The maintenance and evolution of resource-constrained embedded systems
created using design patterns

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Abstract

Most previous work on pattern-based software development has focused on the process of system creation rather than on the post-creation project phases (such as maintenance and evolution). In the study reported in this paper, we present the results from a short series of empirical studies in which we examined techniques for exchanging patterns used in an embedded design after the project had been completed. When exchanging patterns at this time, our aim was to identify the implementation of the pattern of interest in the system code and then substitute a suitable version of the replacement pattern. Findings are presented both from two small test projects, and from a more realistic case study. The results obtained suggest that this approach has considerable potential.

Keywords: Embedded systems; Pattern implementations; Exchanging patterns; Software maintenance