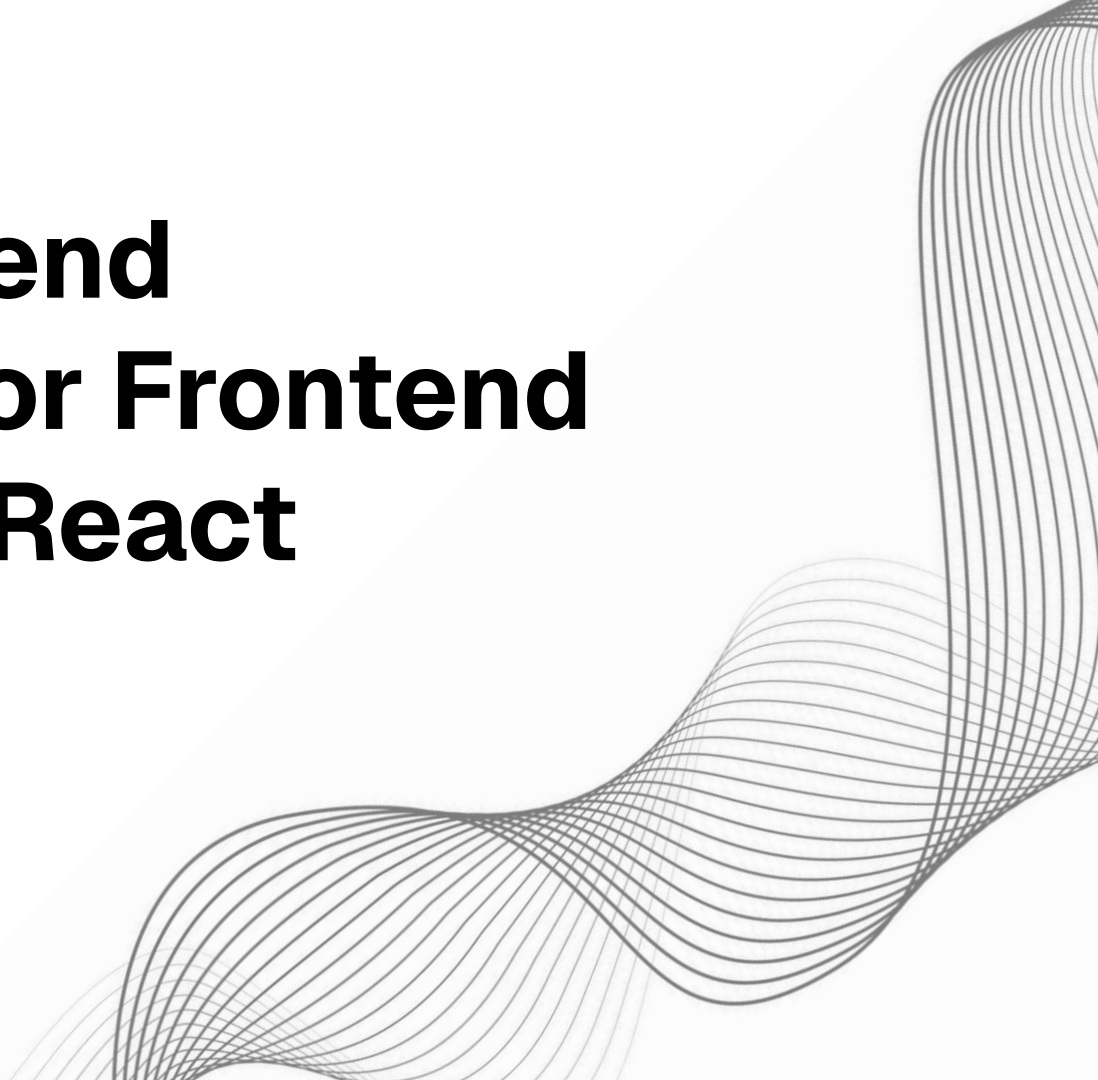


Django Backend Adaptation for Frontend Migration to React

Eduardo Ezponda

Trabajo de Fin de Grado I 250890



SPLOROTECH

Innovation consultancy for the management of funded technology projects



Platform for **managing** funded innovation projects

kronis

Planning, implementation and monitoring of project phases

The screenshot displays the Kronis website's landing page. The header includes a navigation menu with links: 'Why Kronis', 'Features', 'Automations & integrations', 'Pricing', and 'Help'. On the right side of the header are two buttons: 'Start free trial' and 'Request a demo'. The main content area features a large heading 'Experience the power of automagical EU Grant Management' with 'EU Grant' in green. Below this, a paragraph states: 'Kronis is the best-in-class software solution created to support your organisation with the justification procedures of your European R&D grants.' At the bottom of this section are two buttons: 'Start free trial' and 'Request a demo'. To the right, a preview of the Kronis software interface is shown. It includes a sidebar with icons for home, menu, charts, checkmarks, and settings. The main interface area has a dropdown menu set to 'All projects'. It contains two bar charts: 'Personnel costs' and 'Time', both showing data across 12 months. Below the charts is a 'Timesheets control panel' for the year 2023, featuring a table with columns for months (Jan to Dec) and rows for users (Ana Garcia and Denny Hoffmann). Each cell in the table contains a colored circle indicating status (green for on track, red for delayed, yellow for warning). At the bottom of the page, a section titled 'Supported programs' lists: 'Horizon Europe', 'Horizon 2020', 'EIT KICs Projects', 'Interreg', and 'Digital Europe Programme'.

Why Kronis Features Automations & integrations Pricing Help Start free trial Request a demo

Experience the power of automagical EU Grant Management

Kronis is the best-in-class software solution created to support your organisation with the justification procedures of your European R&D grants.

