Geoffrey Karnbach 31.08.2024

Requirements Document – MDM CPPS SETUP TOOL

Inhaltsverzeichnis

Introduction

Purpose:

The MDM CPPS Setup Tool aims to simplify the setup and management of Cyber-Physical Production Systems (CPPS) projects within VS Code. It allows users to easily create new projects by setting up GitLab repositories, configuring JIRA workspaces, and organizing project files. The tool also offers a dashboard for managing multiple projects, as well as the possibility to generate test data for large scale projects to try out the infrastructure in a bigger context.

Scope:

The scope of the MDM CPPS Setup Tool includes the creation and the updating of existing CPPS Workspace, that are using GitLab as Git Provider. The project will allow to generate the infrastructure required for the successful management of a CPPS Project, including a GitLab Workspace, a Jira Workspace.
The tool will not support engineers or managers during their day-to-day work in a CPPS Project.

Value:

The MDM CPPS Setup Tool will provide value by:

- Speeding up the setup of a SCM tool (such as GitLab)
- Speeding up the setup of a collaborative Tool for issue tracking (such as Jira)
- Setting up a filesystem with all required project files (for domain workspaces, common workspace, configuration files)
- Allowing the generation of large-scale demo projects with sample data (to try out the entire development pipeline in a larger scale)
- Managing several CPPS Projects at once with a project dashboard.

Target Group:

The target group of the MDM CPPS Setup Tool are managers of CPPS Projects, on a higher level than managers of specific domain workspaces. Those managers are not required to have a strong technical background in software, therefore the User Interface (including messages, error handling) should be handled in a clear and concise way for the user.

Functional requirements

As a User I want to be able to:

- Log into the dashboard (by using an OAuth provider – i.e. GitLab)
- Create a CPPS project from the dashboard view
- Edit the Details of a CPPS project (project information, users, workspaces)
- Delete a CPPS project
- View a list of CPPS project in the Dashboard
- Filter the CPPS project list from the dashboard
- Share the access to a CPPS Project with another user (by GitLab ID – API)
- Generate / Update a GitLab infrastructure for a given project
- Generate / Update a Jira Workspace for a given project
- Generate a file system (only working when creating, not when updating, or only in specific aspects such as adding domain workspace directories)
- Get an overview of the tool with a Tutorial Walkthrough
- Generate a sample project with all tools and sample data (using a setup wizard and generating text content for the file system using an LLM – i.e. ChatGPT)

Non-Functional requirements

- Performance: The tool should perform setup tasks, such as creating repositories and configuring environments, within a specific time frame (e.g., under 5 minutes for setting up a new project).
- Scalability: The tool should be able to handle a growing number of projects, users, and data without significant degradation in performance. It should support a high number of concurrent users and large projects with multiple repositories and environments.
- Usability: The user interface should be intuitive and easy to use for both technical and non-technical users. It should require minimal training and provide clear error messages and guidance.
- Security: The tool should enforce strong authentication and authorization mechanisms, especially given the access to potentially sensitive repositories and project data. It should comply with relevant security standards and ensure that data in transit and at rest is encrypted.
- Compatibility: The tool should be compatible with different operating systems (Windows, macOS, Linux).
- Portability: The tool should be able to be deployed on different environments or moved to different servers with minimal changes or configuration.

External Tools

GitLab specification

Required features for GitLab setup TBD.

Jira specification

Required features for Jira setup TBD.