

# CHARGE UN'ITY

Group 22  
Pedro Ponte - 98059  
Alexandre Regalado - 124572  
Miguel Soares Francisco - 108304  
Inês Ferreira - 104415

05/06/2025

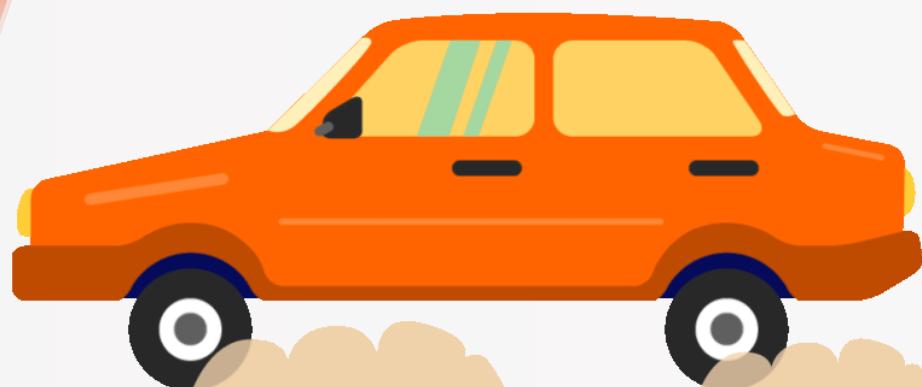
# OUR PROJECT

**ChargeUnity** is an application designed to improve the EV charging ecosystem addressing challenges like finding chargers, charging operations and station management, faced by EV drivers and station operators daily.



# OUR PHILOSOPHY

**ChargeUnity** was built following **SQA** and **DevOps** practices, including **CI/CD** and **Continuous Testing**. We followed **Agile** methodologies, a **BDD** approach and kept a close eye on our **Code Quality** by following principles like the **Google Java Style Code**, in order to deliver an efficient product



