

Round-Trip Engineering for 3D Applications

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In the DFG-funded project “Roundtrip 3D”, we are researching a novel extension of round-trip engineering (RTE) to the development of interactive 3D applications. RTE, which combines forward (model-to-code) with reverse (code-to-model) transformations, has proven useful in the development of “conventional” software as exemplified by several existing tools supporting the simultaneous editing of UML diagrams and program code. Development of 3D applications, however, differs from other software in that (at least) two types of program code are involved, i.e. the graphical 3D objects, e.g. in X3D code, and the application logic, e.g. in JavaScript. Further, 3D development typically involves different developer groups, i.e. 3D content designers and programmers which necessitates non-simultaneous means of synchronizing the different code bases with the common model. To address these challenges, we propose a multi-tiered approach comprised of a common domain model written in a DSL for 3D applications, an intermediate model, abstract syntax trees, and program code in the respective target languages. A persistent intermediate model serves as central data structure for the non-simultaneous synchronization of the various models and code artifacts.

Further information can be found on the project web site <http://vr.tu-freiberg.de/roundtrip3d/>