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Structural framework: a new way to organise and communicate geological information

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A structural framework is a well-defined concept, being used primarily to add structural understanding to a geological model. Within GeoConnect³d, a new approach is used, i.e. the structural framework concept is modified to become the leading model, in which geological maps and models can be inserted and related to. This structural framework is being developed and implemented for two areas of interest - Roer-to-Rhine in northwest Europe and Pannonian Basin in eastern Europe - and will soon be implemented in two pilot areas, Ireland and Bavaria. The organisation of information is strongly linked to different scales of visualisation, starting from the pan-European view (1:15,000,000) with the possibility to zoom in to the scale of local geological models and maps in these four areas.

The GeoConnect³d structural framework reorganises geological information in terms of geological limits and geological units. Limits are defined as broadly planar structures that separate a given geological unit from its neighbouring units, e.g. faults (limits) that define a graben (unit), or an unconformity (limit) that defines a basin (unit). Therefore, the key relationship between these two structural framework elements is that units are defined by limits i.e. all units must be bounded by limits. It is important to note that this relationship is not necessarily mutual: not all limits have to be unit-defining.

A first test of the structural framework methodology was carried out in the Netherlands and Belgium for the Roer Valley graben, as the faults in this area were already modelled in a cross-boundary project (H3O-Roer Valley Graben). Displaying different elements according to scale of visualisation coupled with vocabulary information (definition, grouping and semantic relations between elements, etc.) following the SKOS-system proved a powerful tool to display geological information in an understandable way and improve insights in large-scale geological structures crossing national borders. Additionally, links with other GeoERA projects such as HIKE and its fault database are being successfully established. We consider the outcomes of this test promising to fulfil one of the main goals of GeoConnect³d, i.e. preparing and disclosing geological information

in an understandable way for stakeholders. We also consider this as the way forward towards pan-European integration and harmonisation of geological information, where the ultimate challenge is to correlate or otherwise link information from different geological domains and of different scales.

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