# OUR TEAM



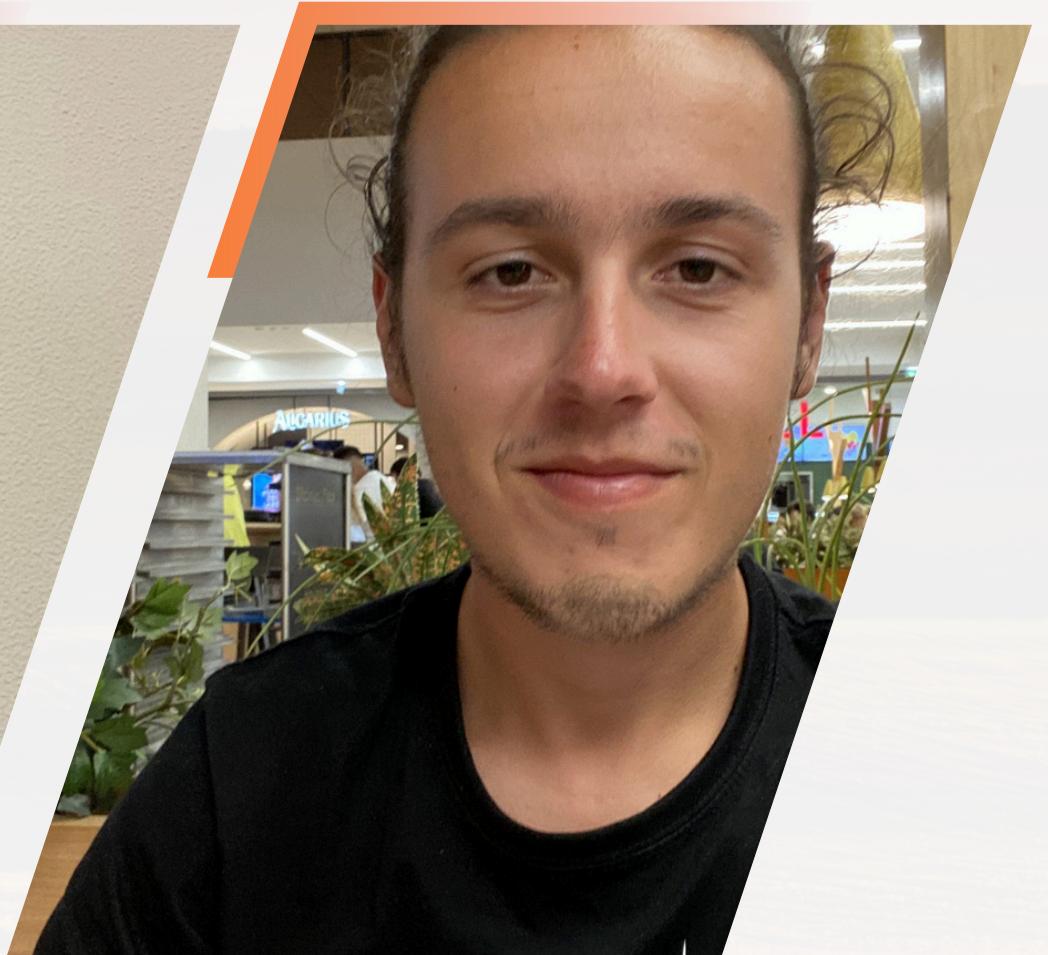
**PEDRO PONTE**  
*Team Leader*



**INÊS FERREIRA**  
*Product Owner*



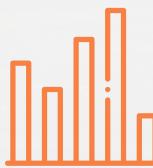
**MIGUEL SOARES**  
*DevOps Master*



**ALEXANDRE REGALADO**  
*QA Engineer*

 **STATION DISCOVERY**

- Search for chargers
- Register Charging station

 **USER STATS**

- Monitor daily operations

**PAYMENT INTEGRATION**

- Make payments
- Configure off-peak discounts

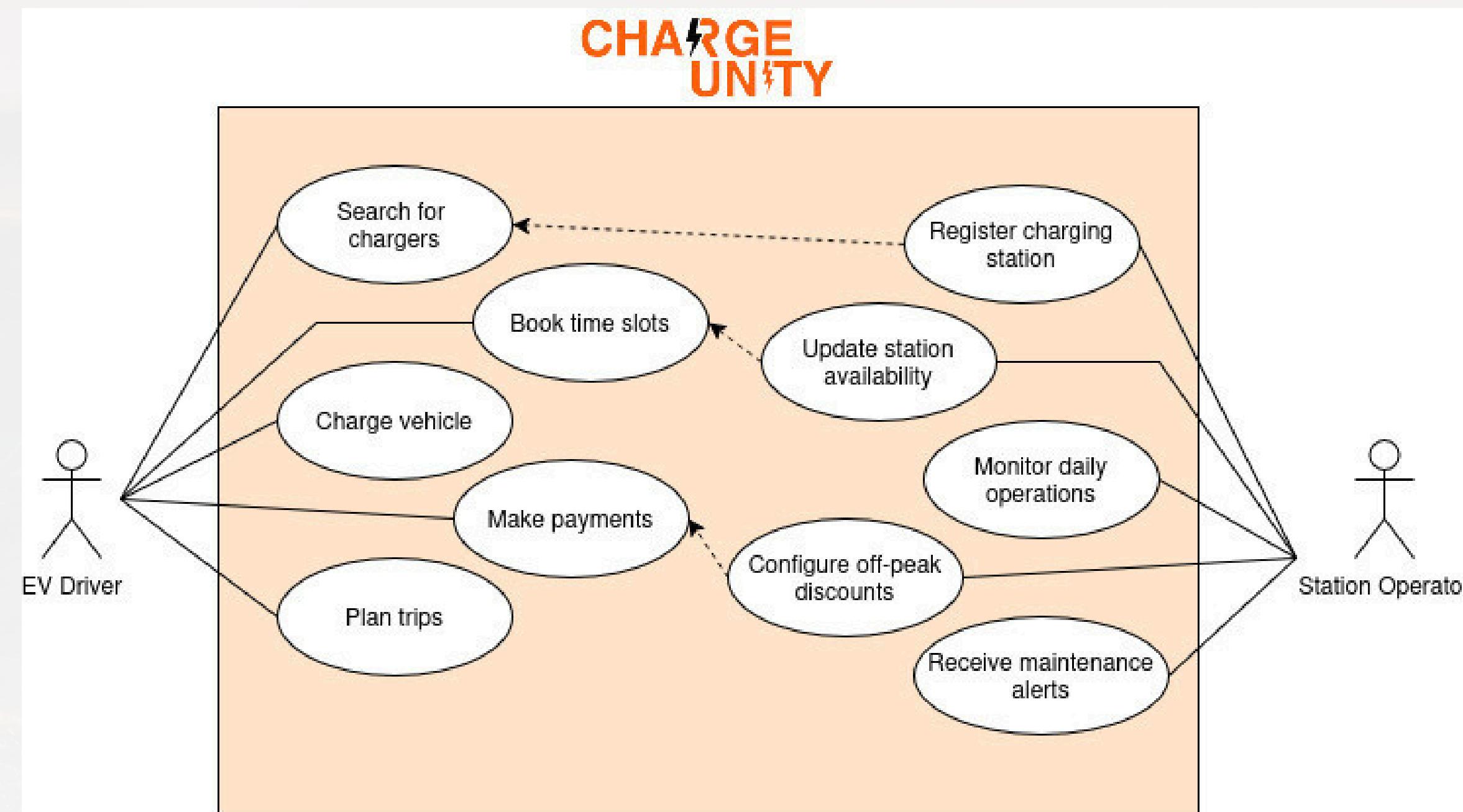
**SLOT BOOKING & SCHEDULING**

- Book time slots
- Receive maintenance alerts
- Update station availability

**CHARGING**

- Charge vehicle
- Plan trips

# USER STORIES





## USER STORY:

*As an EV driver, I want to search for charging stations nearby or in a specific destination, so that I can find a convenient place to charge my car.*

# EV DRIVER

CHARGE  
UNITY

## ACCEPTANCE CRITERIA:

- *Given* the user has opened the app,  
*When* they enter their current location or a destination,  
*Then* a list of available charging stations in that area should be displayed
- *Given* there are multiple stations,  
*When* the user applies filters (charger type, power, price),  
*Then* the results should update accordingly.

