

June 5<sup>th</sup> 2025



## TESTES DE QUALIDADE DE SOFTWARE

**Ana Rita Silva** – 114220 – Product Owner  
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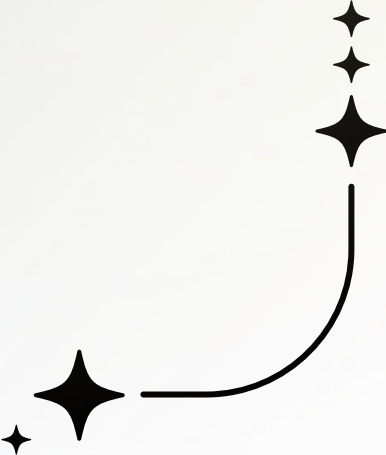
Team Leader – 113889 – **Hugo Castro**  
DevOps – 113475 – **Carolina Silva**



universidade  
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- 01. Product concept
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# PRODUCT CONCEPT



**NikCharge:** a unified digital platform for electric vehicle (EV) charging

Reliable, real-time  
charging availability

Easy reservation  
and usage

Management and  
operations  
dashboards

## HIGHLIGHTS

- Charging station discovery
- Live session monitoring
- Data-driven decision-making for managers





# ROADMAP

Timeline across 6 weeks:

- **Week 1** (< 8 May): Project setup
- **Weeks 2 & 3** (8–21 May): User Profile, Station Discovery
- **Week 4** (22–28 May): Station Management, Booking
- **Week 5** (29 May–9 Jun): Trip Planning, All Core Epics

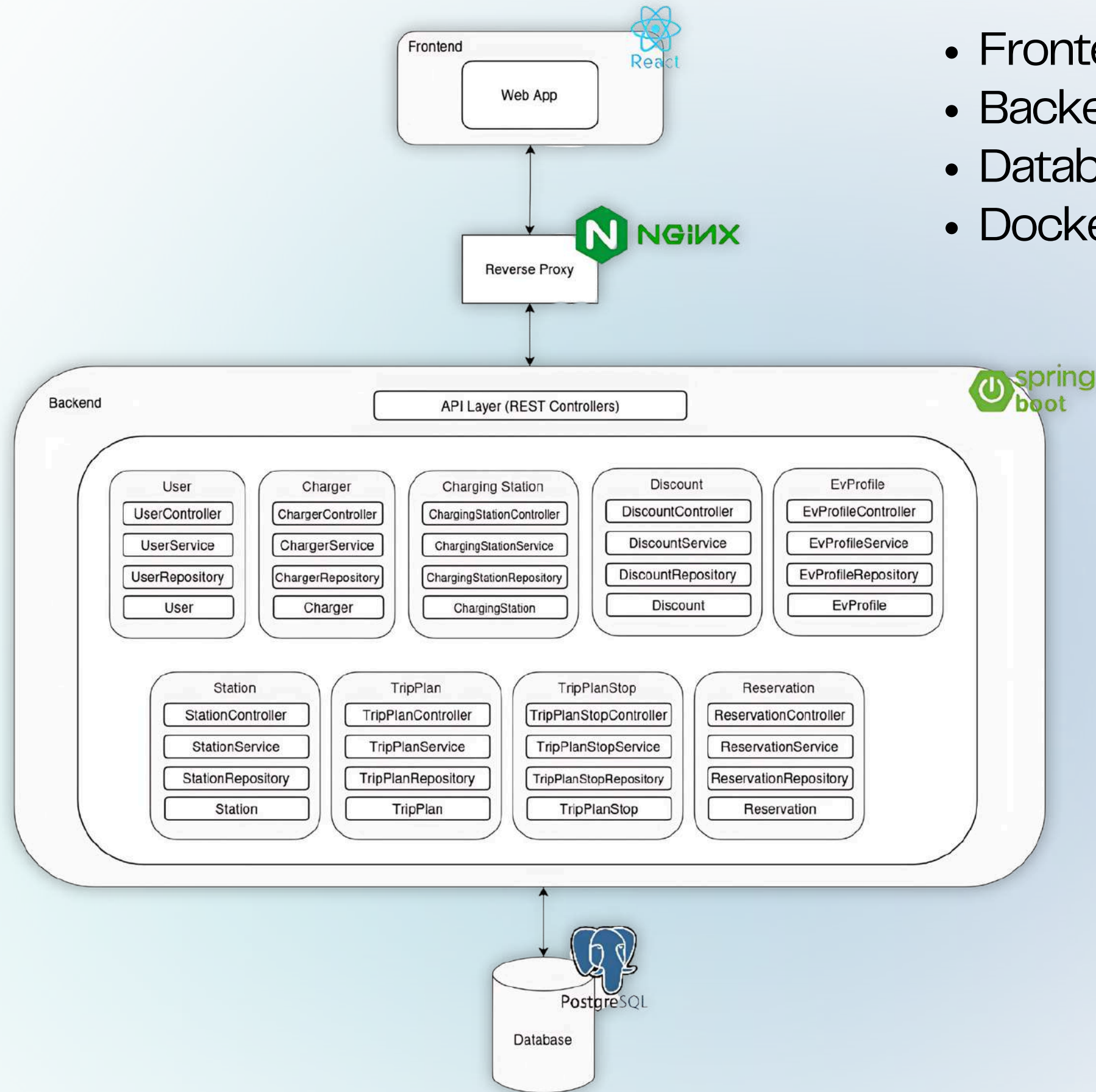
– CI/CD improved across iterations.

– DevOps tools:  **docker**  GitHub Actions **sonarqube**   **XRAY**  **Jira**

– QA strategy: Unit + Integration tests (Spring Boot), Cucumber for BDD, REST-assured for API



# SOFTWARE ARCHITECTURE



- Frontend (React)
- Backend (Spring Boot, REST APIs)
- Database (PostgreSQL)
- Docker for containerization

# DEVELOPMENT PIPELINE

## Backlog Grooming & Story Definition

- Jira (Epics, User Stories, Acceptance Criteria)

## Development & Code Review

- Feature branches
- Java Spring Boot (Backend)
- Mandatory peer review

## Continuous Integration (CI)

- GitHub Actions
- On each PR:
  - Build and test suites are triggered
  - SonarQube (test coverage, smells, duplication)
  - Cucumber and REST-assured

