

Interface for creating movie scripts

Background

Plaxis Output is an application used for examining and exporting calculation results, such as displacements, stresses and water pressures in soil or buildings. These results are used to evaluate the safety of constructions and can vary with time, for example:

- excavating a tunnel leads to deformations at the ground surface. If these are too large, they can damage houses, roads or other structures in the area. As the excavation progresses, any given neighbouring area is affected in different ways.
- the water level in a river rises and falls due to environmental factors such as heavy rainfall or draught. The dikes of the river may collapse or overflow, flooding the surrounding areas. The strength of the dikes depends on time-related aspects such as the speed at which the water rises, how long it has been since the last time the water was this high, etc.
- a large office building needs to be constructed. Without proper foundations, the building may tilt or collapse. This can happen during the construction, but also much later due to very gradual settlement in the ground.

Problem definition

Plaxis Output can convert time-related processes to movies. It uses OpenGL for rendering and can display many types of results in many different ways, such as deformed mesh, arrows, shadings. There are also numerous options that affect the displayed data, such as switching off parts of the plot in order to look inside, take cross-sections, etc. Unfortunately, the user can only select one type of results and one set of options when generating a movie, leading to relatively static movies.

Project goals

This project entails the implementation of a module that can be used to generate more dynamic and interesting movies. It should consist of an intuitive user interface where the user can build a movie script with options to change (during the movie) result types, display options, zoom level, camera position, etc. The movie script must then be used to generate a movie.

How to apply

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