# STATION OPERATOR



## USER STORY:

*As a Station Operator, I want to change the availability status of chargers so that drivers cannot book chargers that are unavailable.*

**CHARGE  
UNITY**

## ACCEPTANCE CRITERIA:

- **Given** I am the manager of the charger  
**When** I mark the charger as “Maintenance”  
**Then** it becomes unavailable for booking and it doesn’t show in station searches.
- **Given** a charger is marked as unavailable  
**When** I mark the charger as “Active”  
**Then** it becomes available for booking

# ORGANIZATION



**GitHub**

*Code Repository*



*Meetings  
Communication*



**Jira**

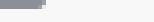
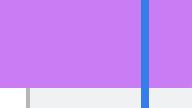
*Backlog*



*Reports  
Minutes*

**CHARGE  
UNITY**

# TIMELINE

Sprints	May				June	
	Iterat...	Iterat...	Iterat...	Iteration 4	Future Work	
<input type="checkbox"/> > CH-9 Station Discovery						
<input type="checkbox"/> > CH-10 Slot Booking & Scheduling						
<input type="checkbox"/> > CH-11 Charging						
<input type="checkbox"/> > CH-12 Payment Integration						
<input type="checkbox"/> > CH-13 User Stats						

CHARGE  
UNITY

# JIRA EPIC/USER STORY

Projects / TQS-ChargeUnity / CH-9 / CH-33

## Station Operator - Register Charging station

+ Add Apps

### Description

#### User Story:

As a Station Operator, I want to register a new charging station with its specifications so that it becomes available for drivers to view and book.

### Acceptance Criteria:

Given I am on the "register station" page

When I enter valid details (name, location, ...) and submit

Then the new station is added to the system.

Given that a station with the same name and location already exists

When I try to register a duplicate

Then the system shows an error preventing duplication.

### Subtasks

CH-33 / CH-94 1 Like Share ... X

## Features for functional testing and tests

+ Add Apps Done ✓ Done ⚡

Details

Labels	None
Parent	CH-33 Station Operator - Registr...
Due date	None
Start date	None
Sprint	Iteration 4 +2
Story point estimate	2
Fix versions	None
Development	1 branch 6 commits 1 pull request 3 builds
Reporter	Pedro Ponte

5 days ago MERGED ✓

Type	Key	Summary	Assignee	Status	Story point estimate
CH	CH-71	Charging station and Station operator service tests	Miguel Soares Fra...	DONE	2
CH	CH-81	Home page	Pedro Ponte	DONE	1
CH	CH-86	Integration tests	Miguel Soares Fra...	DONE	1
CH	CH-94	Features for functional testing and tests	Pedro Ponte	DONE	2

# JIRA XRAY

CH-9 / CH-28

EV Driver - Search for chargers

+ Add Apps

Description

User Story

As an EV driver, I want to search for charging stations nearby or in a specific destination, so that I can find a convenient place to charge my car.

Acceptance Criteria:

Given the user has opened the app,  
When they enter their current location or a destination,  
Then a list of available charging stations in that area should be displayed.

Given there are multiple stations,  
When the user applies filters (charger type, power, price),  
Then the results should update accordingly.