## Quality Assurance

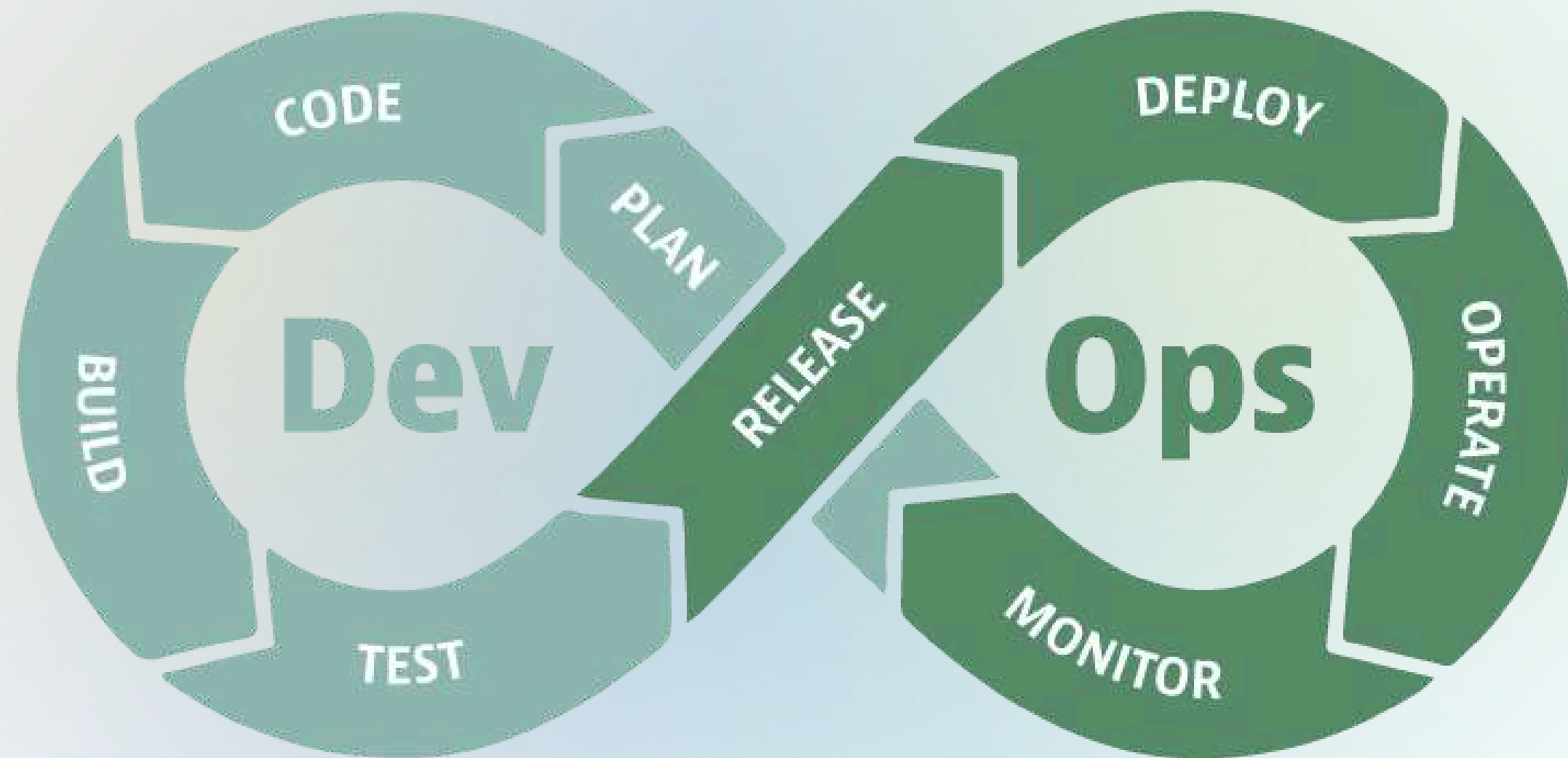
- JUnit
- Cucumber
- REST-assured
- Xray (Jira integration)

## Deployment




- Containerized via Docker
- Auto-deployed




# DEVELOPMENT PIPELINE



# DEVELOPMENT PIPELINE

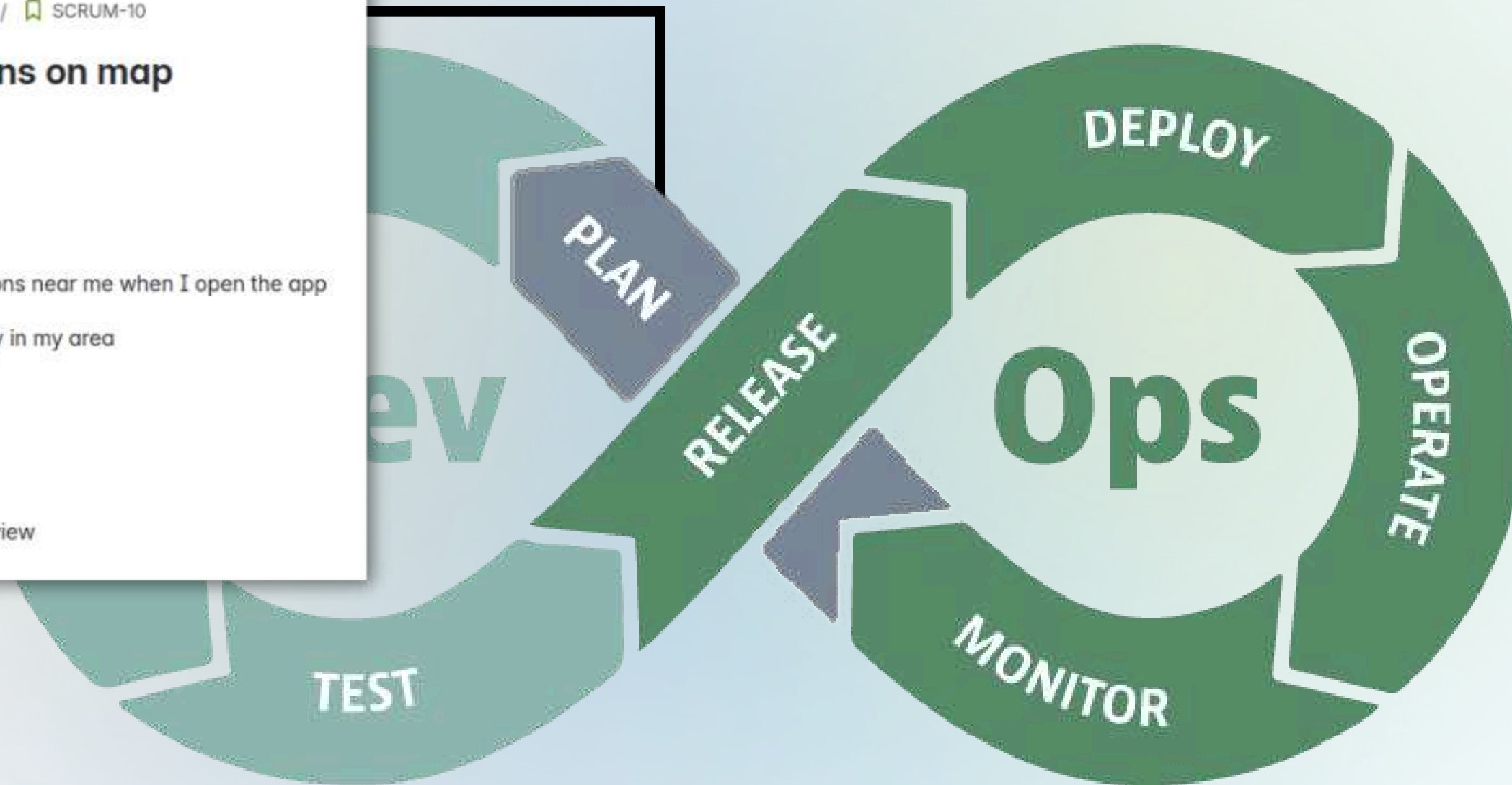
Projects /  NikCharge /  SCRUM-9 /  SCRUM-10

 **View nearby stations on map**

**Description**  
**As a user**  
**I want to** see available charging stations near me when I open the app  
**So that** I can quickly check availability in my area

