

Online Stack Sampling and Monitoring System (OSSMS) Wire Frame and Design Documentation

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Introduction

This comprehensive guide is designed to assist users, developers, administrators, and other stakeholders in understanding, utilizing, and maintaining the Online Stack Sampling System (OSSMS).

Serving as a central reference point for all aspects of the system, this document caters to various needs. Whether you are a developer seeking insights into the system architecture, an administrator managing the software configuration, or an end-user aiming to maximize the system's benefits, this guide is tailored for you. It offers a detailed overview of the software's functionality, architecture, and usage instructions.

Overview

The Online Stack Sampling System (OSSMS) aims to transition the current stack sampling test plan submission, approval, and data sheet submission processes to an online platform. This migration is intended to enhance the efficiency of the process and the quality of data collected during stack sampling.

The primary motivation for developing this system was the COVID-19 pandemic, which significantly altered traditional work practices. One industry notably impacted was the Accredited 3rd Party Stack Emission Testing Firms (A3PSETF). These firms are responsible for conducting source emission testing for Air Pollution Source Installations (APSI) to ensure compliance with the National Emission Standards for Source Specific Air Pollutants (NESSAP) as mandated by the Clean Air Act. The OSSMS was created to adapt to these new circumstances and prioritize safety.

Upon deployment, the OSSMS is expected to provide the following essential features for production-level usability:

- Test plan creation and submission
- Test plan review
- Test plan approval
- A communication channel for third-party members and the Environmental Management Bureau (EMB) to discuss the test plan
- Submission of data sheets
- Submission of final reports

Audience

This documentation is intended solely for the Environmental Management Bureau's admin team and future developers who need to understand the intricacies of the system. Please note that this documentation must not be shared outside the EMB to ensure the system's security.

System Architecture

Server

Server refers to a computer or a system that is dedicated to providing services or resources to other computers, known as clients, within a network. Servers are designed to handle specific tasks, services, or requests from clients and are an essential part of network infrastructure.

In our case, we are using a virtual machine that is hosted within EMB's (Environmental Management Bureau) server and is managed by their own IT team.

Our server is currently using a Linux Ubuntu as its operating system. This setup is ample and will be able to cater our system's requirements.

Frontend

Frontend refers to the client-side part of our system that users interact with directly.

The frontend/application layer of our system is being managed by a PM2 process manager and mainly utilizes the React JS framework as its framework due to its proven reliability, performance and maintainability.