### Subtasks

100% Done

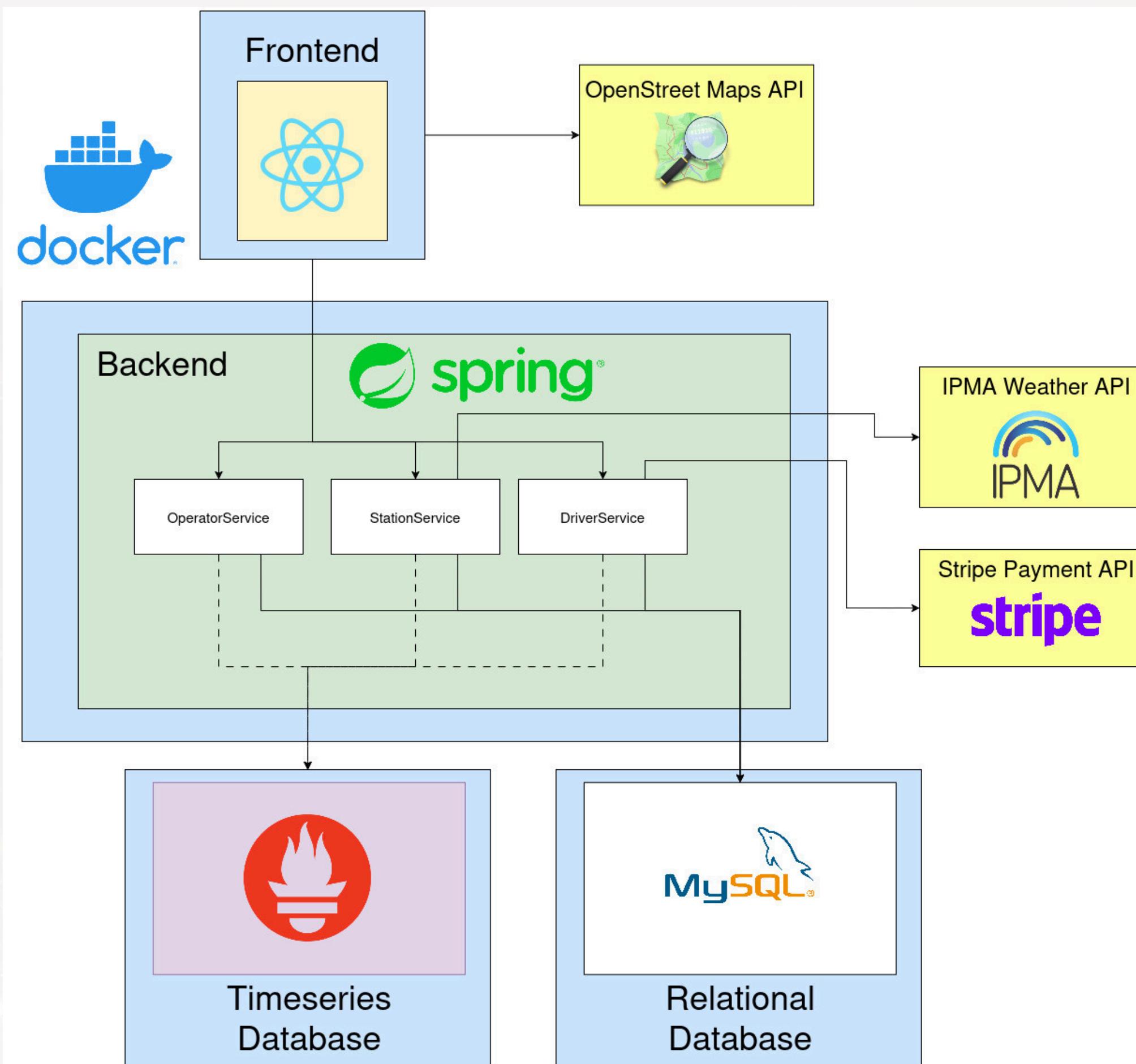
Type	Key	Summary	As...	Status	Story point esti...
CH-75	Charging station and chargers service logic, tests and frontend	F	DONE		4
CH-95	Frontend for searching for chargers and tests	F	DONE		1
CH-96	Feature for functional tests and said tests	F	DONE		1

### Linked work items

is tested by

<input checked="" type="checkbox"/> CH-122 testChargerToString	TO DO	
<input checked="" type="checkbox"/> CH-121 testPricePerKWhBounds	TO DO	