Start free trial Request a demo

Supported programs

Horizon Europe Horizon 2020 EIT KICs Projects Interreg Digital Europe Programme

Problems in Kronis

Scalability: Difficulty in finding profiles with full Django experience



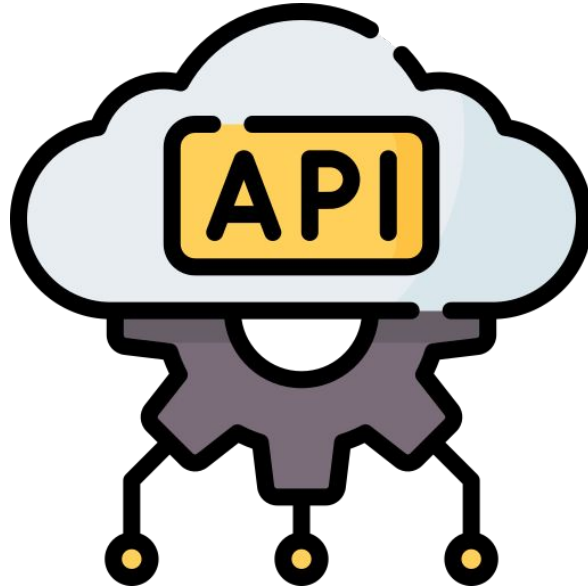
Solution

Migration to React/NextJS to separate backend and frontend



Adaptation

API: adapting Django to communicate with React



Objectives

Optimisation

Scalability

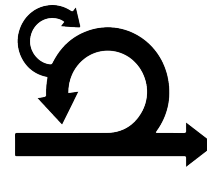
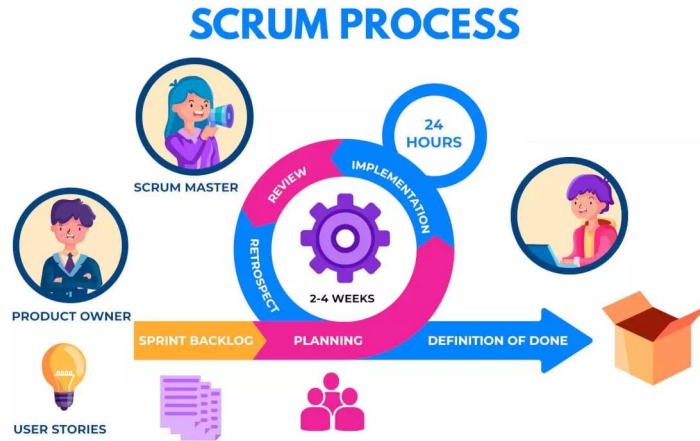
User experience

Efficiency

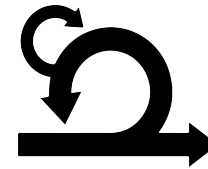


Methodology

Scrum is an agile framework for managing projects, focusing on collaboration, iterations and incremental deliveries.



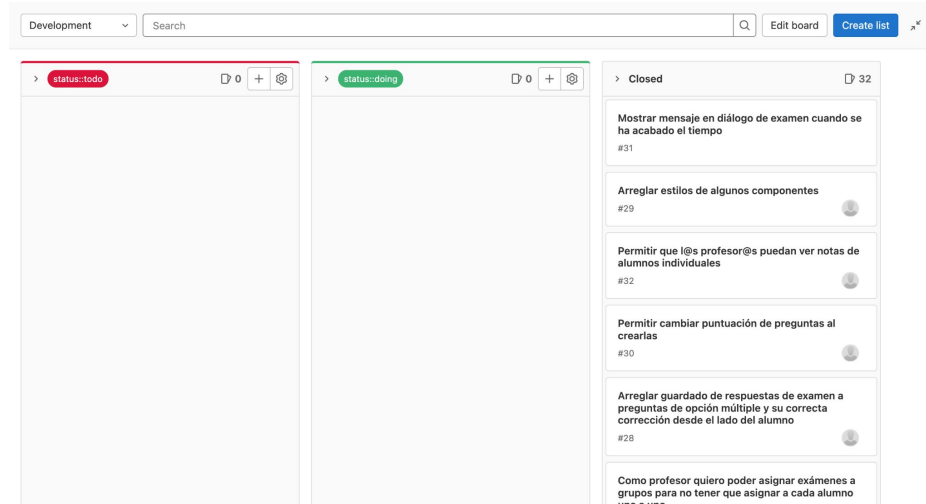
Sprint 1



Sprint 2

GitHub:

Version control platform for easy project management to **organise tasks**



Backend development

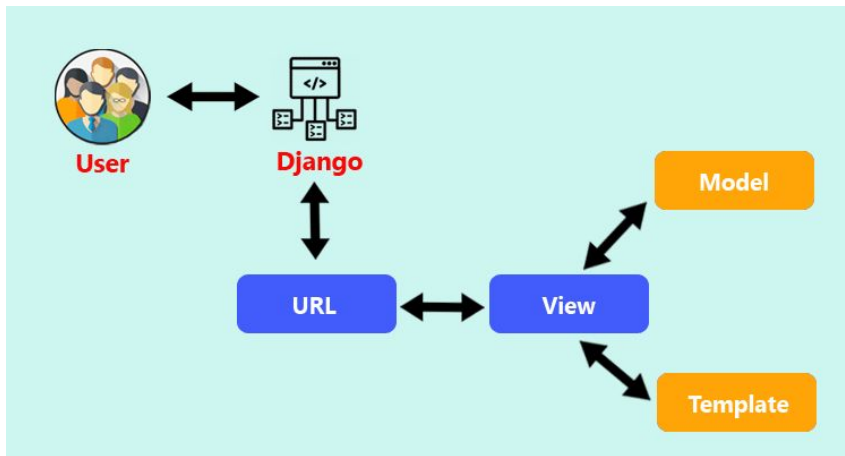
Django



Django

Model - View - Template Pattern:

- Model → Business logic and Data
- View → User interaction
- Template → Data presentation



Django Rest Framework (DRF)

API creating with Django

JSON data exposure

Simplify development



Frontend development

NextJS

The Next.js logo is displayed in white text on a solid black rectangular background. The text reads "NEXT.js" in a bold, sans-serif font, with the ".js" part being smaller and positioned to the right of "NEXT".