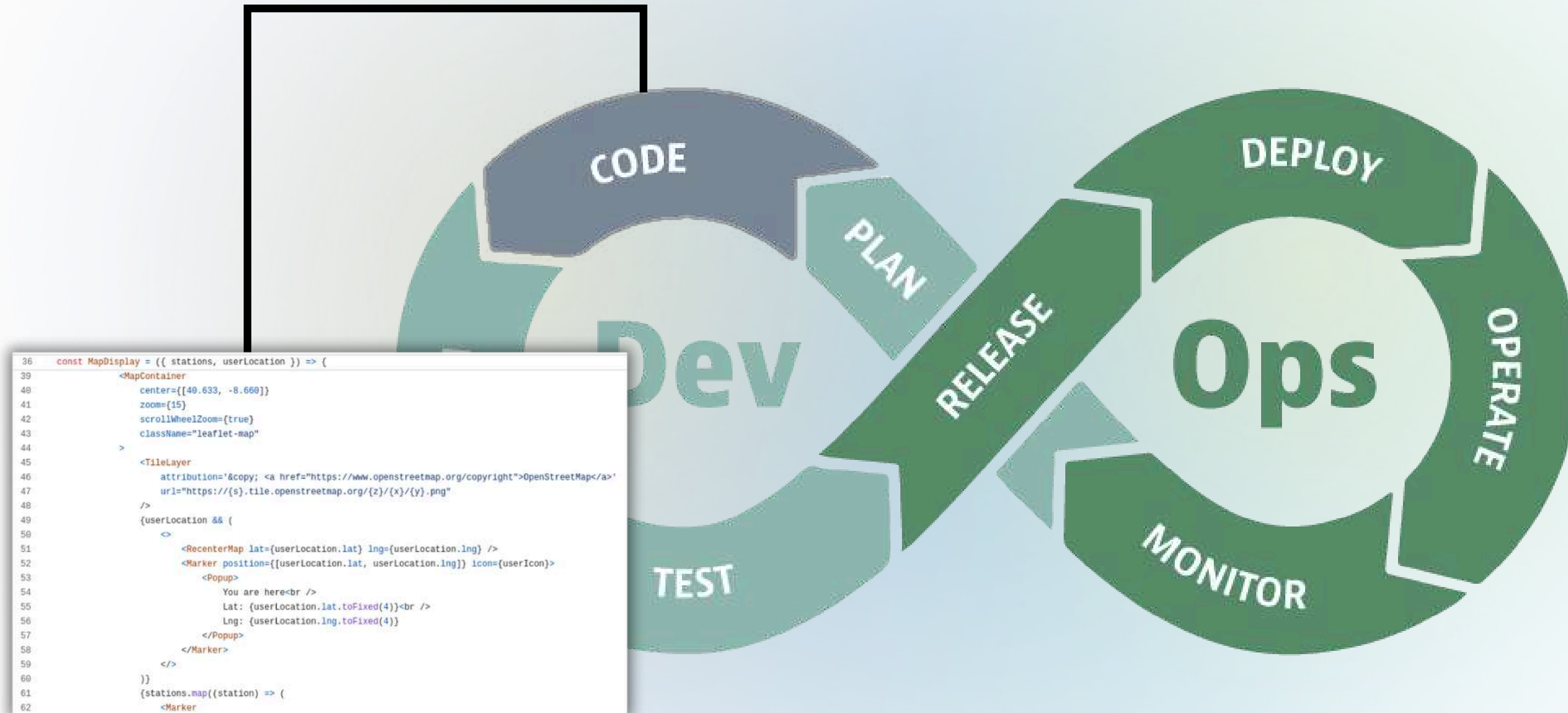
*Acceptance Criteria:*

- Default location is current GPS
- Default time is "now"
- Tapping a station opens its detail view