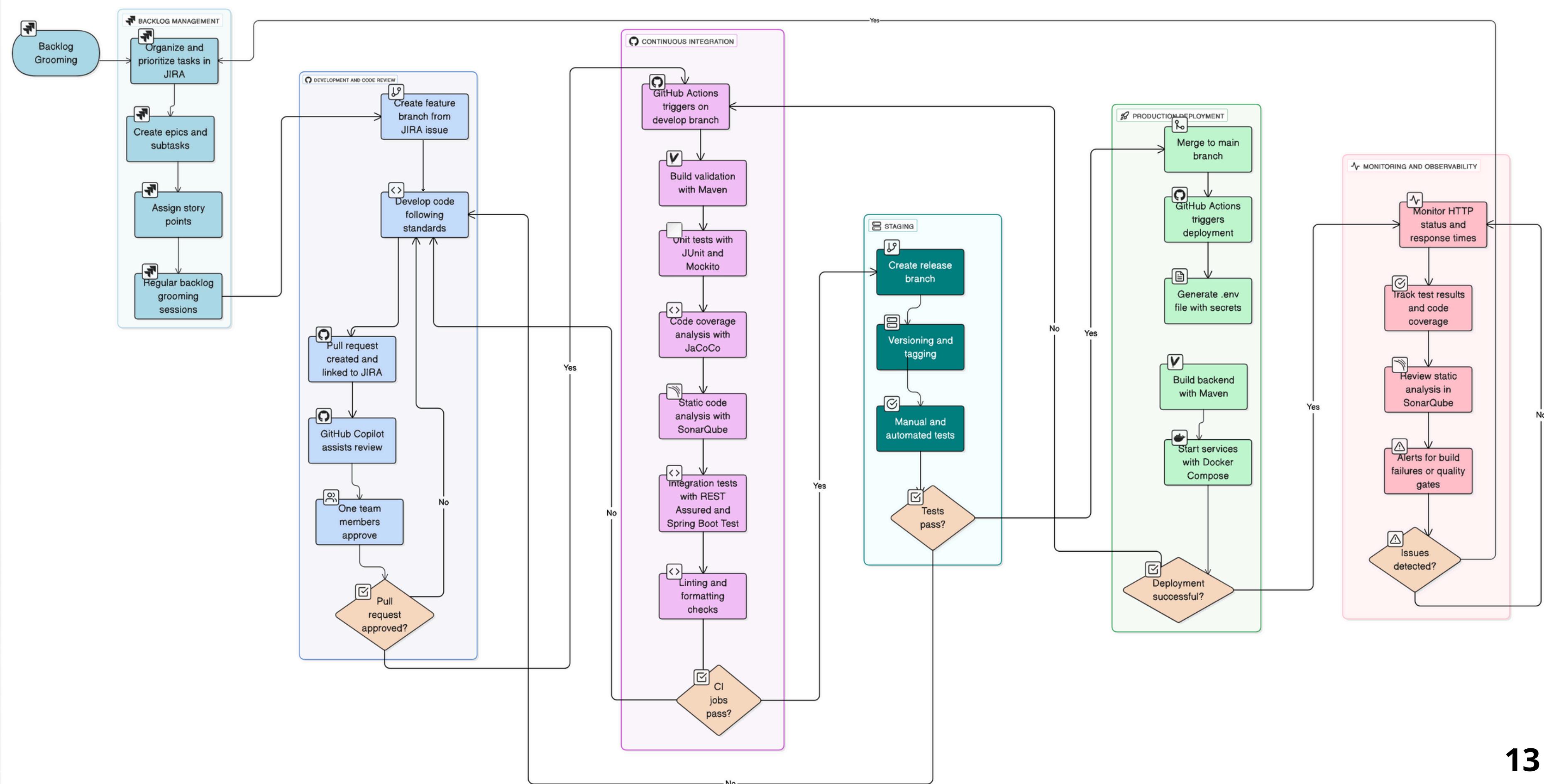
# ARCHITECHTURE



CHARGE  
UNITY

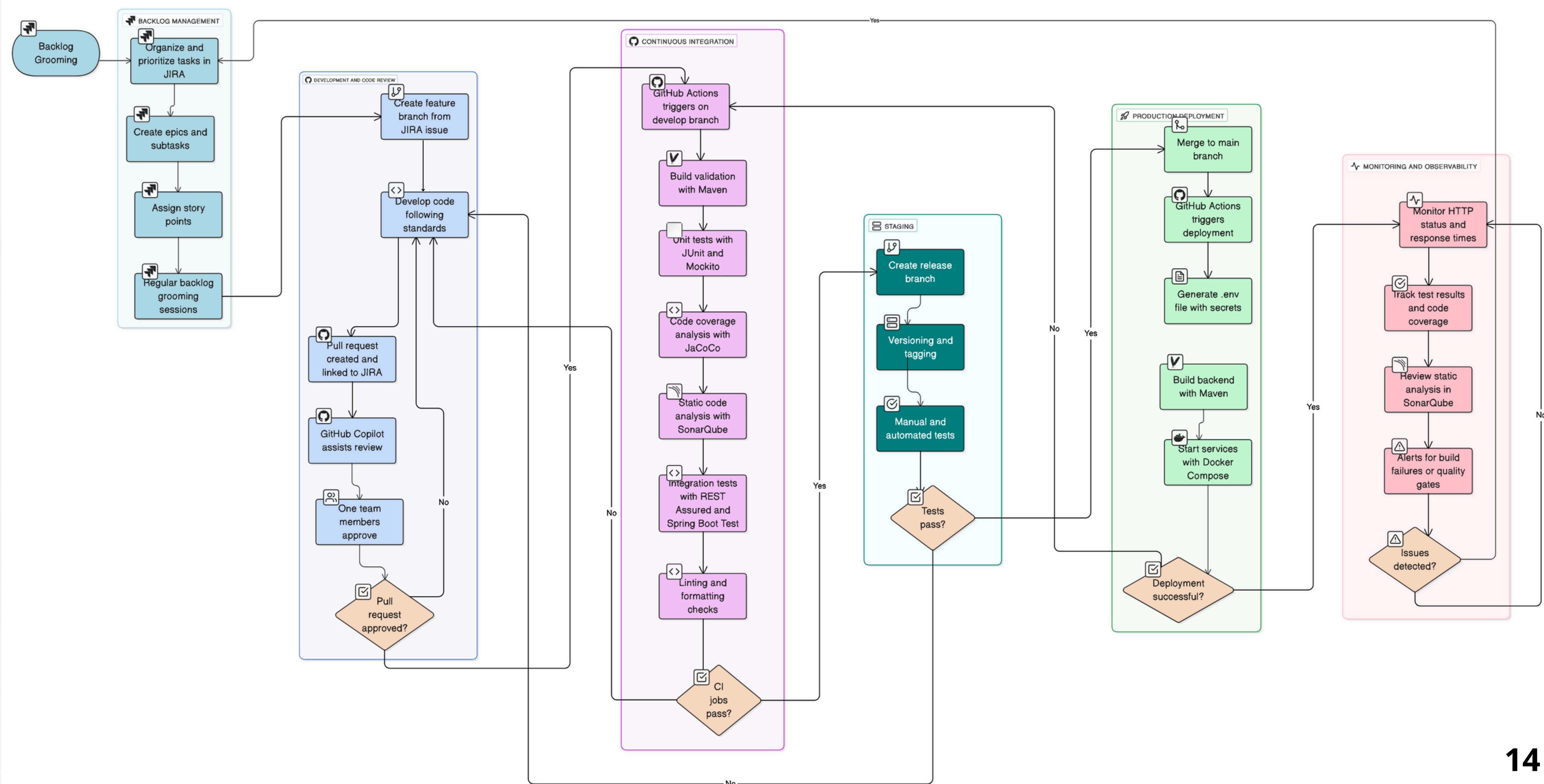
# CI/CD PIPELINE

CHARGE  
UNITY



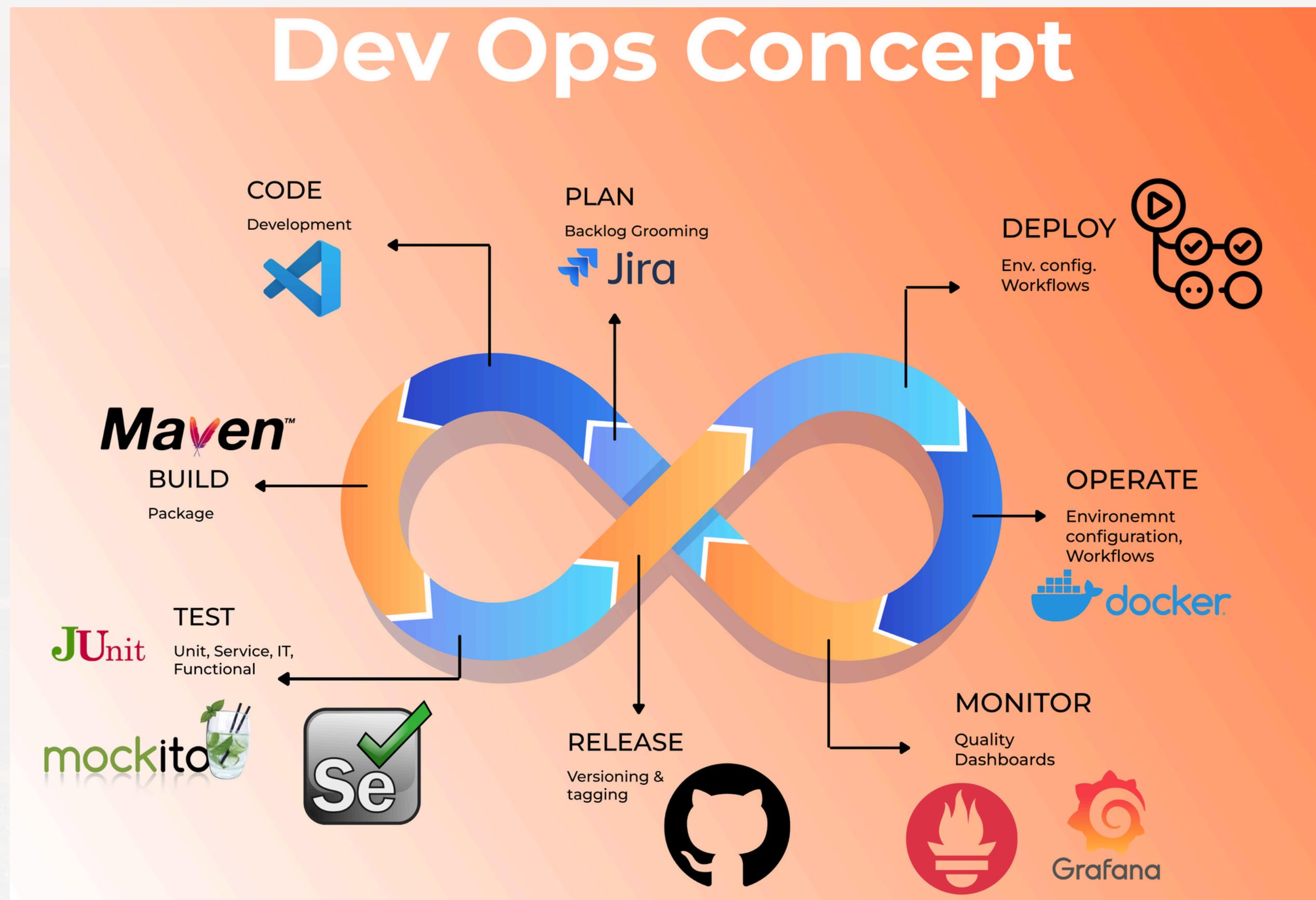
# CI/CD PIPELINE

CHARGE  
UNITY



# CI/CD PIPELINE TOOLS

## Dev Ops Concept



CHARGE  
UNITY

# DEVELOPMENT PIPELINE

CHARGE  
UNITY

The screenshot shows a Jira issue page for a User Story. The title is "Station Operator - Register Charging station". The "User Story" section contains the following text:  
**User Story:**  
As a Station Operator, I want to register a new charging station with its specifications so that it becomes available for drivers to view and book.  
  
**Acceptance Criteria:**  
Given I am on the "register station" page  
When I enter valid details (name, location, ...) and submit  
Then the new station is added to the system.  
  
Given that a station with the same name and location already exists  
