

The Limits of Application Programming Interfaces

APIs and other forms of standard specifications exist to make it possible to exchange implementations of these APIs without clients noticing this change. Such interchangeability has the purpose of allowing for competing implementations. With these come lower costs, choice of quality-of-service, and faster innovation. Using the OpenGL API as an example, this thesis analyses three OpenGL implementations for their compliance with the standard. It shows how the API specifies wanted and unwanted variation. It makes suggestions as to how to make the desired variation clearer and how to avoid unwanted specification.

Work Results

- Literature review of standard specification mechanisms
 - How to specify allowed (wanted) variation?
 - How to avoid unwanted variation?
- Review of OpenGL specification
 - Application of other specification mechanisms to OpenGL (uses small subset)
 - Comparison of strengths and weaknesses
- Description of three implementations
 - How do the implementations conform to the specification? Where do they vary?
 - Analysis of variation from a wanted / unwanted perspective
- Classification of issues found
 - Where was OpenGL underspecified? Overspecified?
 - Where did implementations break the contract? Good or bad?
- Conclusions for choosing a standards specification mechanism

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