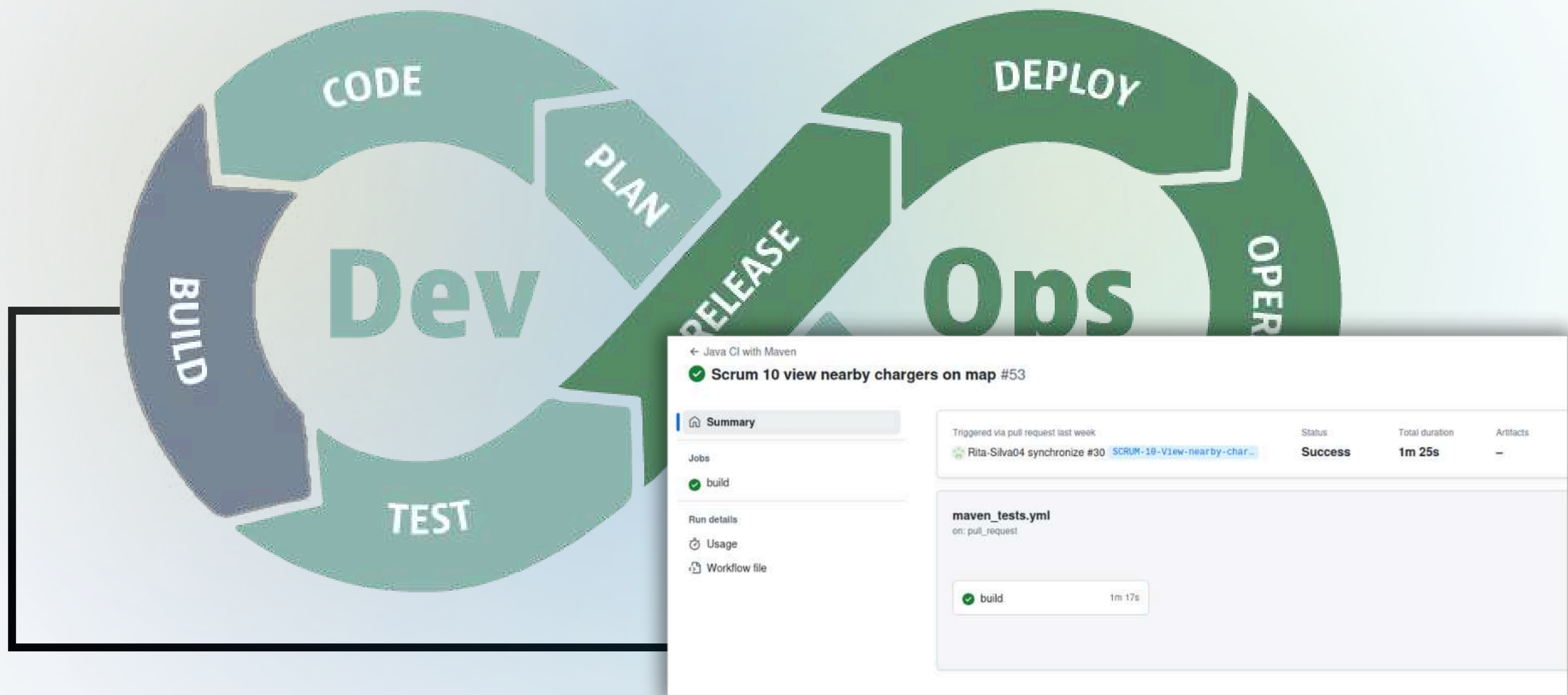




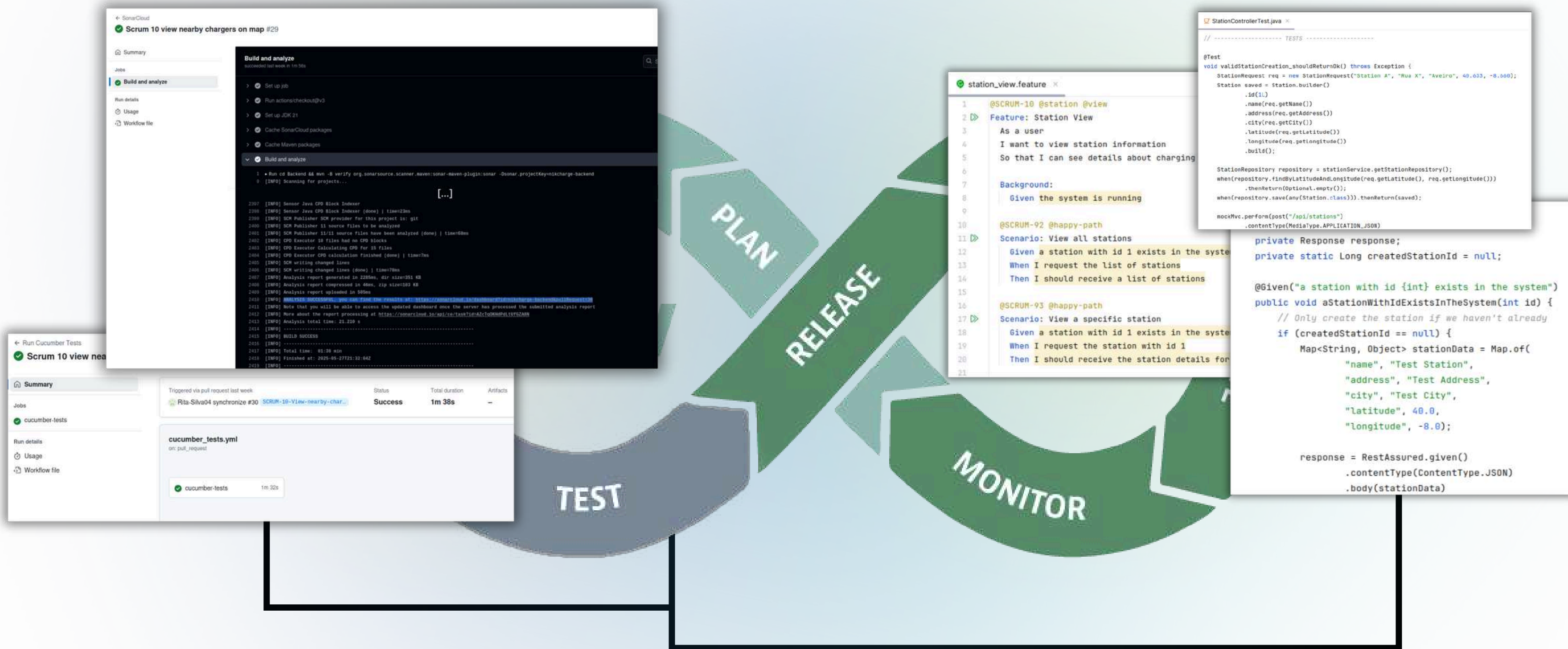
# DEVELOPMENT PIPELINE



# DEVELOPMENT PIPELINE

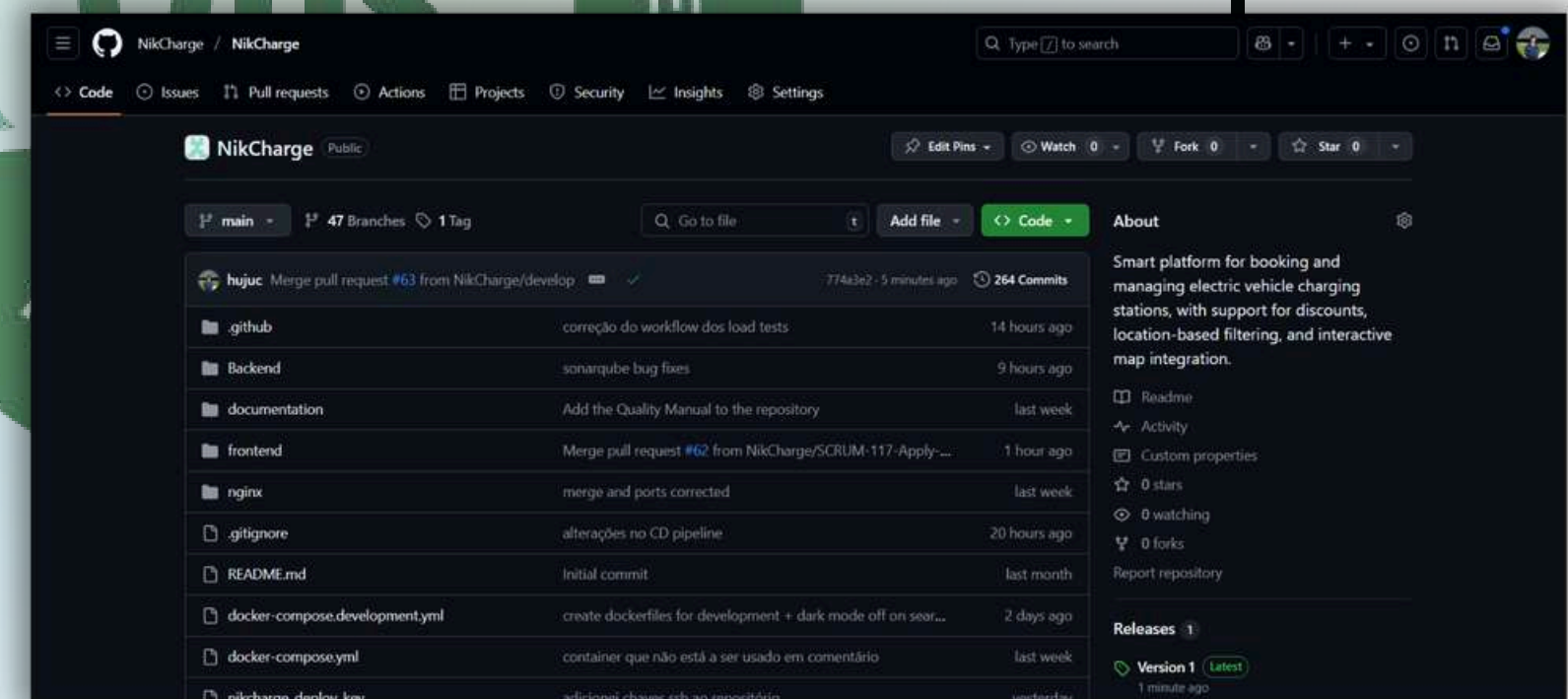
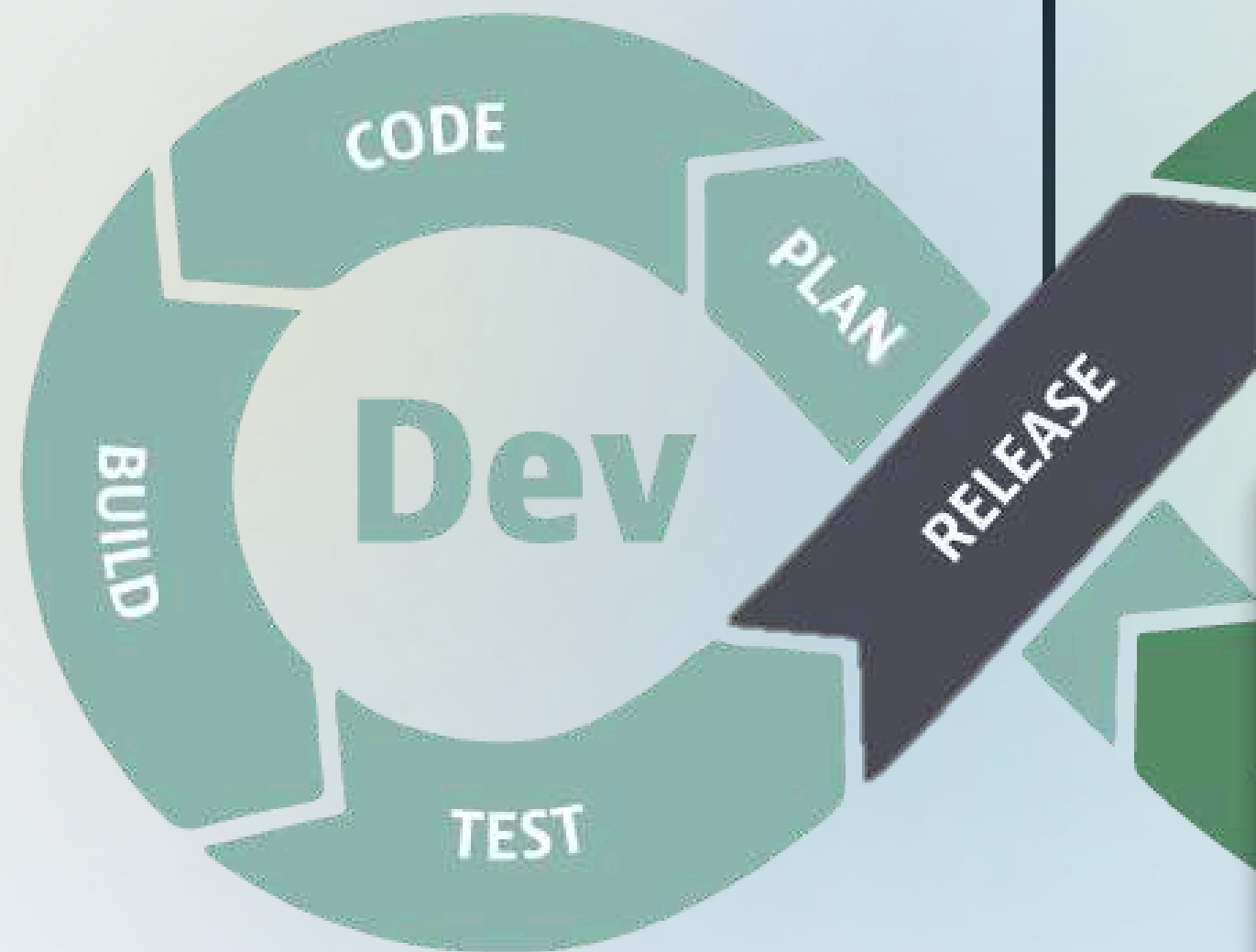


