

Product Requirements Document

Project: Helm/Kubernetes Validation CLI Tool

Objective:

A CLI tool to validate Kubernetes manifests and Helm-rendered resources against a pluggable rule engine, with human-friendly outputs, rule-centric exemptions, severity levels, and namespace scoping.

MVP Features:

1. Rule-Based Validation:

- Raw YAML or Helm.
- Rules: Missing Labels, Missing Resource Limits.
- Multi-container awareness.

2. Rule-Centric Exemptions:

- .exemptions.yaml keyed by rule name.
- global, kinds, files, namespaces, container-level.

3. Severity Levels & Fail-On:

- Rule severity: error, warning, info.
- --fail-on flag to control exit code.

4. Namespace-Level Exemptions:

- Support glob patterns on namespace.

5. Outputs:

- Table and JSON.

6. CLI:

- Flags: -f, -c, --values, --exemptions, --output, --fail-on.

Future Enhancements:

- Structural, best practices, custom rules.

- Helm diff, kubeconform.
- Suggestions, SARIF/HTML, baseline mode.
- AI-assisted recommendations.
- RBAC checks, CI test mode, plugin system.
- Autofix, dashboards, JUnit XML, metrics.
- Config schema validation.