A look into the future of serious games technology

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In: Serious games: The challenge

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1 Introduction

Serious games often lack detail and graphical polish when compared with commercial games. While there has been an impressive evolution in the graphical technology of AAA games, serious games often lag behind in the adoption of these new technologies. However, adopting these technologies may be beneficial for the player's enjoyment of the game, the immersion effect they can achieve, and the market value of the final product. This lack of detail is often caused by two reasons. Firstly, the budgets allocated for serious games are often lower and the time spent in production time is usually shorter. Secondly, the teams developing serious game content usually consist of educators who are less experienced in the game development process.

However, recently there have been new developments in game technology which may help to alleviate this. In this abstract we will give a short overview of upcoming technologies and how they may benefit serious game creators.

2 Intelligent Tools

Traditionally, games are produced by experienced and skilled development teams using technical and specialized software packages. While these packages are very flexible, they also present the user with a high learning curve. Usually a large team of developers is responsible for adding all content to the game. The production tasks are divided over different artists specializing in one area of content creation (e.g. animation, texturing, environment designers…)

It is unlikely that educators will have the skills needed to produce high quality content. However, we see a clear solution in the future where experienced game developers create "template" content which can then be used by many games in different contexts. The non-technical educators will then be able to use intelligent environment creation packages to fill the world with these templates.

For example, the recently introduced Unity Asset Store [1] allows users to purchase basic "assets" (game objects such as 3D furniture models, icons…) from within the editing environment. However, the user still needs to place all the objects in the virtual world by hand. While this may not require highly technical skills, it still requires a lot of time to create large and realistic worlds. However, recent advancements in computer learning and geometrical

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algorithms [2, 3] allow scenes to be generated semi-automatically. Here the user provides the system with a number of sample scenes. The computer then analyses the scenes and learns the relationships between the scene objects. Finally, new scenes can then be automatically generated by the system. This way, the user only has to be in a supervising role and provide high level input to the editing system. This allows the user to focus on other tasks such as creating educational content. Other research [4] has focused on best practices for graphics specific user interfaces which typically arise when creating game content. Results show that novice users can easily create complex datasets such as material and lighting properties used by the visualization without much prior training.

3 Online Collaboration

In the previous section we already mentioned the online Unity 3D assert store. However, this system is very rigid, content creators provide ready-made content on this platform which can then be purchased by customers. In contrast to this, interactive web based systems also play an increasingly important role in game creation. For example, the Infinitex system [5] allows multiple users to edit the same world at one time without using the complex version management systems often used by professional game developers. The system allows multiple users to create texture data in an intuitive and interactive way. It also goes beyond a simple editor, as it incorporates the whole production process from the initial empty environment until the final finished product and addresses all the challenges that arise along the way when creating visually rich games. In particular, it focuses on versioning, management, continuity, and (multi-user) security. Furthermore, this system works on current generation hard- and software.

Such a system could easily be extended in the future to include more tasks than texture creation such as object placement, sound design and gameplay elements. Such online systems will also simplify the life of inexperienced users by automatically completing certain tasks such as asset management and distribution. Together with results mentioned in Sect. 2, this will greatly reduce the time and effort needed to create high quality game content.

Finally, the most important benefit of online systems is that the line between creators, users and players can be blurred. Users and educators can easily contribute new content and this content will immediately be made available to the players without requiring the installation of updates or patches.

4 Conclusions

In this work we have given a short overview of the future of game technology to create compelling educational games in a cost efficient way. Advanced editing technologies will allow inexperienced educators to create new game content and easily make this content available to their users and players.

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