Increasing the reproducibility of structural modelling

Abstract:
Information management and documentation is a major challenge for the modelling of complex systems. It is difficult for others than the modellers themselves to decide if the structural model at hand is sufficient in quality, scope and underlying information for the desired purpose, as it is usually not possible to reproduce the modelling purpose. Reproducibility in modelling in general is hard to achieve, as the modelling process depends on several individual influencing factors. Existing literature on reproducibility in modelling reveals that the creation process of the model as such, as well as the information over the creation process are both essential for the reproducibility of the generated model. We identify three areas of support in order to increase the reproducibility of structural modelling. We provide a framework for increasing the reproducibility of structural modelling. A documentation template to capture the information generated within the modelling activities is suggested. As a result the framework highlights the importance of documentation for modellers and ensures that all the required information is captured. The application and
success evaluation shows the benefit of the framework by increasing the reproducibility of structural modelling and that it also offers opportunities for better information management in general.

Stichworte: reproducibility; modelling quality; structural modelling; documentation; information management

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