a semantically structured content presentation;

- Automatic generation of educational games-labyrinths based on Unity3D;

- Personalized adaptation control tool, using both physiological measurements and face analysis of the player, management of the mechanics, dynamics and audio-visual effects of the game;

- Intelligent question and answer agent, which provides the virtual characters with appropriate answers to player questions.

INQUIRIES

You can tell us what you think about learning games by participating in a survey (open the links in Chrome and use Google Translate from Bulgarian to your language):
- For learners - https://goo.gl/forms/Hacnt341I6DcDoZn1
- For teachers - https://goo.gl/forms/sf1fkyOhRMzOYSMt1

CONTRACTOR

The project is performed by a team of the Department of Software Technologies at the Faculty of Mathematics and Informatics at the Sofia University St. Kliment Ohridski, which includes specialists from the Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences (BAS) and the Institute of Information and Communication Technologies - BAS.

The project manager is Prof. Boyan Bonchev

DURATION

Start: 15/12/2017

Final: 14/12/2020

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APOGEE- smArt adaPtive videO GamEs for Education

PROJECT OBJECTIVES

The APOGEE project has the following main objectives:

- Design, generation and customization of educational video games based on a formal descriptive model involving semantic structuring of didactic content. This objective refers to the lack of such platforms and tools in a global perspective. To facilitate the use of the platform, a methodology will be developed for creating educational video games for training by non-IT specialists;

- Dynamic adaptation of parameters of the educational video games according to the outcomes, the excitement and the emotions of the individual player - the platform will allow the mechanics of the game, the dynamics and the audio-visual effects to be implicitly adapted during the play to the changes in the player's behavior;

- The three-dimensional virtual characters (non-player characters) in the game will interact with intelligent agents for answering the player's questions using knowledge and facts derived from lexical corpora with learning content like textbooks and web pages;

- The validation of both the methodology and the platform for the creation of smart adaptive video games will be carried out through practical experiments for the creation of educational games for medieval history of Bulgaria by pedagogues and teachers. This will provide an objective assessment of the usefulness of the platform in terms of its usability by non-IT professionals and, on the other hand, of the opportunities for playing and learning through smart adaptive video games built with the online platform of the project.

HYPOTHES OF THE PROJECT

The objectives of APOGEE are related to several research hypotheses as follows:

- Learning pupils through 3D video games-labyrinths is more effective and more effective than learning through traditional sources such as books or video clips;

- Non-IT specialists such as teachers, educators and lecturers are able to easily design video games based on learning labyrinths using the software gaming platform;

- Adaptive games applied to learner adaptation based on player's results, excitement and emotional status provide better playing and learning opportunities than non-adaptive games;

- Adapting to video games based on player excitement, obtained by measuring psycho-physiological indicators such as conductivity of the player's skin, is effective and efficient;

- Video games with smart virtual (i.e. non-player) characters represented by avatars used for student training offer better gaming and learning opportunities than the same games without such characters.
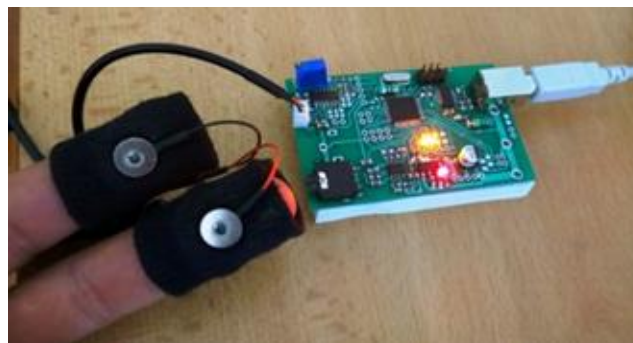
APOGEE PLATFORM

To achieve the goals of the project, the APOGEE team is developing an online platform for constructing and generating smart customizable 3D games for learning.
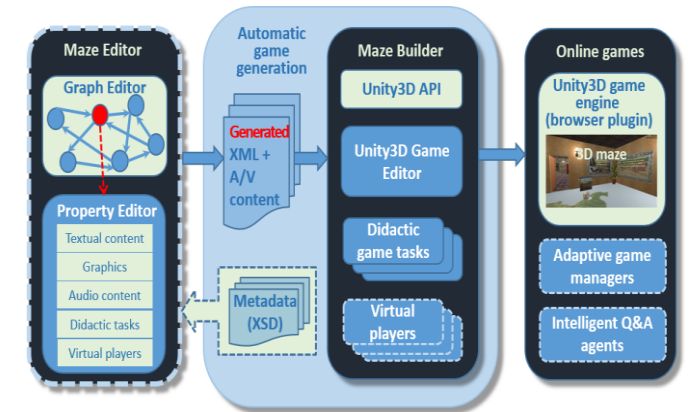
Note: blocks in dotted line are under construction

The first prototype of the platform is now complete and allows automated creation of simplified video labyrinths without virtual characters but containing several types of mini-games embedded into the rooms of the labyrinth.

For more information, visit the project Web site at http://www.apogee.online/.