PRD: Automated Sprint Management Platform in Kroolo

This PRD outlines the requirements for an integrated, AI-powered sprint management solution within Kroolo, automating the full DevOps workflow: AI-generated Epics/User Stories/Tasks, seamless version-control integration (GitHub, GitLab, Bitbucket), pull request automation, and automated dashboards for DORA and key engineering metrics.

1. Objectives

- Fully automate agile sprint and delivery management using AI.
- Integrate with major code repositories for real-time data ingestion and workflow automation.
- Automate pull request management (creation, review assignment, merging, and status tracking).
- Auto-generate, measure, and visualize DORA and engineering metrics dashboards for optimal team performance and visibility.

2. Key Features & Functional Requirements

2.1 AI-Generated Work Items

- **Epic Generation:** Use AI to analyze high-level project goals, requirements documents, or product specs to auto-generate Epics.
- **User Story Creation:** For each Epic, AI parses the objectives and outputs detailed, INVEST-compliant User Stories mapped to acceptance criteria.
- **Task Breakdown:** Each User Story is further decomposed into granular, actionable Tasks (with owners, estimates, and dependencies).
- **Intelligent Suggestions:** AI proposes missing stories/tasks based on sprint progress, commit patterns, or detected gaps.

2.2 Version Control System Integration

- **General Requirements:**
    - OAuth and API-based integration with GitHub, GitLab, and Bitbucket.
    - Real-time webhook sync for commit, pull request, branch, and status updates.
- **Specific Integration Points:**
    - **Commit Linking:**
        - Automatically associate commits with Kroolo tasks/stories/epics via commit message tagging or manual mapping.
        - Show live commit/status in Kroolo UI.
    - **Branch Auto-Creation:**
        - Generate feature or bugfix branches per task automatically.
        - Enforce naming conventions and traceability.
    - **Pull Request (PR) Automation:**
        - Auto-create PRs upon branch completion.

        - AI can recommend reviewers based on file/module history and team bandwidth.
        - Auto-assign code reviewers and notify on PRs needed for sprint completion.
        - Status update in Kroolo upon PR merge, rejection, or review request changes.
        - Automatic linking of PRs to tracked tasks and stories.

2.3 Sprint & Workflow Automation

- **Planning:**
    - Create recommended sprint scope from backlog using velocity prediction and work priority.
    - Auto-fill sprints with AI-generated tasks, adjust plan based on team availability.
    - Pre-sprint: AI highlights risk factors, missing dependencies, and under/over-assigned users.
- **Execution:**
    - Move tasks automatically based on PR/commit status (e.g., "In Progress" on branch creation, "In Review" on PR open, "Done" on merge).
    - Alert team if bottlenecks, blockers, or unreviewed PRs persist past SLAs.
- **Review & Retrospective:**
    - Summarize sprint outcomes automatically: completed vs. planned, lead time, blocker analysis.
    - Auto-generate retrospective items (what went well, improvements, action items) from conversations, comments, and data signals.

2.4 Metrics Dashboards

- **DORA Metrics:**
    - *Deployment Frequency*: Pull from deployment pipeline or PR merges into main/prod.
    - *Lead Time for Changes*: Measure from first commit/PR open to production merge.
    - *Change Failure Rate*: Integrate with incidents/issues tied to deployments.
    - *Time to Restore Service*: Track incident open-to-resolve durations.
- **Engineering Metrics:**
    - *Developer Experience (DX) Index*: Regular surveys, aggregated score visualization.
    - *Weekly Time Loss*: Track and sum blocked/task delay time per person and cause.
    - *Time to Value*: Measure from task open to value delivery milestone (e.g., customer-facing deployment).
    - *AI Metrics*: Tasks assigned to agents, acceptance rates, net time gained, cycles-to-completion, platform CSAT, etc.
- **Visualization:**
    - Configurable dashboards with trend graphs, bar/line charts, scorecards, and historical comparisons.

- Drill-downs to individual user, epic, or sprint views.

3. Non-Functional Requirements

- **Security:** Secure OAuth, API tokens, permissions mapped to team roles.
- **Scalability:** Support for large codebases, repositories, and distributed teams.
- **Extensibility:** Plugin framework for supporting other code hosts, CI/CD providers, or custom analytics.
- **Usability:** Intuitive setup wizards, dashboard customizations, and actionable in-app notifications.

4. Workflow Summary (Step-by-Step)

1. **Workspace Setup and Integration:**
    - User creates Kroolo workspace/project.
    - Connect version control accounts (GitHub, GitLab, Bitbucket) via OAuth.
    - Map repositories to projects and configure sync settings.
2. **AI-Driven Sprint Planning and Breakdown:**
    - Product Owner/PM inputs high-level goals; AI suggests Epics and User Stories.
    - Team reviews, adjusts, and approves AI-generated work items.
    - AI breaks User Stories into Tasks, assigns owners, estimates, and aligns work to sprint velocity.
3. **Automated Workflow Execution:**
    - Devs pull assigned tasks; Kroolo auto-creates branches based on task details.
    - Commits and PRs auto-linked to corresponding tasks.
    - PRs assigned to reviewers algorithmically; Kroolo notifies and updates board status on actions.
4. **Sprint Progress and PR Automation:**
    - Automated board updates reflect code progress in real time.
    - Kroolo alerts on stuck tasks/PRs.
    - PR merges or failed builds trigger workflow actions (move to Done/Blocked, incident creation).
5. **Automated Metric Collection & Dashboarding:**
    - DORA/engineering metrics captured automatically from connected tools, survey data, and workflow logs.
    - Team/team leads review live dashboards, retrospective auto-summaries, and performance drivers.

5. Acceptance Criteria

- Connecting at least one repository from GitHub, GitLab, or Bitbucket syncs all relevant commit and PR data into Kroolo.
- Project can be decomposed from Epics → User Stories → Tasks with a single AI-powered workflow (including editing and suggestions).
- PR creation, reviewer assignment, and board state update happen automatically based on workflow triggers.
- At sprint close, all DORA and engineering metrics (as specified) are populated on dashboards without manual intervention.
- End users can drill down from dashboards to root cause or supporting evidence (e.g., blocked tasks, failed PRs).

6. Future Enhancements

- Integration with additional CI/CD tools for granular deployment metrics.
- AI root cause analysis of recurring blockers.
- Advanced burndown projections and predictive alerts for sprint risks.