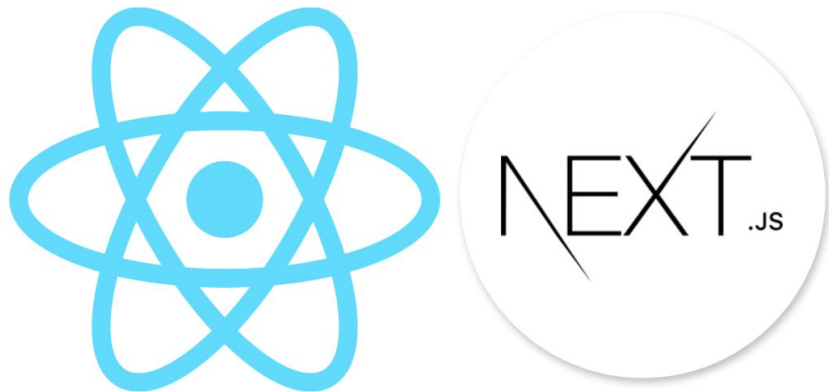
NEXT.js

NextJS

React Framework → high-performance apps

Hybrid rendering:

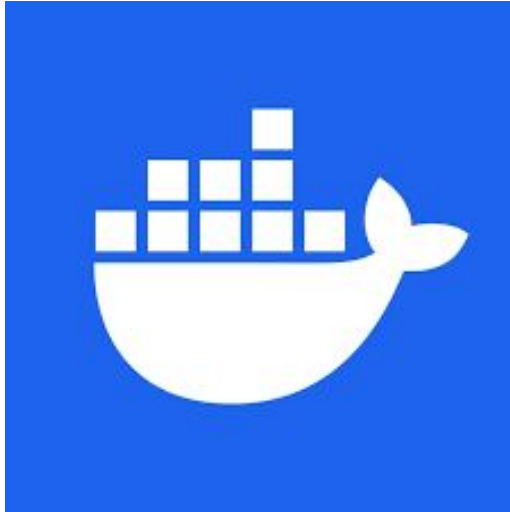
- SSR: Faster initial load
- SSG: Optimized static content



Kronis Architecture

Docker: Frontend, Backend, PostgreSQL, Redis

AWS: Frontend, Backend, load balancers



Silk

Optimises DB queries

Identifies inefficiencies

Integrates with Django



Migration: Bootstrap to Tailwind CSS

- Before (Django + Bootstrap):
Predefined styles, less flexibility
- After (NextJS + Tailwind):
Utility-first, customization

