Multi-purpose presentation techniques for geoscientific data in various media

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The intuitive presentation of the progression of complex geoscientific phenomena is often an underrated part of the modelling- and simulation workflow.

Compiling such a presentation allows to easily communicate progress in joint research projects between participants with different backgrounds. Also, adequate 3D visualisations are usually easier to understand when presenting research results to stakeholders as well as the general public and critical information is conveyed in a more comprehensible manner.

We established a workflow that is based on integration and preprocessing of multiple geoscientific data sets in a suitable framework such as the OpenGeoSys Data Explorer or ParaView. After choosing an adequate visual representation of the data in these frameworks, custom-made interfaces are employed to export the data to presentation frameworks. For instance, using the Unity 3D Engine allows to implement interaction techniques such as adding camera paths, concentrating on specific subsets of the data or scene, blending multiple data sets, etc. While a general sequence of the presentation can be predefined, interactive navigation is still possible and allows to focus on particular interests of the audience.

Established interfaces and frameworks allow to display existing presentations in multiple ways, including virtual reality environments, novel hardware such as head-mounted displays like the Occulus Rift, or even websites presenting 3D content. Furthermore, the content can be redistributed as an executable for use on arbitrary machines.

This versatility enables the use of prepared presentations for a multitude of occasions including exchange of intermediary result to partners in cooperate projects, reports at conferences, the defense of research projects, or use in training courses or for tutorials.