Using Composition Connectors to Support Software Asset Development

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Software Product Line (SPL) approaches enable the development of software product variants by *reusing* a set of *software core assets*. These assets could have variant features themselves that can be configured in different ways to provide *different behaviours*. Unfortunately, in many SPL approaches software core assets are constructed *from scratch* and in an *ad hoc* manner.

In previous work, it has been introduced a new approach to component composition within the context of Component-based Development [1]. In this approach, components are *passive* and they do not request services from other components. Rather, they execute their provided services only when invoked by connectors. Connectors are *exogenous* to components and they encapsulate well-known *communication schemes*, e.g. [2]. These connectors are indeed first-class compilation units that admit some sort of parametrisation to indicate the components they compose and the services that should be considered in these compositions.

In [3] a catalogue of these connectors is presented. Thus, this work shows the feasibility of utilising these connectors to generate software core assets. Specifically, the feasibility of generating a set of *reusable software core assets* for a Home Service Robots product line. The assets are generated by composing a set of passive technology-intensive components (e.g. speech and sound recognisers, obstacle detectors) into specific arrangements via our connectors. Although this piece of work is only at an initial stage, we realised that it has a set interesting features: (i) it provides a *systematic* and *consistent* means to generate software core assets -it allows reuse of a well-defined composition process, (ii) it *maximises reuse* –it promotes reuse of both components and connectors and (iii) it admits some level of *automation* –it mitigates software asset development effort.

We agree, however that a complete case study implementation must be carried out to better support all these claims. Similarly, a better integration of the artefacts describing the product line's variability with our approach is required. Thus, our future work will focus on these issues.

References

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