

Dear members of the MIP Award Selection Committee,

With pleasure, we would like to nominate the following paper for an SPLC Most Influential Paper Award:

Ina Schaefer, Lorenzo Bettini, Viviana Bono, Ferruccio Damiani, Nico Tanzarella: *Delta-Oriented Programming of Software Product Lines*, as appeared in the proceedings of the 14th International Software Product Line Conference (SPLC'10), LNCS 6287, Springer, 2010, 77–91. https://doi.org/10.1007/978-3-642-15579-6_6

We support this nomination for multiple reasons. Most importantly, this paper is the classical reference for the concept of delta-oriented SPL modelling. The technology does not rely on the 150% model, but rather sees the possibility for both adding, changing and subtracting from the core platform to produce variants. Delta modelling, as complementary to amalgamated variability modelling, enables a modular approach to implement software product lines.

Delta-oriented programming (DOP), allowed scalable SPL modelling. Concretely, a product line is represented by a (core) module, providing an implementation of a valid product (developed with standard application engineering techniques), and a set of delta modules specifying changes to be applied to implement further products by adding, modifying, or removing code. Application conditions attached to the delta modules allow one to explicitly handle combinations of features. Finally, a concrete product implementation for a particular feature configuration can be generated by incrementally applying all delta modules with valid application condition.

Overall, through the concept of delta modules, this paper paved the way for a vast amount of research on delta-oriented modelling and programming and contributed to their dissemination in industrial settings. The model has also turned out to be amenable to multiple interesting analyses. These developments include DeltaJ(ava), Delta Simulink and the Delta Modelling Language (DML) integrated in the Abstract Behavioural Specification (ABS) modelling language, as well as delta-based testing, performance analysis and verification techniques for SPLs.

The paper has received a lot of attention since the original publication. It offered an alternative systematic method for variability modelling that brought SPLE closer to model-driven engineering, the model transformation paradigm, and to generative programming. This interest is witnessed by citations in multiple

papers that appeared over time, and still today, in SPLC'20. While citations alone are not sufficient to merit the MIP award, it is impressive to note that the paper has received over 400 citations (according to Google Scholar) as of November 25, 2020. With 20 citations per year, this makes it one of the most cited SPLC papers.

Individual email confirmation on this joint nomination is provided from each of us.

Sincerely,

Eduardo Almeida (Federal University of Bahia, Brazil)

Maurice H. ter Beek (ISTI-CNR, Pisa, Italy)

Thorsten Berger (Ruhr University, Bochum, Germany and Chalmers | University of Gothenburg, Sweden)

Øystein Haugen (Østfold University College, Halden, Norway)

Klaus Schmid (University of Hildesheim, Germany)

Julia Rubin (University of British Columbia, Canada)

Andrzej Wąsowski (ITU, Copenhagen, Denmark)