MTLG – Helping students and teachers creating and analysing simulations and games from a didactical and technical perspective

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Abstract: MTLG is a framework for the creation of animations, simulations and games that focuses on simple operation through multi-touch input, support for didactic implementation and the evaluation of learning data. The framework is completely web-based and therefore system and platform independent. Over several years, prospective computer science teachers and computer science students have used the framework in our e-learning labs and seminars. We have iteratively improved and enhanced the framework and its applications over several use cases in various computer science classes. The framework and all learning applications are available as open educational resources.

Keywords: framework, simulation, animation, serious games, teacher training, computer science education

1   Architecture

It is rather difficult to create animations, simulations and interactive gamified applications for specific learning goals, because an implementation of an interactive learning application requires in-depth specialist knowledge in many areas.

The general idea of the MTLG[3] framework is to offer a convenient toolkit for ambitious developers to produce their own learning games and simulations with reduced effort and without deep understanding of the inner workings of higher programming languages and server infrastructure. The resulting applications are platform independent and optimised for touch interaction.

Therefore, the framework consists of two major components. The first one is the gameframe and it can be interpreted as a scaffolding tool, managing dependencies, offering a build tool and live server as well as a pre-configured continuous integration pipeline for easy deployment to a web server. The second component is the actual core. It manages control flow and provision of further modules as the framework can be extended by including modules for specific tasks and purposes. The framework as well as all modules are published under an open license as open educational resources. The

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[3] https://gitlab.com/mtlg-framework, last accessed on March 21st, 2019

target group is mainly technically interested teachers as well as prospective teachers in their studies. The core functionality and the most important modules are as follows:
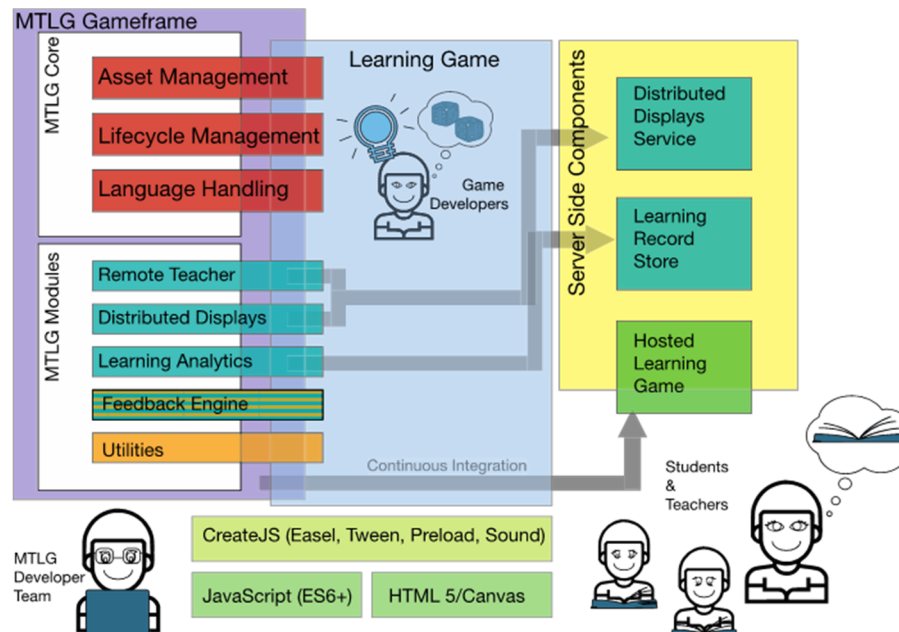

Abb. 1: Architecture

In the future, the framework will provide further support for didactically meaningful planning and implementation of a collaborative learning application.

Bibliography

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