# DEVELOPMENT PIPELINE





# DEVELOPMENT PIPELINE



# DEVELOPMENT PIPELINE

Workflow file for this run  
github/workflows/deploy.yml at 0b87918

```
1 name: Deploy project
2
3 on:
4   push:
5     branches:
6       - develop
7   pull_request:
8     branches:
9       - develop
10
11 jobs:
12   deploy:
13     runs-on: self-hosted # ALTERADO: usar o runner no teu PC
14
15     steps:
16       - name: Checkout repository
17         uses: actions/checkout@v3
18
19       - name: Run deploy on remote server
20         run: |
21           ssh carolinaspsilva@deti-tqs-02 << 'EOF'
22             cd ~/NikCharge
23             git reset --hard HEAD
24             git pull origin develop
25             echo "POSTGRES_USER=${{ secrets.POSTGRES_USER }}" > .env
26             echo "POSTGRES_PASSWORD=${{ secrets.POSTGRES_PASSWORD }}" >> .env
27             echo "NODE_ENV=development" >> .env
28             echo "VITE_API_URL=/api" >> .env
29             docker-compose up -d
30             docker-compose logs -f
31             docker-compose up -d
32             docker-compose logs -f
33             EOF
```

Deploy project  
Merge pull request #47 from NikCharge/SCRUM-10-View-nearby-chargers-on-map #71

Summary

Jobs

deploy

Run details

Usage

Workflow file

deploy  
Succeeded 38 minutes ago in 2m 18s

Set up job

Checkout repository

Run deploy on remote server

```
1 • Run ssh carolinaspsilva@deti-tqs-02 << 'EOF'
16 Pseudo-terminal will not be allocated because stdin is not a terminal.
17 Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 5.15.0-124-generic x86_64)
18
19 * Documentation:  https://help.ubuntu.com
20 * Management:    https://landscape.canonical.com
21 * Support:        https://ubuntu.com/support
22
23 System information as of Wed Jun  4 08:08:48 PM WEST 2025
24
25 System load:  0.65          Processes:      159
26 Usage of /:    56.1% of 10.00GB    Users logged in:  1
27 Memory usage: 25%           IPk address for eth0: 192.168.100.2
28 Swap usage:   0%
29
30 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
31   just raised the bar for easy, resilient and secure K8s cluster deployment.
```

