

Organizing the Technical Debt Landscape



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How Technical Debt Can be

- * Organized?
- * Visualized?
- * Identified?
- * Managed?

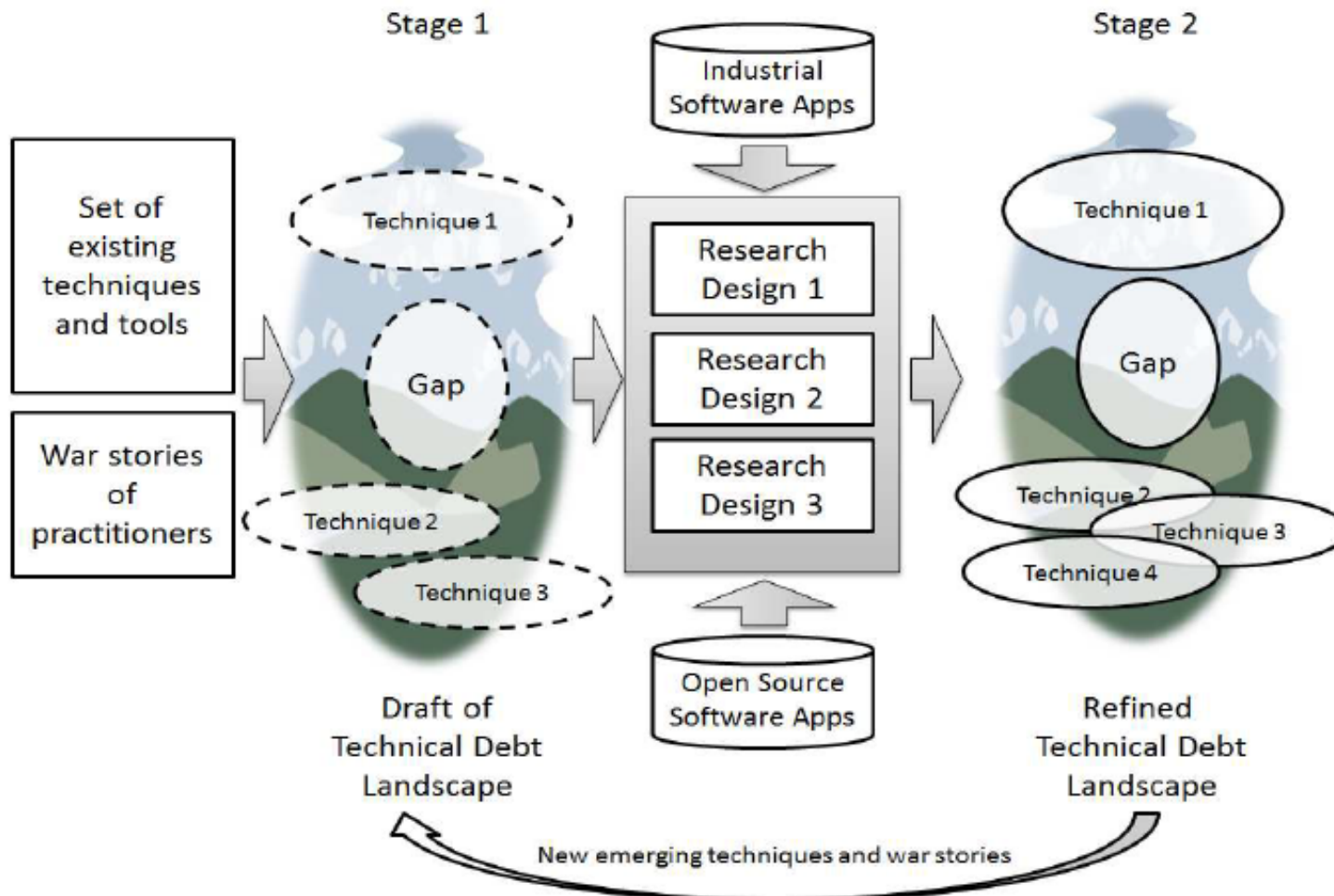
Existing Approaches

- * **Modularity Violations (tool: CLIO)**
- * **Design Patterns and Grime Buildup**
- * **Code Smells (tool: CodeVizard)**
- * **ASA issues (tool: FindBugs).**

Research Questions

- * What are the overlaps and gaps among existing techniques?
 - * Which pairs of these techniques always report problems in the same set of components?
- * To what extent do existing techniques help in identifying TD?
 - * Which techniques can detect components that are defective and/or change-prone?

Technical Debt Landscape



Research Design

- * Design 1: Direct comparisons of TD identification techniques
- * Design 2: Evaluating TD identification techniques for identifying real debt
- * Design 3: Evaluating the relationship between types of TD and future maintenance:

Hadoop Case Study

- * Different TD techniques point to different classes and therefore to different problems
- * Dispersed coupling, god classes, modularity violations and multithread correctness issues are located in classes with higher defect-proneness
- * Modularity violations are strongly associated with change proneness.

Future Work

- * Find and fill gaps
- * Investigate quality factors other than defect and change proneness, such as productivity and maintenance difficulties