A Product Derivation Process Framework

Analysis of Product Derivation Methods for Software-Intensive Automotive Product Lines

Problem Statement:

- An effective Product Derivation process can help to ensure that the effort required to develop the core assets is less than the benefits delivered through using these shared assets across the products within a product line however.
- Hotz et al. (Hotz, Gunter et al. 2003) describe product derivation as “slow and error prone even if no new development is involved”
- Deelstra et al. (Deelstra, Sinnema et al. 2005) – Says there is a lack of methodological support for application engineering and, consequently, organizations fail to exploit the full benefits of software product families.
- Rabiser et al. (Rabiser, Grunbacher et al. 2007) – claims that “Deelstra et al. 2005” – says there is “a lack of methodological support for application engineering and, consequently, organizations fail to exploit the full benefits of software product families.”
- Rabiser et al. (Rabiser, Grunbacher et al. 2007) – claims that “Guidance and support are needed to increase efficiency and to deal with complexity of product derivation”

State of the Art

- Current approaches to product derivation can roughly be categorised according to derivation technique used: configuration and transformation
- The configuration approach is based on the idea that product derivation activities should be based on the parameterisation of platform assets rather than on how individual products are obtained
- The transformation approach uses model driven engineering techniques, by providing models as abstractions of platform assets and using model transformations as an technique for product generation
- Deelstra et al. present a product derivation framework. The framework presents a high level overview of product derivation activities. The framework consists of two phases: an initial phase and an iteration phase

Solution Approach:

- Work to Date:
  - Performed literature review of PD practices and approaches within SPL
  - Extrapolate from the literature an initial process framework for product derivation
  - Iterative workshop series to further refine and assess framework
  - Conduct Bosch Case Study on Product Derivation Process within Bosch Business Units
  - Evaluate efficiency of Bosch Product Derivation Process and recommend further improvements
  - Revised framework based on case study experiences

- Future Work:
  - Perform second case study on industrial product derivation practices
  - Revise framework based on case study experiences
  - Perform expert opinion analysis
  - Revise and Validate Product Derivation Framework

- Results to Date:

References