Not Secure http://deti-tqs-02.ua.pt/search

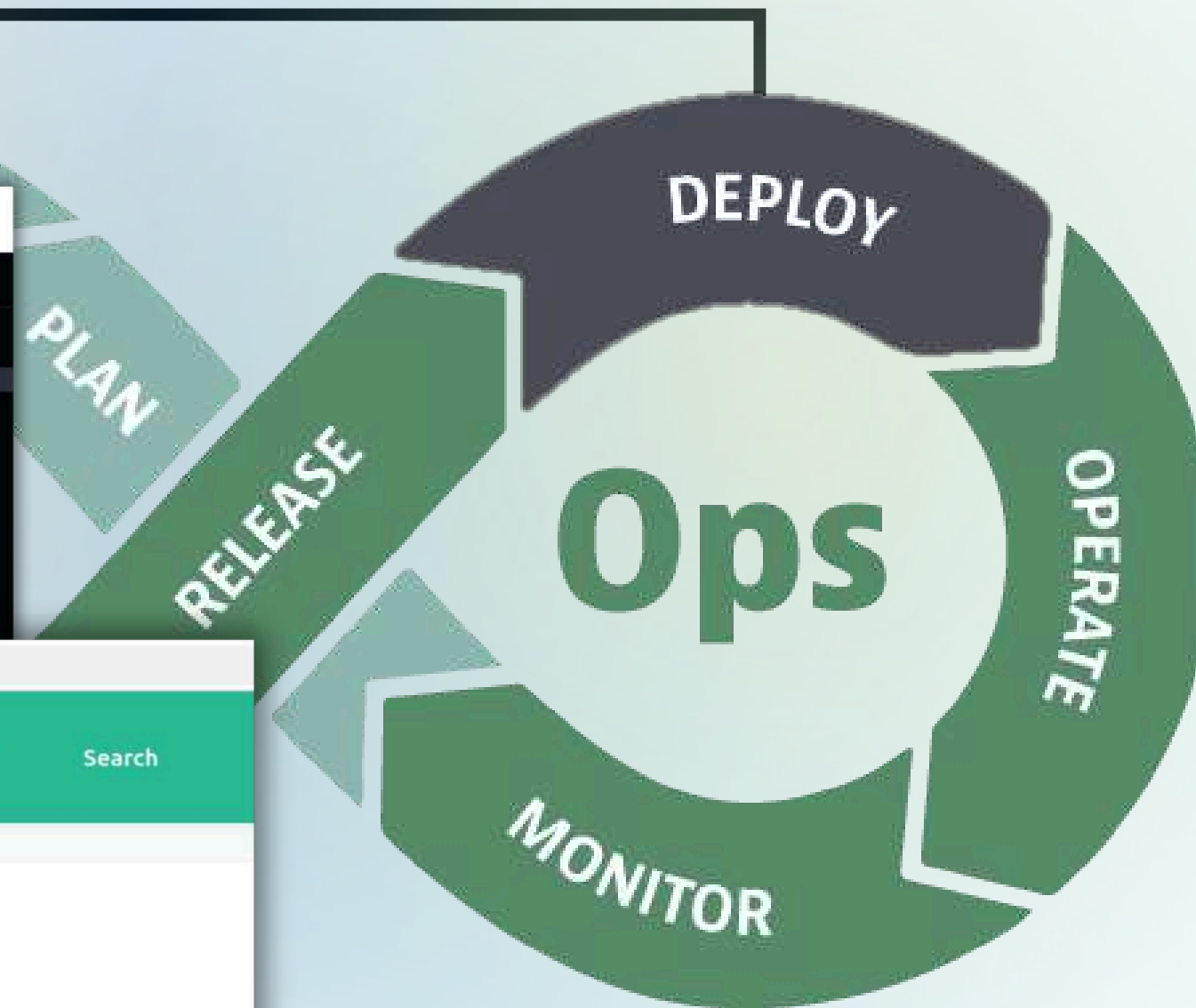
NC  
NikCharge

Home About Search

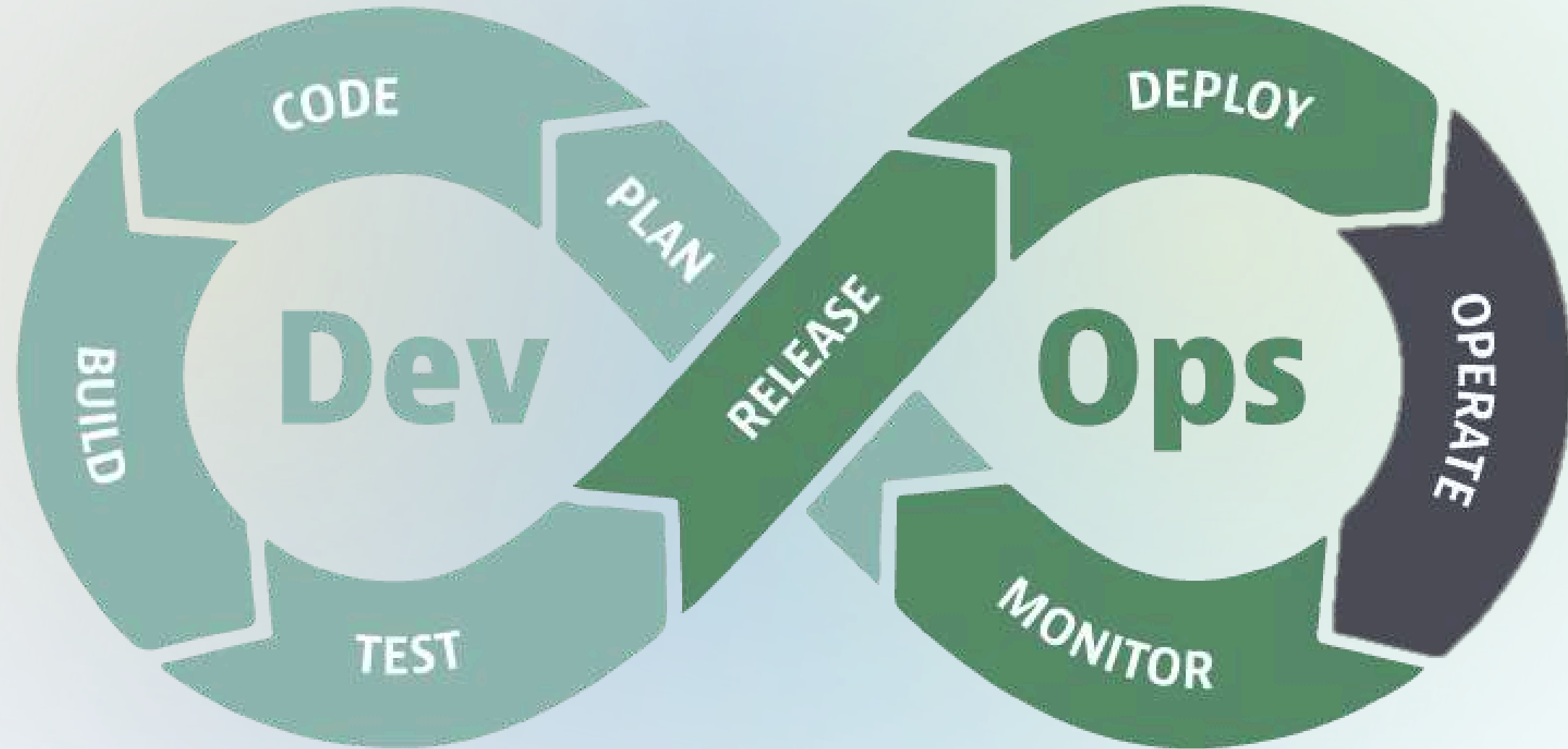
Search for stations

10 stations found

Map List



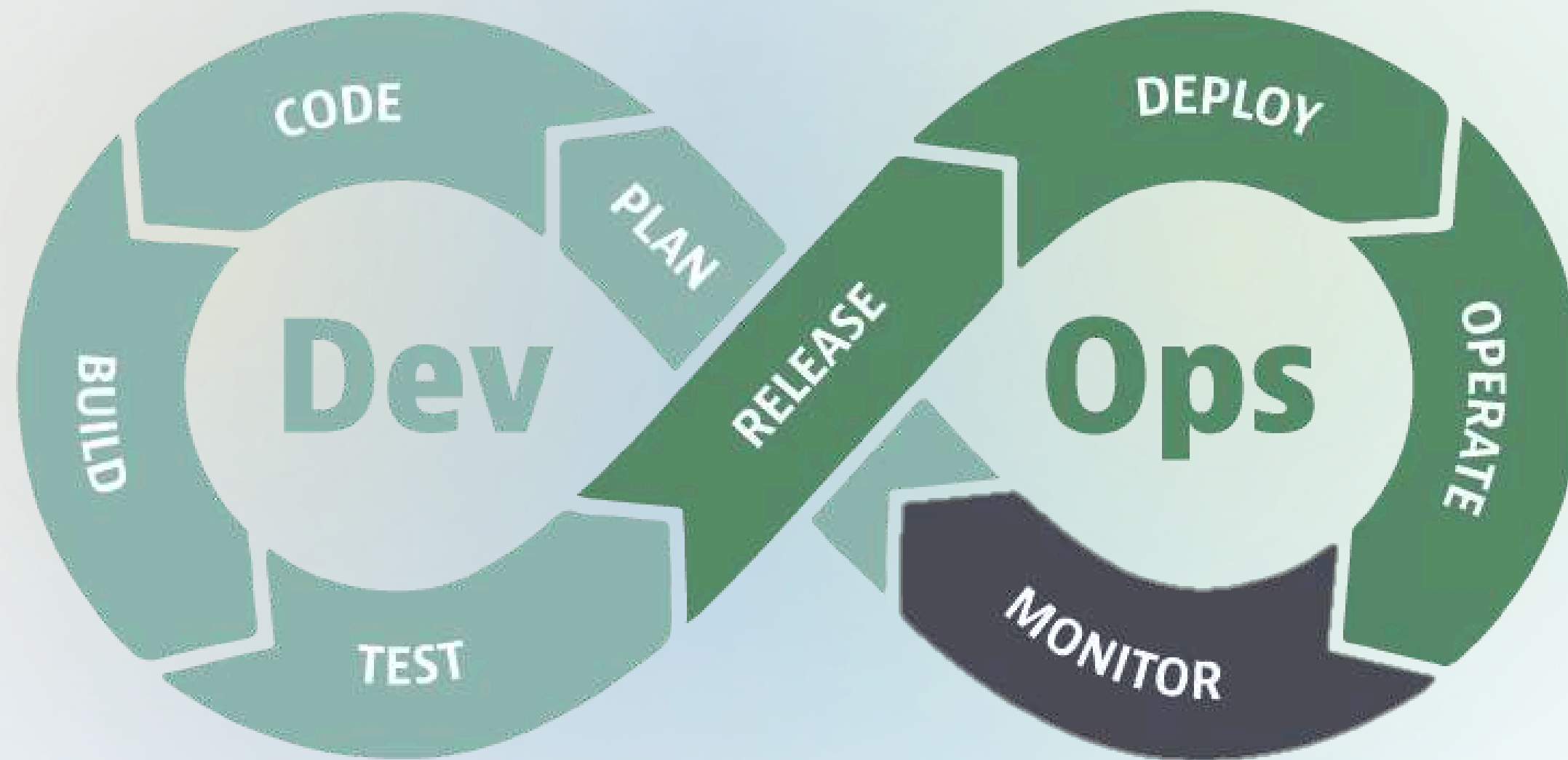
# DEVELOPMENT PIPELINE



```
$ docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS                               NAMES
171d99de17de   nginx:1.25                          "/docker-entrypoint...." About an hour ago Up About an hour 0.0.0.0:80->80/tcp, :::80->80/tcp   nginx