When I try to register a duplicate  
Then the system shows an error preventing duplication.  
  
The "Tickets filhos" section shows four child tickets: CH-71, CH-81, CH-86, and CH-94, all of which are marked as "CONCLUÍDO" (Completed).  
  
On the right side of the screen, there is a detailed view of the User Story's information, including:

- Responsável: Miguel Soares Francisco
- Categorias: UserStory
- Pai: CH-9 Station Discovery
- Data limite: Nenhum
- Team: Nenhum
- Start date: Nenhum
- Sprint: Iteration 4 +2
- Story point estimate: Nenhum
- Versões corrigidas: Nenhum
- Desenvolvimento: [Criar branch](#), [Criar commit](#)
- Relator: Pedro Ponte
- Automação: Execuções de regras

User Story

- User story must have all steps to comply with our **definition of done**.

- Branches are created through Jira with the issue key to facilitate organization

The screenshot shows a GitHub pull request interface. The branch name is "CH-81-frontend-for-registering-stations". The pull request has been updated 2 weeks ago and has 5/5 check status. It is ahead of the main branch by 249 commits. There is a "Pull request" button.

Create Branch

# CI/CD PIPELINE

CHARGE  
UNITY

- Pull Requests are created to develop and must be reviewed by at least 1 other member

CH-81 frontend for registering charging stations #21

Merged Ponte348 merged 2 commits into develop from CH-81-frontend-for-registering-stations 2 weeks ago

Conversation 2 Commits 2 Checks 5 Files changed 11



Ponte348 commented 2 weeks ago • edited by jira bot

## Description

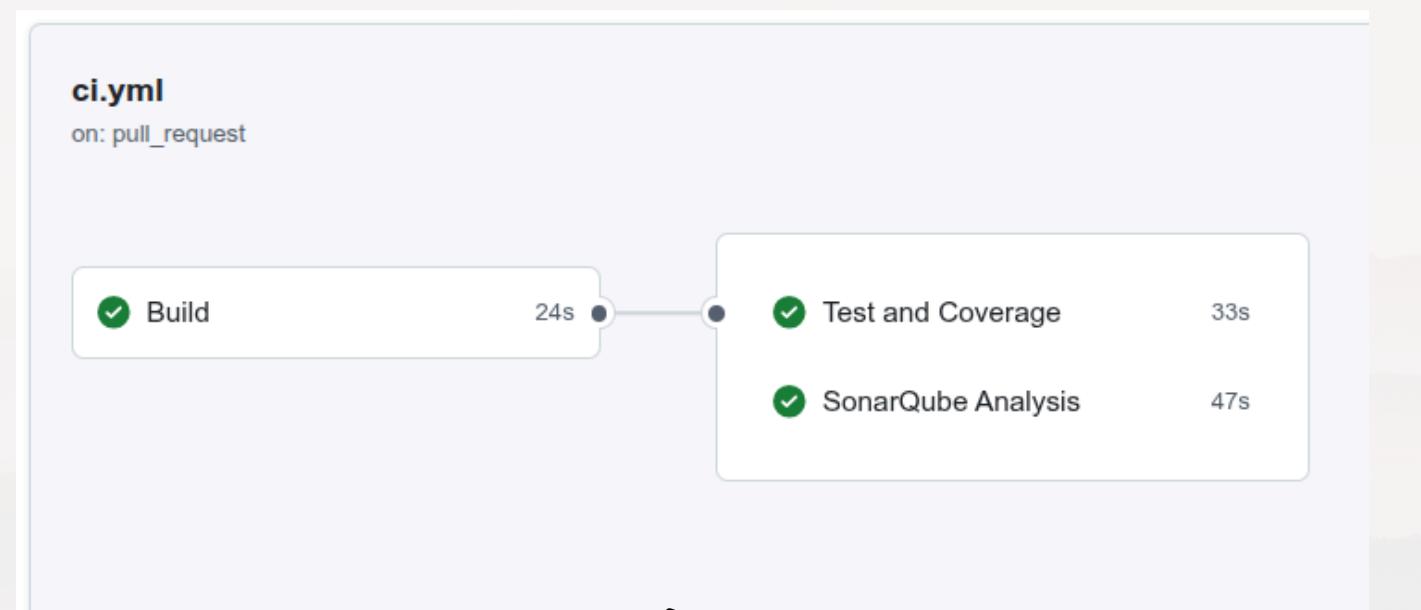
Very basic home page that allows choosing between driver and operator menus.  
Operator page also tries to load cards with all operators but endpoints are still not done.

