

DV8 Integration: : CHEAT SHEET



About

The dv8_showcase.Rmd vignette introduces ArchDia's DV8 design structural matrices, architectural flaws, and decoupling level in Kaiāulu.

Design Structure Matrix (DSM): A visual model for expressing dependencies.

Architectural Flaws: DV8 can detect 6 types of architectural flaws: Clique, Package Cycle, Improper Inheritance, Unstable Interface, Crossing, and Modularity Violation.

Decoupling Level: Measures how well a design is separated into modules based on the [DRH](#) clustering.

Project Config Setup

The first part of running any vignette is setting up your project configuration file (examples in [kaiaulu/conf](#)).

Required Fields

- tool:
dv8:
folder_path: ../../analysis/dv8/apr
architectural_flaws:
 - cliqueDepends:
 - call
 - use
 - crossingCochange: 2
 - crossingFanIn: 4
 - crossingFanOut: 4
 - mvCochange: 2
 - uiCochange: 2
 - uihDepends:
 - call
 - use
 - uihInheritance:
 - extend
 - implement
 - public
 - private
 - virtual
 - uiHistoryImpact: 10
 - uiStructImpact: 0.01

Indirect Fields

- tool:
depends:
code_language: cpp
keep_dependencies_type:
 - Cast
 - Call
 - Import
 - Return
 - Set
 - Use
 - Implement
 - ImplLink
 - Extend
 - Create
 - Throw
 - Parameter
 - Contain

The file "tools.yml" must also be configured. See [README.md](#) for more information on 3rd party software dependencies.

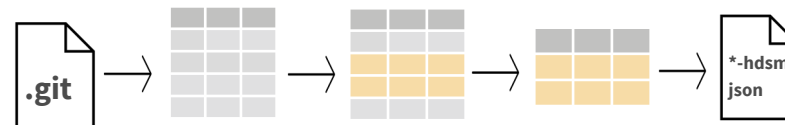
Required Fields:

- [Perceval](#) (version 0.12.24)
- [Depends](#) (version 0.96a)
- [DV8](#) (version 4.0-20210630.025325+)

Functions

parse_gitlog(), filter_by_*, gitlog_to_hdsmj()

parse_gitlog() generates a table from a git project, which can be filtered via the filter functions, and then transformed into a history design structure matrix (hdsbm.json) representation.



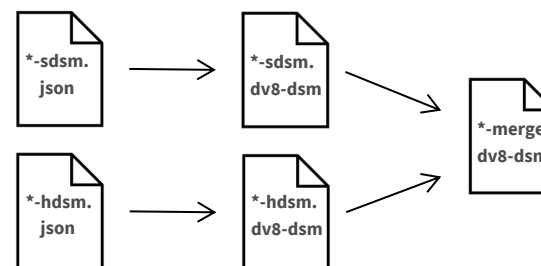
parse_dependencies(), filter_by_*, dependencies_to_sdsbmj()

parse_dependencies() generates a table of dependencies from Depends, which can be filtered via the filter functions, and then transformed into a structural design structure matrix (sdsbm.json) representation.



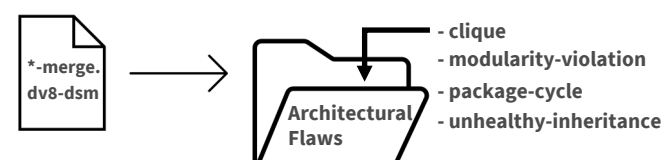
dv8_dsmj_to_dsmb(), dv8_hdsmb_sdsmb_to_mdsmb()

Converts dsm.json files into .dv8-dsm files (historical DSM and structural DSM). Merges these matrices into one new matrix in a *-merge.dv8-dsm file (merged DSM file).



dv8_mdsmb_to_flaws()

Detects architecture anti-patterns from a merged DSM binary file and returns an architectural flaws folder.



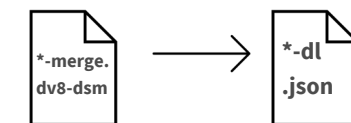
Related Vignettes

See the following notebooks for related analyses:

1. [dv8_showcase.Rmd](#)
2. [gitlog_showcase.Rmd](#)
3. [depends_showcase.Rmd](#)
4. [social_smells_showcase.Rmd](#)

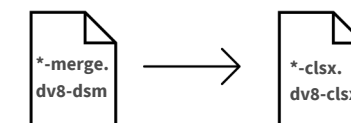
dv8_mdsmb_to_decoupling_level()

Takes as a parameter a *-merge.dv8-dsm binary file and returns the Decoupling Level metrics as a *.json file.



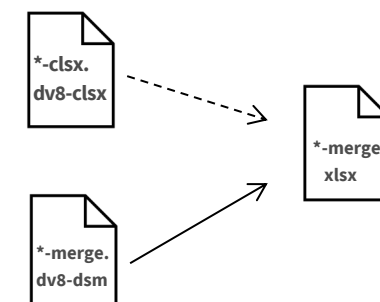
dv8_mdsmb_to_hierclsxb()

Takes in a *-merge.dv8-dsm binary file and computes the design rule hierarchy as a *-merge.dv8-clsx binary file.



dv8_mdsmb_drhier_to_excel()

Takes as a parameter a *-merge.dv8-dsm binary file and optionally a *-clsx.dv8-clsx and exports it to an excel spreadsheet for further analysis.



Parser functions are also available on the Kaiāulu API for various DV8 json files.