bfb535f04c0e   ghcr.io/nikcharge/frontend:latest   "/docker-entrypoint...." About an hour ago Up About an hour 80/tcp                             nikcharge_frontend_1
708cbf34a224   ghcr.io/nikcharge/backend:latest    "sh -c 'java -jar /a..." About an hour ago Up About an hour (healthy) 0.0.0.0:8080->8080/tcp, :::8080->8080/tcp  nikcharge_backend_1
f2bc3ec02c93   postgres:15                         "docker-entrypoint.s..." About an hour ago Up About an hour (healthy) 0.0.0.0:5433->5432/tcp, :::5433->5432/tcp  postgres
```

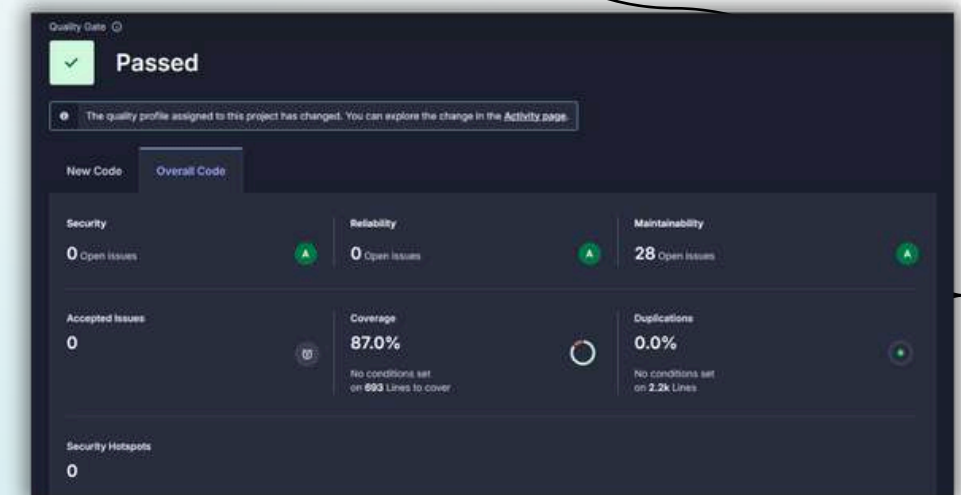
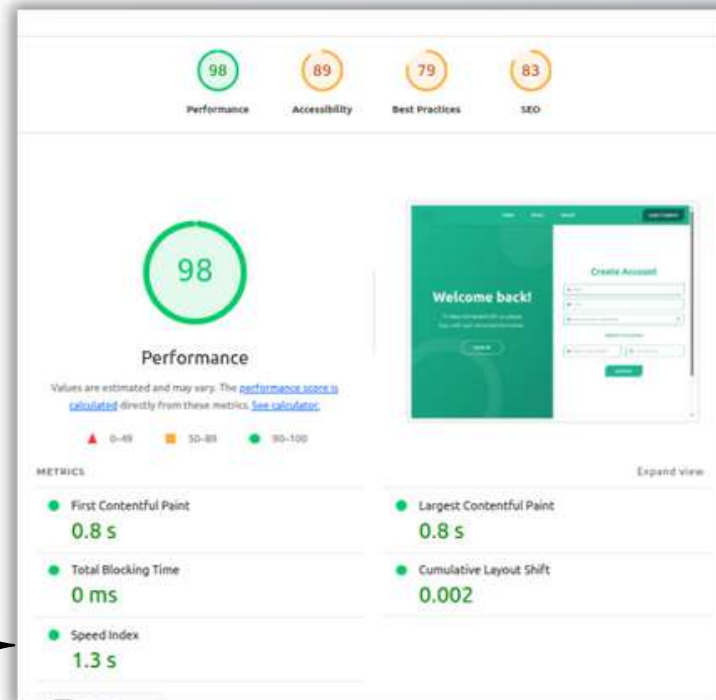