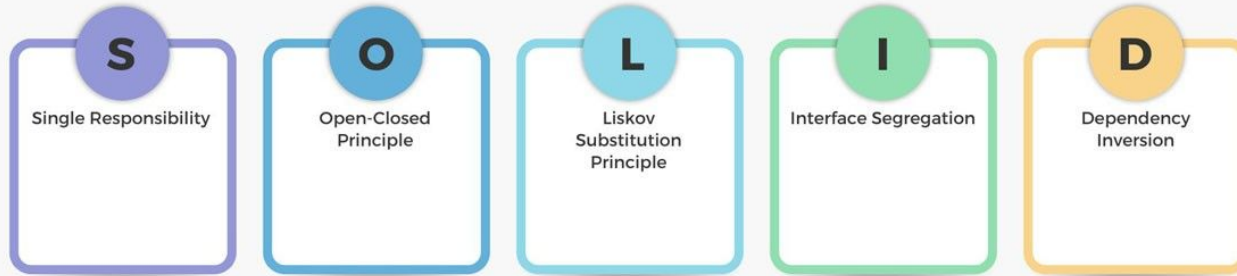


vs



Frontend project

SOLID PRINCIPLES



Project modifications

CRUD endpoints → Models

Travel actions



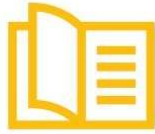
Timesheets - CRUD Endpoints

CRUD operations for models in Timesheets

 wallarm



Create



Read

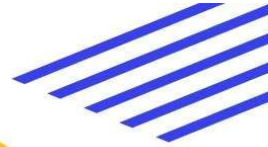
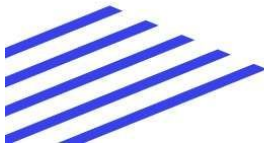


Update



Delete

C R U D



Sploro
disrupting innovation

Travel Actions - Endpoints

Actions for travel management:

- Close
- Request reopen
- Cancel reopen request
- Reopen
- Accept/Reject reopen requests



