# Setting up Continuous Integration and Continuous Deployment for a Forestry Application

Degree programme: BSc in Computer Science | Specialisation: Distributed Systems and IoT
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## Deploying software manually requires a lot of time, energy, and knowledge. Can this process be simplified with today's technologies? Yes, it can! This bachelor thesis sets up a Continuous Integration/Continuous Delivery pipeline for a forestry application to ease the deployment.

### Introduction

Built on the principle of "Google Street View", the Martelage Sylvotheque (MSC) platform enables virtual tours through forests. To achieve this, selected forests are documented with high-resolution photospheres (360° panorama) and archived over several years. Users can then visit these forests digitally at any time and from any location. MSC helps forest specialists and forest owners to observe forest growth over several years. The platform is frequently used in combination with the MSC smartphone app in teaching at the School of Agricultural, Forest and Food Sciences (BFH-HAFL). It has been used in several courses.

### Background

MSC consists of three components: A mobile application, a web application, and a backend. Both the mobile and the web application communicate with the backend via REST. The backend accesses two different databases. With over 85,000 lines of code, MSC is very complex, and so are its integration and deployment processes. Unfortunately, the integration and deployment processes are very tedious: In order to deploy the software, it must be built manually and then uploaded to the cloud provider. This is error-prone, time-consuming and, ultimately, the software quality decreases.

### Goal Statement

The goal of this bachelor thesis was to improve the integration and deployment processes of MSC.

### Results

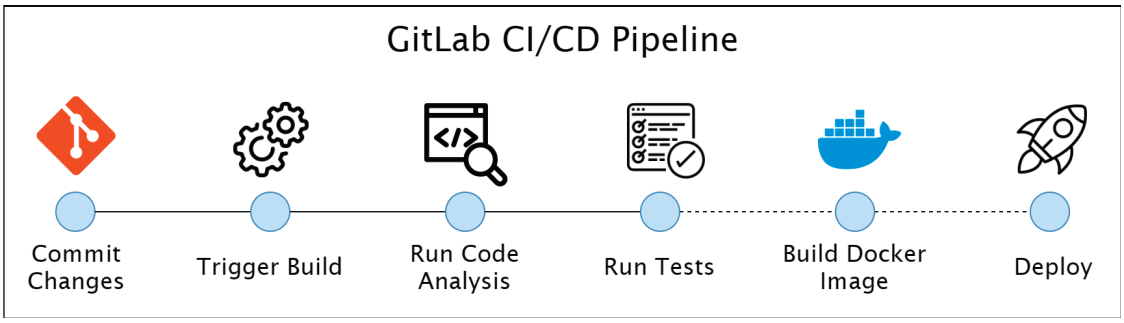
We have greatly improved the integration and deployment processes of MSC. In detail, we have

- Designed a Gitlab CI/CD pipeline to improve the software quality and ease deployment.
- Integrated the pipeline into the existing system.
- Verified the pipeline implementation by deploying to the development environment.

### Discussion

This bachelor thesis has laid the foundation for robust integration and deployment processes. The documentation provides easy-to-follow steps for deploying MSC components. And finally, the end user benefits from faster development cycles and more stable deployments.

Marc Muster




The GitLab pipeline enables straightforward integration and deployment of Martelage Sylvotheque components.