Spec-Driven Development with Kiro Training

Duration: **2 Day**

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Spec-Driven Development with Kiro is a two-day, instructor-led course designed to help developers and technical teams adopt a more structured and controlled approach to software development using Kiro's agentic development capabilities.

Participants learn how to plan and implement software features and bug fixes through specifications before moving into implementation. Using **Kiro Feature Specs** and **Bugfix Specs**, the course explores how requirements, designs, tasks, and development activities can be organised into repeatable workflows.

The programme goes beyond specification-driven development to examine how agent behaviour can be controlled through steering files, context providers, execution modes, and custom subagents. Participants also explore how Model Context Protocol (MCP) servers and Kiro Powers can extend agent capabilities by connecting development workflows with external tools, services, and specialised knowledge.

Automation through agent hooks and skills, reusable agent capabilities, shared project configuration, team collaboration, and enterprise governance are also covered. Through demonstrations, hands-on labs, and group exercises, learners build and extend applications while applying Kiro's agentic development capabilities.

Prerequisites

Participants are recommended to have:

- Proficiency in at least one programming language,
- Working knowledge of Git version control,
- A basic understanding of RESTful APIs and cloud application concepts,
- Foundational knowledge of generative AI concepts, including LLMs, tokens, and inference.

Who Should Attend

This course is designed for:

- Software developers and engineers,
- Technical leads adopting AI-assisted development workflows,
- Development teams introducing agentic coding practices,
- DevOps engineers integrating AI agents into software delivery pipelines.

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What You Will Learn

By the end of this course, participants will be able to:

- Implement spec-driven development workflows that use specifications to plan, design, and deliver software features and fixes,
- Configure and control agent behaviour using steering files, context providers, execution modes, and custom subagents,
- Extend agent capabilities with Model Context Protocol servers and Kiro Powers to integrate external tools, services, and domain expertise,
- Automate and scale development workflows through agent hooks, agent skills, shared steering, and custom subagents,
- Create and share reusable agent capabilities by developing custom Kiro Powers, agent skills, and custom subagents for team-specific workflows,
- Apply enterprise governance controls covering MCP registry allowlisting, model governance, and extension management.

Training Outline

Introduction to Agentic Development with Kiro

This section introduces the agentic coding paradigm and the core capabilities available within Kiro.

- Understand the agentic coding paradigm and Kiro's core capabilities
- Explore five principles of effective agentic development
- Compare Kiro IDE and Kiro CLI
- Work with Vibe sessions and Spec sessions
- Consider model selection for different development requirements

Spec-Driven Development with Feature Specs

Participants learn how feature development can be structured and managed through specifications.

- The three-phase specification workflow: **Requirements, Design, Tasks**
- Requirements-First workflows and EARS notation
- Design-First workflows
- High-Level and Low-Level Design
- Support correctness through property-based testing

Steering, Context, and Agent Control

This section focuses on controlling the context, scope, and behaviour of development agents.

- Steering files and foundational context
- Create and manage custom steering files
- Inclusion modes: **always, fileMatch, manual, and auto**
- Workspace and global scope
- Context providers and session management
- Autopilot and Supervised execution modes
- Trusted commands and trusted tools

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Bugfix Specs

Explore a structured approach to analysing and implementing software fixes.

- Understand when to use Bugfix Specs
- Work through the bugfix analysis phase
- Define current, expected, and unchanged behaviour
- Perform root cause analysis and develop a design
- Use property-based testing to help prevent regressions

MCP Servers and Tool Integration

Learn how Model Context Protocol can extend Kiro by connecting agents with external tools and services.

- Model Context Protocol fundamentals
- Understand MCP client-server architecture
- Configure MCP servers at workspace and user scope
- Manage servers, tools, and auto-approve settings
- Use MCP tools within chat
- Troubleshoot MCP integrations

Kiro Powers

This section explores how Powers can provide reusable capabilities while addressing context overload.

- Understand the context overload problem and the role of Powers
- Explore the Power directory structure: `POWER.md`, `mcp.json`, and steering
- Install and use Powers through the IDE and kiro.dev
- Author and share custom Powers

Agent Hooks, Skills, and Custom Subagents

Participants explore different approaches to automating and extending agent-driven development workflows.

- Agent hooks: triggers, actions, and creation
- Agent skills as portable instruction packages
- Progressive disclosure for agent skills
- Custom subagents with scoped tool permissions and delegation
- Understand the differences between Skills, Steering, and Powers

Team Collaboration and Enterprise Governance

The final section focuses on using Kiro consistently and securely across development teams and enterprise environments.

- Share workspace configuration through the `.kiro` directory
- Organise steering files for team use
- Establish spec review conventions
- Apply MCP registry allowlisting
- Implement model governance

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- Manage the extension registry
- Apply governance controls to web tools