Development of a web interface

Facilitate API interaction

Structured way to test API endpoints



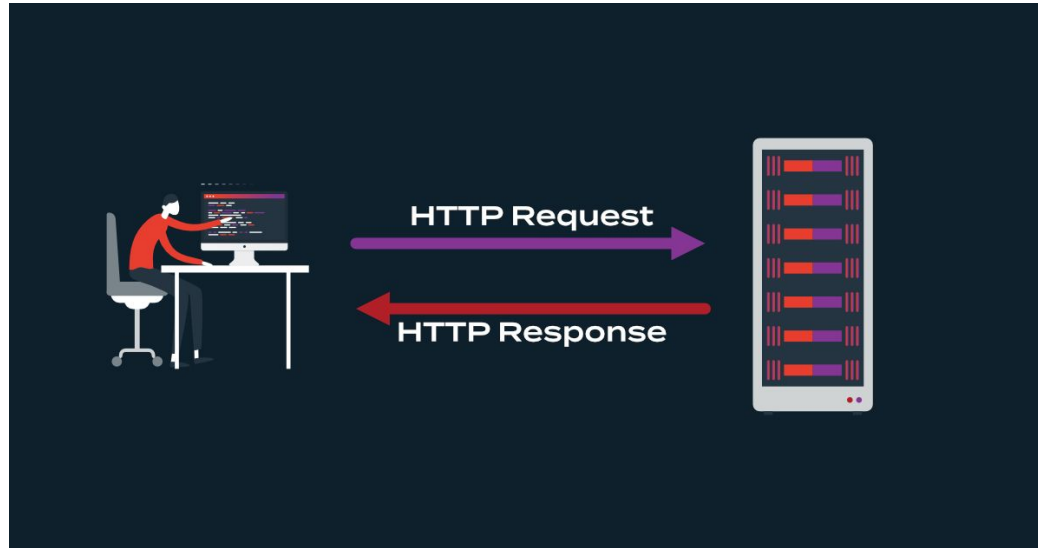
REST API

Interface features

GET, POST, PUT, DELETE requests

Dynamic Data Insertion

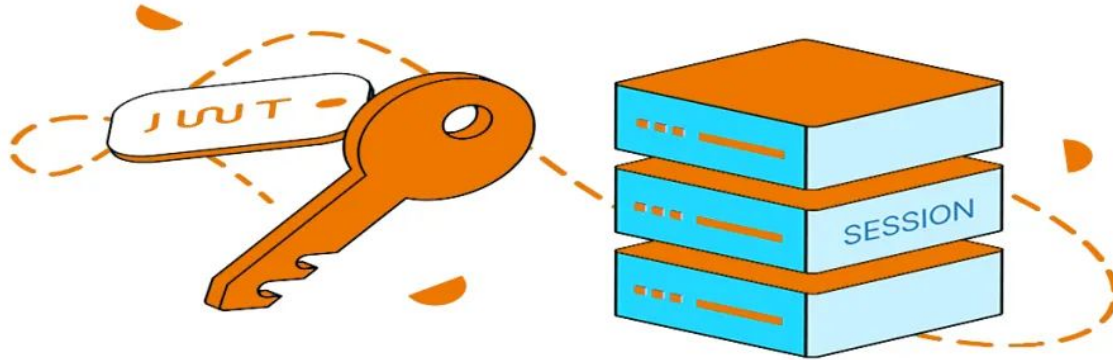
Response visualization



Authentication and security

Login system

Session token authentication for requests



Local implementation of Kronis

Removed dependency on sensitive data

Maintained essential settings

```
EMAIL_HOST=smtp.office365.com
EMAIL_HOST_USER=splora@sploro.eu
EMAIL_HOST_PASSWORD=TryToAvoidSendingEmails
EMAIL_USE_TLS=True
EMAIL_PORT=587

GOOGLE_API_KEY=TryToAvoidUsingGoogleAPI

USE_AWS_S3_STORAGE=False
```

Example of an API response

List

Select an option:

Worker

Send List

```
[
  {
    "id": "1",
    "avatar_url": "/media/profile_avatars/default.png",
    "name": "Eduardo",
    "surname": "Ezponda",
    "position": "Developer",
    "is_organisation_manager": true,
    "n_projects": 0,
    "is_active": true,
    "activation_pending": null,
    "activation_disabled": false,
