

# Using Software Quality Attributes to Classify Refactoring to Patterns

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**Abstract**—Refactoring to patterns allows software designers to safely move their designs towards specific design patterns by applying multiple low-level refactorings. There are many different refactoring to pattern techniques, each with a particular purpose and a varying effect on software quality attributes. Thus far, software designers do not have a clear means to choose refactoring to pattern techniques to improve certain quality attributes. This paper takes the first step towards a classification of refactoring to pattern techniques based on their measurable effect on software quality attributes. This classification helps software designers in selecting the appropriate refactoring to pattern techniques that will improve the quality of their design based on their design objectives. It also enables them to predict the quality drift caused by using specific refactoring to pattern techniques.

**Index Terms**—refactoring to patterns, software metrics, software quality.