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DESIGN RULE CLASSIFICATION RUBRIC AND GUIDANCE

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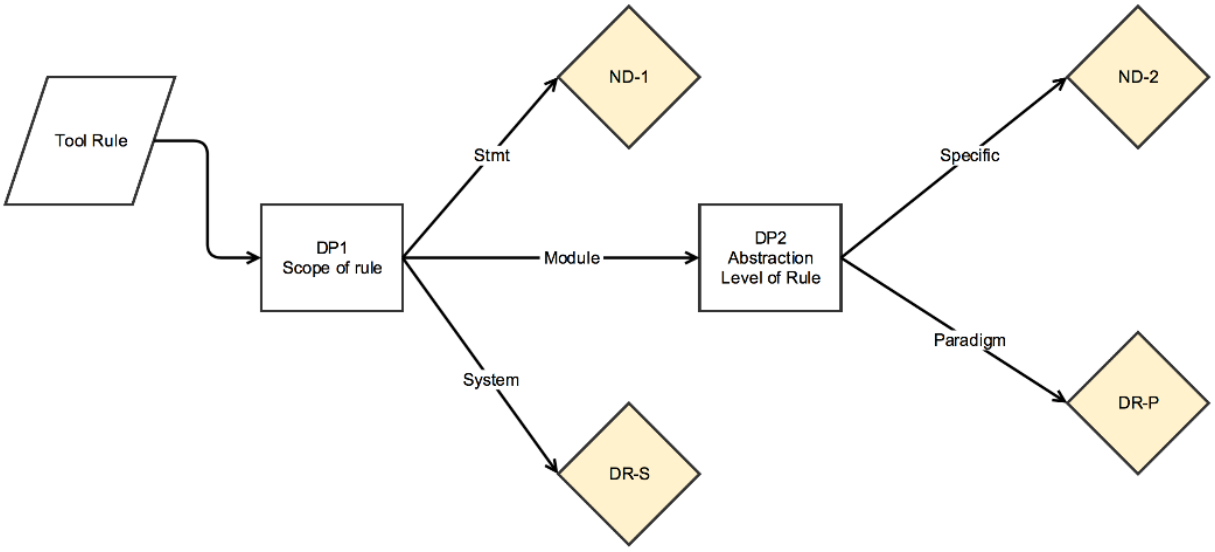
Design Rule Classification Rubric



Design Rule Classification Guidance

Quality attribute type is an orthogonal classification and not relevant to this rubric.

DP1: Scope

- **Statement (ND1)**
  - Almost always code problems and not design.
  - Not about accumulation of multiple violations of the rule.
  - Internal to method (switch, case, if/else, expression)
  - Empty methods, dead stores, fit here.
- **Module (go to DP2)**
  - A class, component, Module, object.
  - The lowest level of “design” we might draw on paper.

  - A group of statements (file) or a language construct (method, class) that can be executed independently, reused, tested, and maintained or is a composition of other modules.
- **System (DR-S)**
  - Problems detected cross boundaries between languages and/or architectural layers. For instance, it involves both the application code and the data access layer (CAST)
  - Metric thresholds (e.g., McCabe complexity > X, Component Balance < 7) typically fall here.
  - Allocation view specific details (e.g., package/file naming violations) may belong here.

DP2: Abstraction Level

- **Specific (ND2)**
  - Module level, syntax specific violations.
  - We cannot translate into another language or paradigm easily.
  - Might see keywords or reserved words or concepts, but can't be translated to generalizable concept.
  - E.g., Violating Spring naming conventions is a rule with no obvious commonalities in other frameworks.
- **Paradigm (DR-P)**
  - Covers a paradigm (OO, Functional, Imperative, ...), Architectural Style (Concurrent, Pipe/Filter, PubSub, MVC, ...), or Design Pattern (Exception Handling, ...).

Additional Resources

This material supplements the research paper Bellomo, S.; Nord, R.; Ozkaya, I.; & Popeck, M. “What to Fix? Distinguishing Between Design and Non-Design Rules in Automated Tools,” in *Proceedings of the IEEE International Conference on Software Architecture (ICSA 2017)*.

This study is part of a wider SEI effort on technical debt.

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