    "activation_disabled_message": null
  },
  {
    "id": "2",
    "avatar_url": "/media/profile_avatars/default.png",
    "name": "Isa",
    "surname": "Quílez de la Torre",
    "position": "Doctor",
    "is_organisation_manager": false,
    "n_projects": 0,
    "is_active": false,
    "activation_pending": null,
    "activation_disabled": false,
    "activation_disabled_message": null
  }
]
```

Unit testing

No need for an active database

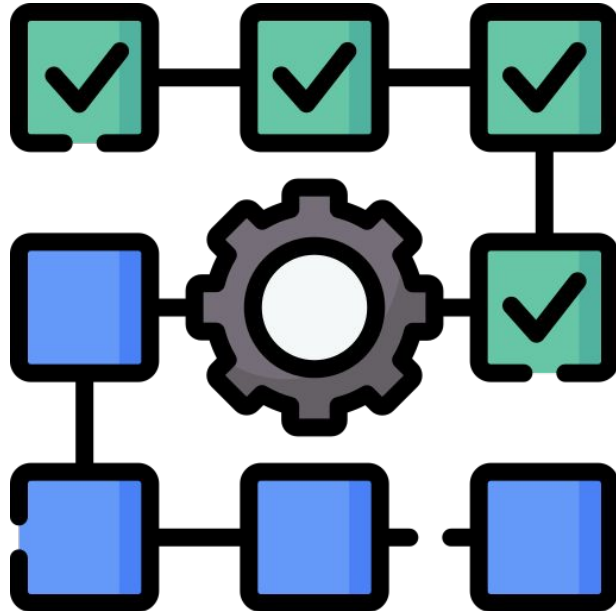
Detects errors before deployment



Unit testing

Ensures functionality without database access

Mocks to simulate dependencies



Unit testing

186 tests executed successfully 

```
(venv) PS C:\Users\eduez\Desktop\sploro-app\sploro_app> python manage.py test api.tests  
Found 185 test(s).
```

```
Ran 185 tests in 0.247s
```

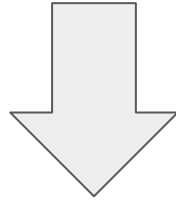
```
OK
```



Future lines

Kronis will evolve with EU subsidy needs

Splorotech aims for full automation



Become a leader in efficient
innovation project solutions

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