RiSE LABS
REUSE IN SOFTWARE ENGINEERING

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THE COMPREHENSION OF FEATURE-ORIENTED SOFTWARE

This briefing reports evidence on the aspects influencing feature-oriented software comprehension based on the results of a focus group session.

FINDINGS

We could group our main findings in four categories regarding the aspects that might have influence on the comprehension and consequently the maintenance of feature-oriented software. These groups are enumerated in the following:

Approach Strategies: By understanding how the software engineers address the comprehension of unfamiliar code can produce insights on the construction of more effective methods, processes, and tools to support maintenance of feature-oriented software.

- Among our findings in this category are the use of tools other than the search to address unfamiliar code. We conjecture that visualization tools, such as the “Collaboration Diagram” and the “Configuration management” can contribute to the comprehension code using both Conditional Compilation and FeatureHouse.

Hindering Factors: By understanding what makes the comprehension tasks harder, we can build tools to facilitate such an important process in the software maintenance.

- Among our findings in this category are issues already well known by the practitioners using annotations, the excessive amount of annotations and the highly scattering of them.

- Regarding the compositional approach, we found the number of duplicated classes, as well as the amount of clicks to reach the source code as bottlenecks of the existing code organization tools and are worth further investigation and improvements.

Facilitators Factors: by understanding what makes the comprehension tasks easier, we can concentrate the effort on research to make these factors of some use to enhance the already available tools to comprehend software.

- Among our findings in this category are the simple programming model of the Conditional Compilation and the good way of code organization of the FeatureHouse. This finding corroborates with those in the hindering factors category, since although the participants like the way the code is organized, they were uncomfortable with the amount of clicks to get to it.

General Observations: by understanding the feelings of the software engineers regarding to the first contact with unfamiliar variability representations, we can also look for improvements in such aspects causing negative and lack of motivated of software engineers facing the decision of whether use one or another option.

- Among our findings in this category is the difficulty to novice developers using FeatureHouse to perceive the importance of the precedence among the features in the binding time. This fact should be more explicitly addressed in the supporting tools.

- The participants pointed out the traceability is an important asset in the comprehension of such kind of code, which we agree and suggest also further investigation in the facet.

These findings point out research gaps on the influence of the use of different variability representations on feature-oriented software comprehension.

Keywords:

Feature-oriented Software
Program Comprehension
Focus group

Who is this briefing for?

Software engineering researchers who want directions to further investigations on the comprehension of feature-oriented software

Where the findings come from?

All findings of this briefing were extracted from a focus group conducted by Santos et al.

What is included in this briefing?

The main findings of the original study report.

Evidence summary through a brief description of each group of aspects identified in the study.

What is not included in this briefing?

Additional information not presented in the original study report.

Detailed descriptions about the studies analyzed in the original study report.

To access other evidence briefings on software engineering:

http://www.lia.ufc.br/~cbsoft2017/en/xi-sbcars/

For additional information about RiSE Labs:

http://www.rise.com.br

ORIGINAL RESEARCH REFERENCE

Alcemir Rodrigues Santos et al. Aspects Influencing Feature-Oriented Software Comprehension: Observations from a Focus Group. 2017. 11th Brazilian Symposium of Software Components, Architecture, and Reuse. http://dx.doi.org/10.1145/3132498.3133838.