

# UML-Based Statistical Test Case Generation

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**Abstract.** For incremental iterative software development processes, automated testing is necessary to enable evolution not only in terms of functionality, but in terms of software quality as well. Automation requires models to provide the necessary information. Scenarios and use cases do not only feed requirements engineering, they may also be the basis for testing. They have to be enriched by detailed behavioral information in order to be used for statistical test case generation. This paper introduces an approach for generating system-level test cases based on use case models and refined by state diagrams. These models are transformed into usage models to describe both system behavior and usage. The method is intended for integration into an iterative software development process model. The resulting test cases are suited to be carried out in conventional ways, i.e., either manually or using test tools. The method is supported by a XML-based tool for model transformation.