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**IMPROVING VARIABILITY IN
SOFTWARE CONFIGURATION
MANAGEMENT BY SEPARATION OF
CONCERNS**

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Abstract

Configuration management is a common way of handling variation between versions of a software product. Variation can be expressed among others in terms of concerns (e.g. features) the product addresses. As far as such concerns are represented by single modules, they can be easily combined to build new versions of the software product. However, tangled or scattered concerns are not that easy to manage. Aspect-oriented programming modularizes scattered concerns. But even if aspect-oriented programming became a widely-used paradigm, not all variants of a system could be identified with a subset of aspects. There are concerns, which can neither be encapsulated in modules nor in aspects. They can be perceived as code modifications rather than code fragments such as modules or aspects. We propose ICCM, a new versioning model, which represents such concerns as a collection of fine-grained deltas. In ICCM, versions are obtained by composing deltas specified in terms of the intended concerns. CHAT is a prototype versioning tool integrating ICCM into an existing software development environment. Experiments with CHAT showed a significant reduction in the overall time needed to create new versions of a software product.