# DEVELOPMENT PIPELINE



# QA STACK

- **Unit & Integration** : JUnit, Mockito, Testcontainers
- **BDD & Functional** : Cucumber + Gherkin, REST-Assured
- **Performance Testing** : k6, Google Lighthouse
- **Code Quality** : SonarCloud (coverage, static analysis, quality gates)
- **CI/CD & Automation** : GitHub Actions (build, test, deploy)
- **Traceability & Dashboards** : Xray (Jira), Sonar dashboards



```
TOTAL RESULTS
checks_total.....: 4053 50.289593/s
checks_succeeded.....: 100.00% 4053 out of 4053
checks_failed.....: 0.00% 0 out of 4053

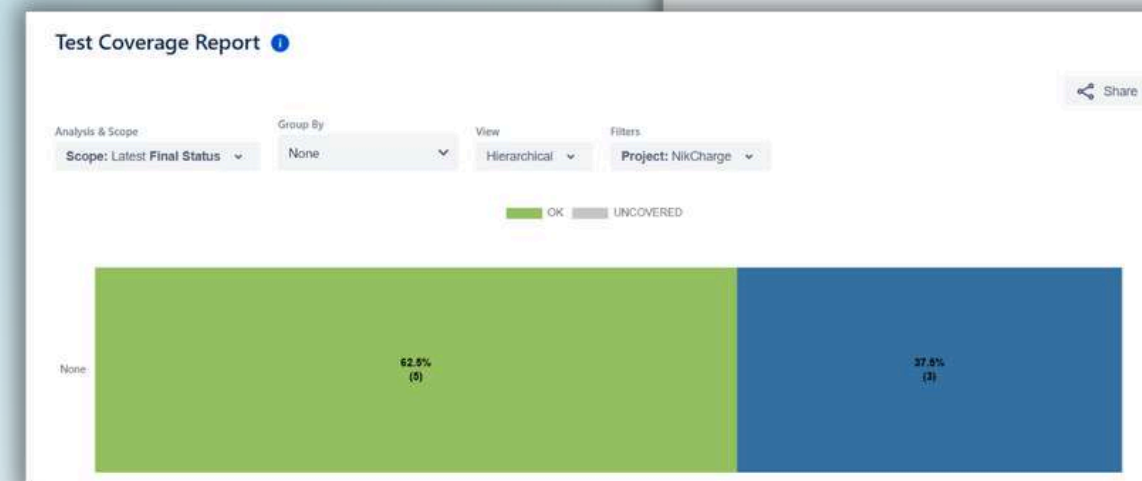
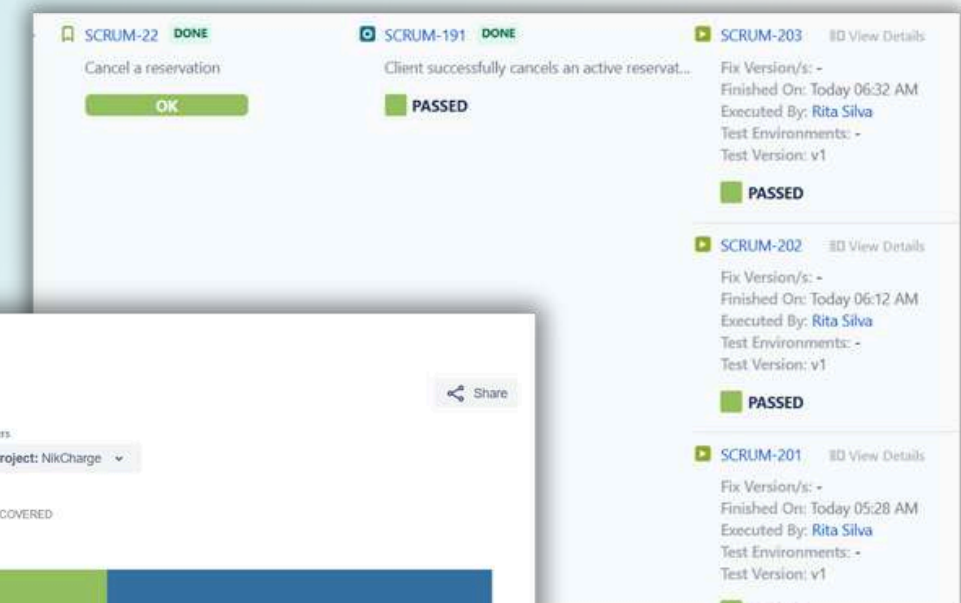
✓ signup status 200
✓ signup response has correct email
✓ login status 200
✓ login response has correct email
✓ login response has name
✓ station created
✓ charger created
✓ reservation created
✓ reservations fetched

HTTP
http_req_duration.....: avg=1.09s min=1.54ms med=245.23ms max=27.55s p(90)=1.06s p(95)=1.38s
{ expected_response:true }.....: avg=1.09s min=1.54ms med=245.23ms max=27.55s p(90)=1.06s p(95)=1.38s
http_req_failed.....: 0.00% 0 out of 3183
http_reqs.....: 3182 39.473635/s

EXECUTION
iteration_duration.....: avg=7.56s min=1.21s med=3.54s max=39.01s p(90)=20.32s p(95)=29.01s
iterations.....: 517 0.578839/s
vus.....: 50 min=50 max=50
vus_max.....: 50 min=50 max=50

NETWORK
data_received.....: 1.9 MB 24.14 KB/s
data_sent.....: 757.18 KB 9.0 KB/s

running (1m18.6s), 00/50 VUs, 517 complete and 0 interrupted iterations
default ✓ [=====] 50 VUs 1m18s
```

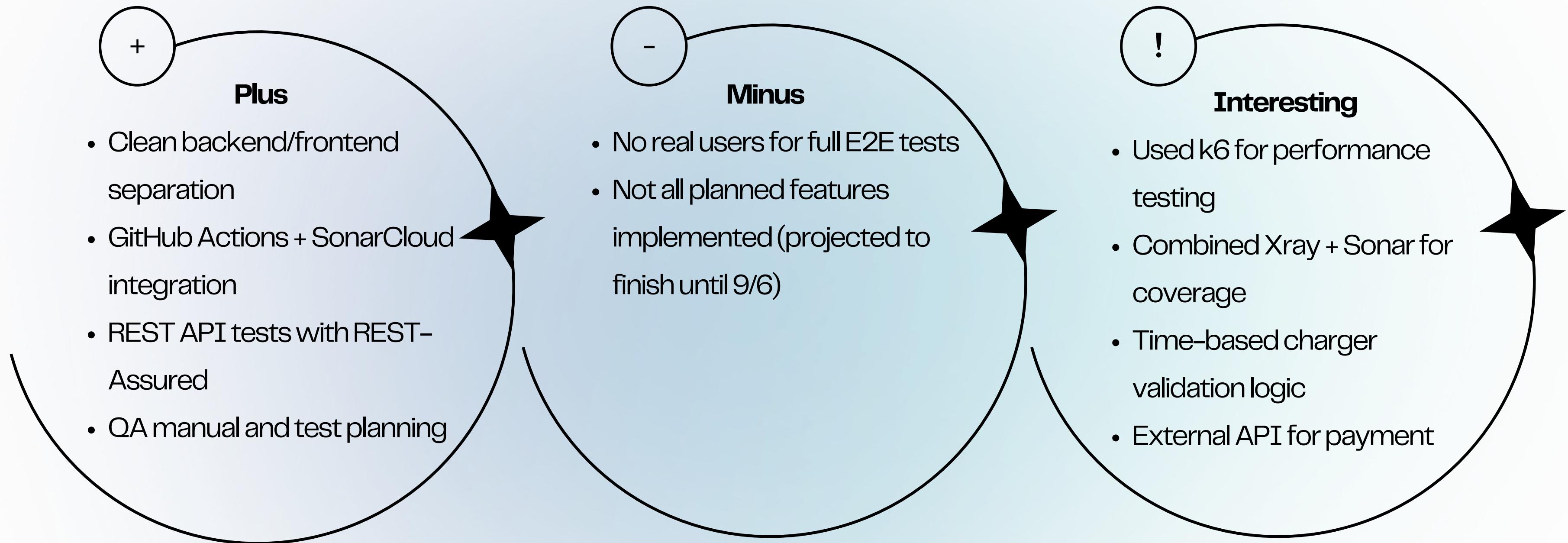


# PRODUCT TOUR

(Live demo)



# PROJECT SELF-REVIEW



# THANK YOU



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