CHAPTER 3 MDSE Use Cases

The first and most well-known application scenario for MDSE is undoubtedly software development automation, commonly referred to as model-driven development (MDD). In MDD, model-driven techniques are consistently employed to automate as much of the software lifecycle as possible, from requirements to deployment. However, the full spectrum of possible applications for MDSE encompasses a much broader range of scenarios. MDD is merely a small part of the vast MDSE iceberg, as illustrated in Figure 3.1. In this context, the acronym MD(S)E can also be interpreted as Model-Driven Everything. This philosophy suggests that the MDSE approach can be applied to any software engineering task.

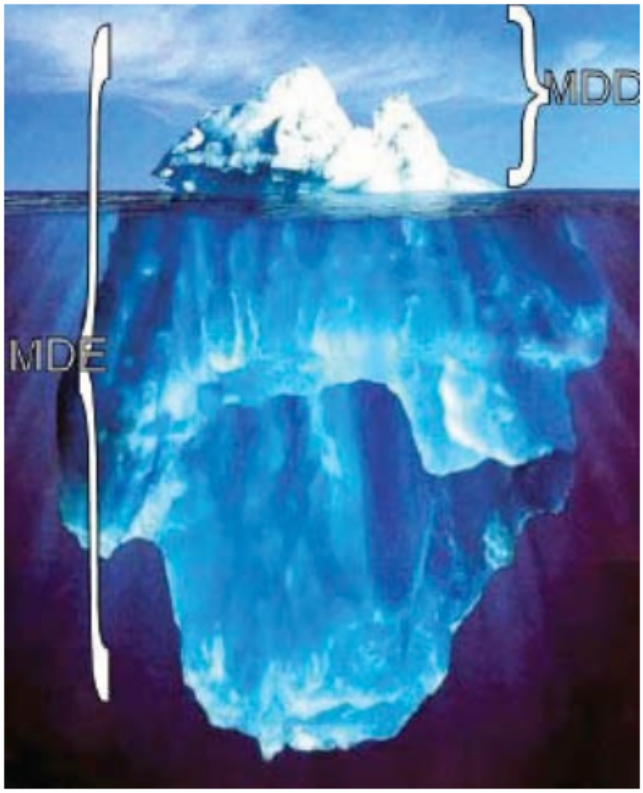

Figure 3.1: MDD is just the most visible side of MDSE.

3.1 AUTOMATING SOFTWARE DEVELOPMENT

Software development automation consists of starting from a high level (or early) representation of the desired software features and deriving a

running

application out of it, possibly through a set of intermediate steps to enable some degree of user interaction with the generation process.

Typically, when following an MDSE approach, the running application can be obtained through one or more model transformations that subsequently produce a more and more refined version of the software description, until an executable version of it is reached. A usual MDSE-based

development process is illustrated in Figure 3.2. In each phase, models are (semi)automatically generated using model-to-model transformations taking

as input the models obtained in the previous phase (and manually completed/refined when necessary). In the last step, the final code is generated by means of a model-to-text transformation from the design models.