Scientific workflows are one important means in the context of data-intensive science for reliable and efficient scientific data processing in distributed computing infrastructures such as Grids. A common trend is to adapt existing and established business workflow technologies instead of developing own technologies from scratch.

This thesis provides a model-driven approach for scientific workflow engineering, in which domain-specific languages (DSLs) tailored for a certain scientific domain are used for scientific workflow modeling, and automated mapping techniques for technical execution are developed and evaluated. The Business Process Model and Notation (BPMN) is thereby used at the domain-specific layer and the Web Services Business Process Execution Language (BPEL) at the technical layer. The implementation uses the Eclipse Modeling Framework (EMf) and is evaluated in three application scenarios.

Guido Scherp studied computer science at Oldenburg University and worked for the OFFIS institute for information technology in Oldenburg. Since 2011, he is employed at the ZBW (Leibniz Information Centre for Economics) in Kiel where he conducted his research on scientific workflows and model-driven software engineering as part of their cooperation with the Software Engineering Group at the Kiel University.

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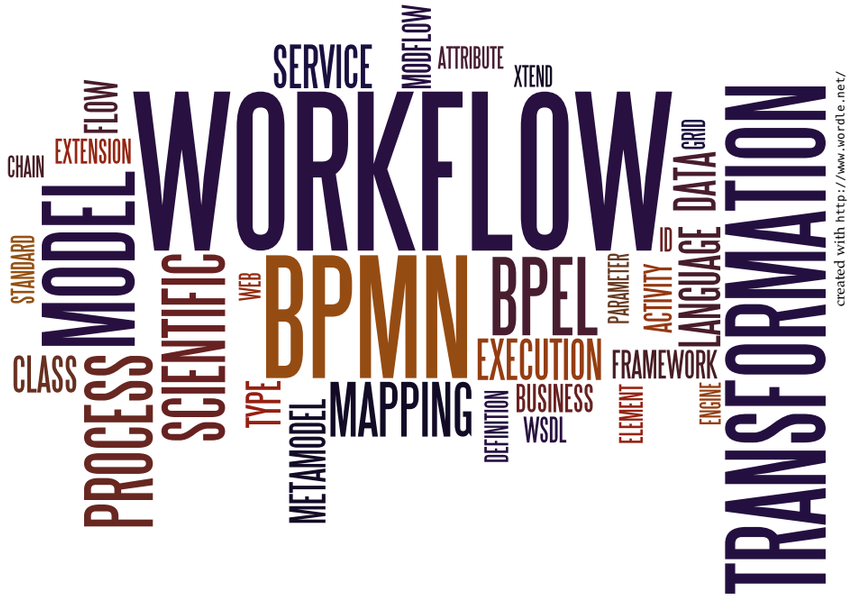

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