Components

- React JS
- HTML
- CSS
- Javascript
- PM2

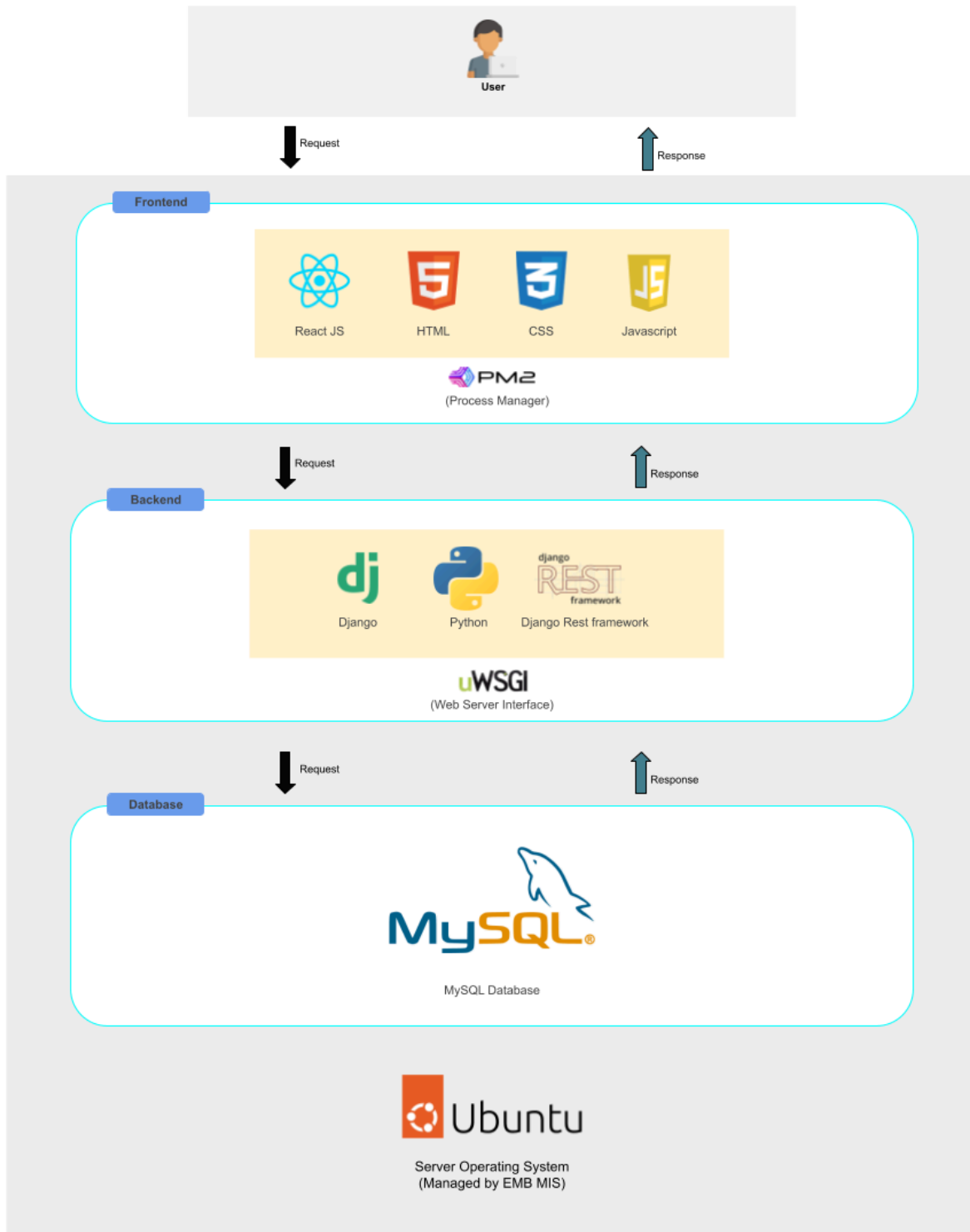


Diagram 1 - System Architecture

System Modules

User Manager

Overview

The user manager is responsible for overseeing the system's user base and all related models, including company and team details.

Responsibilities

- Manages the creation and update mechanism for the following
 - Users
 - Teams
 - Company
- Determines if the user is active or inactive
- Checks who can access specific parts of the system

Data Model

User

Field name	Description	Data Type
id	Unique identifier for the user	int
name	Name of the user	string
email	Email address of the user	string
role	ID of the role assigned to the user	int
company	ID of the company assigned to the user	int
region	Region where the user resides	string
school	School where the user is from	string
course	Course that the user took	string
contact_number	Contact number of the user	string

profession license	Indicates if the user has professional license	boolean
profile_picture	Location of the user's profile picture	string
email_verified	Indicates if the user has validated their email address	boolean
status	Shows if the user is active or inactive	boolean

- Team
- Role
- Company

Test Plan Manager

Overview

The test plan manager is the core component of the system, enabling users to create, update, and manage submitted test plans. It also handles the approval of test plans, as well as the submission of data sheets and necessary reports.

Responsibilities

- Manages the creation and update mechanism for the test plans
 - The test plan manager implements certain rules for the creation and update of test plans
- Enables the users to add comments on a test plan
- Creates the required data sheets
- Handles the update and locking features of the data sheets
- Manages the assignment of test plans to intended users
- Handles the approval flow of a test plan from the evaluator to the regional director
- Handles the evaluator assignment in accordance with the rules provided by the EMB-AQMS.

Data Model

- Comment
- Datasheet

- Method
- Request Relationship (test plan relationship to users)
- Requests (test plans)