

Promoting Design Knowledge Accumulation Through Systematic Reuse: The Case for Product Line Engineering

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Palabras Clave: Design Science Research, Design Knowledge Accumulation, Product Line Engineering

Lugar de publicación: HICSS 2021 - Proceedings of the 54th Hawaii International Conference on System Sciences, pp. 5429–5438, 2021.

Índice de impacto: GII-GRIN-SCIE Clase 2 (A)

DOI: <https://doi.org/10.24251/HICSS.2021.660>

Resumen. DSR literature raises concerns about Design Knowledge (DK) accumulation across distinct projects. We believe that DK and the artifact(s) that fleshes it out are the two sides of the same coin, to the extent that, for DK accumulation to thrive, DSR artifacts should come along. On these premises, and with a focus on software artifacts, we advocate for complementing the relevance-design-rigor cycles with a fourth step: refactoring. By “refactoring” is meant the effort that goes in making the design artifact fit to evolve. Specifically, we advocate for artifact development to introduce reuse considerations: development-with-reuse permits to start for reusable code, while development-for-reuse allows for artifact customization to be merged back to the reuse platform, and hence, making it available to subsequent projects. By intertwining “for reuse” and “by reuse”, a reuse platform gradually emerges that expands beyond a single DSR project, and in so doing, becomes the artifact counterpart of the DK accumulation repository. To this end, we make the case for adapting Product Line Engineering (PLE) to DSR. This software development methodology advocates for systematic reuse by putting the focus on a family of artifacts rather than on one-off artifacts. This work describes the efforts so far on adopting PLE to explore a design region along three DSR projects, each with its own artifact, yet similar enough to conform a product family.