## Context

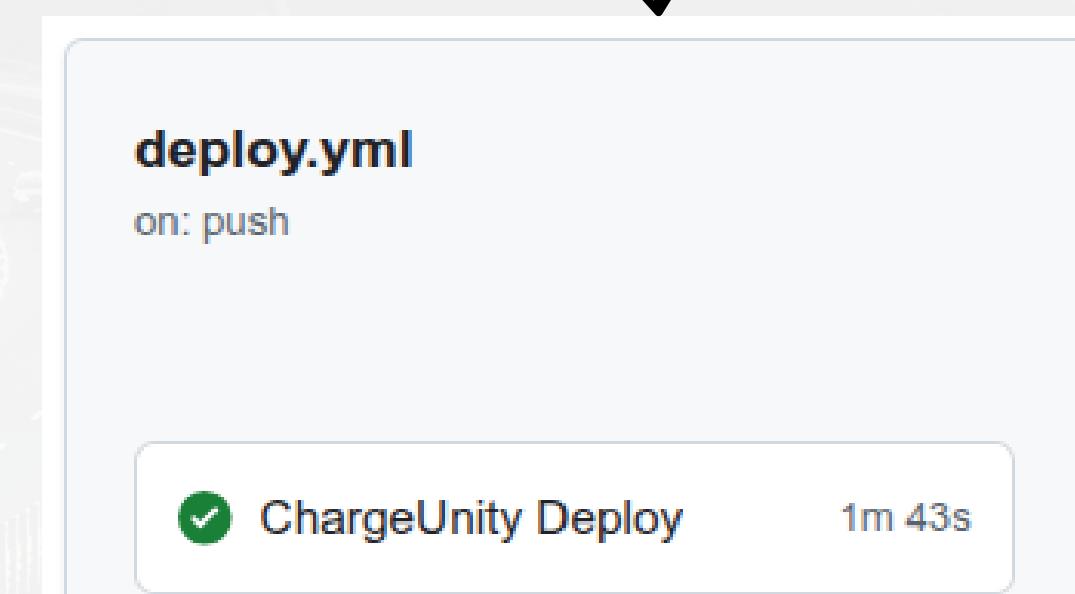
Jira Issue: [CH-81](#)

## How Has This Been Tested?

To test this I ran our docker compose.



- Workflow builds our project and runs tests
- When merging to main, a deploy is triggered



# QA STACK:

CHARGE  
UNITY

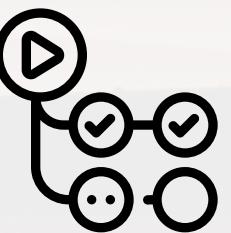
## TESTING STRATEGY

- Unit Tests: JUnit, Mockito (backend logic)
- Integration Tests: Spring Boot Test, MockMvc
- UI Tests: Selenium + Cucumber (BDD approach following user story acceptance criteria)
- Manual Tests: Exploratory for edge cases, responsive layout



## TEST AUTOMATION TOOLS

- CI/CD: GitHub Actions for test automation on PRs
- Test Reporting: JaCoCo integrated into Maven
- Code Quality: SonarQube



# SELF-REVIEW

CHARGE  
UNITY

Plus	Minus	Interesting
<ul style="list-style-type: none"><li>• Clear task organization and role division</li><li>• Project goals were clearly outlined from the start</li><li>• Strong communication and teamwork</li><li>• Using Chat-GPT and Copilot for generating reviews</li></ul>	<ul style="list-style-type: none"><li>• Enhancing Test Depth &amp; Coverage</li><li>• Feature Tests affected by non-idempotence</li><li>• Initial CI was slow because of misconfiguration</li><li>• Simple frontend</li><li>• No login system implemented</li></ul>	<ul style="list-style-type: none"><li>• Interaction with a lot of new tools.</li><li>• Application to other courses like PI</li></ul>

**CHARGE  
UN'ITY**

**ANY  
QUESTIONS?**

**Group 22**

Pedro Ponte - 98059  
Alexandre Regalado - 124572  
Miguel Soares Francisco - 108304  
Inês Ferreira - 104415