

## Pendefinisian commonality dan variability requirements dalam domain engineering menggunakan metoda application-requirement matrix dan feature-oriented domain analysis studi kasus: sistem informasi akademik perguruan tinggi

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### Abstrak

Pengembangan suatu software dalam suatu domain yang sama secara individual seringkali menyebabkan terjadinya kondisi reinventing the wheel baik terhadap requirements maupun komponen lain yang dikembangkan. Untuk meminimalisir kondisi reinventing the wheel dan meningkatkan metoda reuse maka alangkah baiknya jika requirements hingga komponen lain yang bersifat umum (common) diantara software dalam domain tersebut dapat didokumentasikan. Selain itu, requirements hingga komponen lain yang bervariasi (variable) antar software dalam domain tersebut juga diharapkan bisa terdokumentasi agar kebutuhan segmentasi pengguna tertentu dapat terpenuhi. Hal-hal tersebut dilakukan dalam suatu teknik yang disebut software product line engineering atau disebut juga domain engineering. Pada teknik ini dilakukan pendefinisian dan pengembangan commonality dan variability dari suatu software product line. Software product line merupakan kumpulan aplikasi-aplikasi software yang berada dalam satu domain aplikasi yang sama.

Pada penelitian tesis ini dilakukan software product line engineering pada domain sistem informasi akademik perguruan tinggi. Hanya saja pada penelitian ini dibatasi pada pendefinisian commonality dan variability requirements dari domain sistem informasi akademik perguruan tinggi (atau hanya melakukan sub-proses domain requirements engineering dari proses domain engineering dari software product line engineering). Pada pendefinisian commonality dan variability requirements digunakan existing requirements dari sistem informasi akademik perguruan tinggi yang sudah ada. Sistem informasi akademik tersebut adalah sistem informasi akademik Universitas Indonesia, Universitas Riau dan STT PLN.

Metode yang digunakan untuk mendefinisikan adalah Application-Requirements Matrix dan kemudian dimodelkan dengan menggunakan Feature-Oriented Domain Analysis. Menurut Bockle, Pohl dan Linden dalam bukunya [Bockle et al, 2005] bahwa mendapatkan jumlah commonality sebanyak mungkin adalah penting agar mengurangi jumlah variability untuk kebutuhan minimum aplikasi.

Hasil dari penelitian tesis ini berupa definisi commonality dan variability requirements untuk software product line sistem informasi akademik perguruan tinggi. Namun, dari hasil penelitian ini terlihat bahwa jumlah commonality requirements lebih sedikit jumlahnya dibanding variability requirements-nya. Hal ini disebabkan karena terdapat perbedaan kompleksitas requirements dari ketiga data dalam penelitian ini. Akhir kata, semoga hasil penelitian tesis ini merupakan awal dari penelitian lanjutan bidang software product line engineering, khususnya untuk domain sistem informasi akademik perguruan tinggi.

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The development of individual softwares in a certain domain tends to reinvent the wheel of things like the

software requirements or other components being develop. In order to minimalize the tendency of reinventing the wheel and to improve the reusability of requirements and other components in software development, it would wise if those common requirements and other components were documented. In order to accommodate the need of certain segmentated user, the commonality and variability requirements are needed to be explore. The way to do all those things is called software product line engineering (also known as domain engineering). This technique is a way to define the commonality and variability of a software product line. A software product line is a set of software which has the same software domain.

In this thesis research, the research of software product line engineering is focused in the domain of university`s academic information system. The limitation of this research is that in this research is only defining the commonality and variability requirements of university`s academic information system software product line. This process is part of the domain requirement engineering sub-process of the domain engineering process in software product line engineering. To define the commonality and variability requirements, the existing requirements from the existing university`s academic information system are being used as research subject. Those requirements are from University of Indonesia`s, University of Riau`s and STT PLN`s academic information systems.

The method to define the commonality and variability requirements is called Application-Requirements Matrix and the result is modeled using Feature-Oriented Domain Analysis. According to Bockle, Pohl and Linden in their book [Bockle et al, 2005], having commonality requirements as much as possible are important because it would decrease the amount of variability requirements to build a minimum requirements application.

The result of this thesis research is the definition of commonality and variability requirements of university`s academic information system. In the result of this research, it shows that the amounts of commonality requirements are less than the amount of the variability requirements. This happens due to the major differences of the requirements complexity from the three data used in this research. Last but not least, the result of this research is hoped to be the beginning of researches in software product line engineering especially in the domain of university`s academic information system.