



📍 Aveiro Tech City Living Lab

AI-Powered Platform for Smart City Issue Detection & Resolution

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11.03.2025

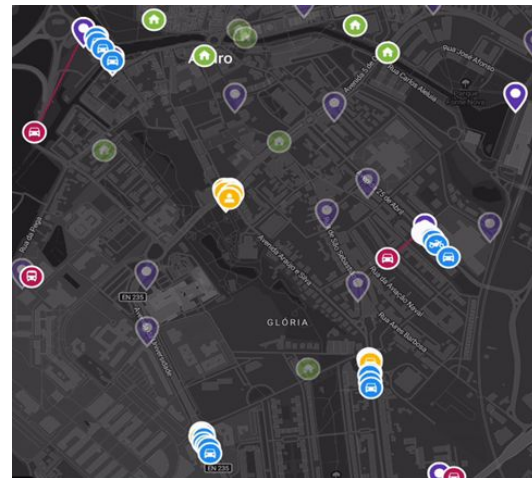
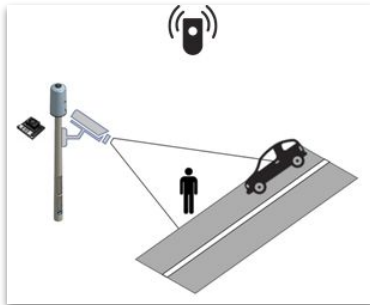
Contextualization

- **Manual incident reporting** – Citizens report incidents manually, often through inefficient channels like phone calls or emails.
- **Lack of real-time validation** – Authorities have no automated way to verify whether an incident has been resolved.
- **Unstructured issue management** – Authorities lack an organized information system to track and prioritize the most urgent and recurring urban issues efficiently.



Aveiro Tech City Living Lab

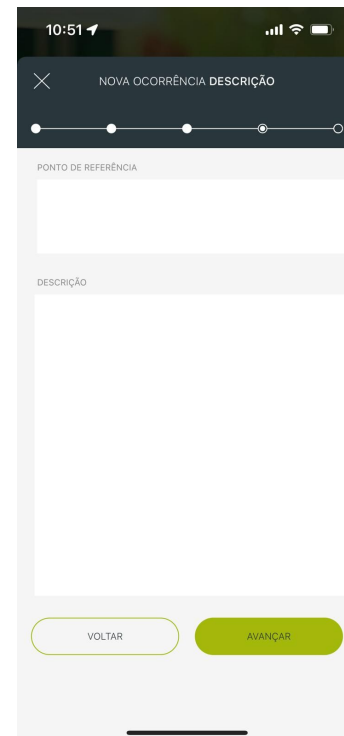
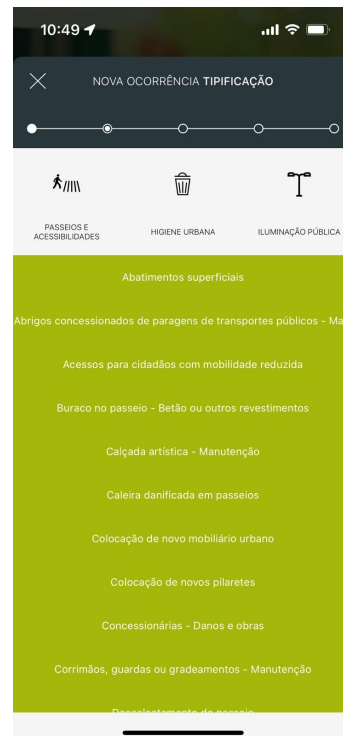
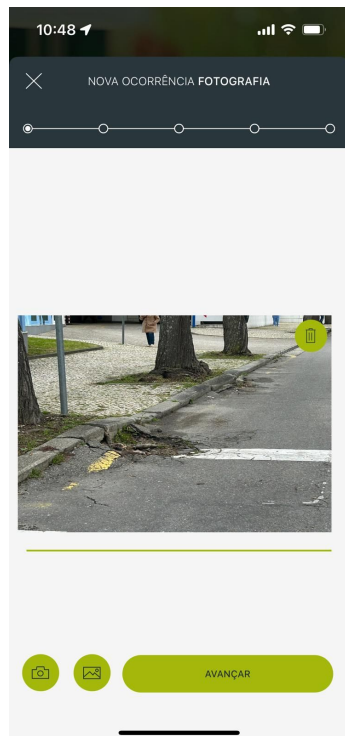
- **Detection** – Identifying resolved issues and finding new ones in real time.
- **Integration** – Connecting with the ATCLL infrastructure for event persistence.
- **Validation** – Testing with the autonomous vehicle (PIXKIT) in a controlled environment.



State-Of-The-Art



**Na Minha
Rua Lx**



Requirements Elicitation



Apple store (Feb 10)

1,4 de 5

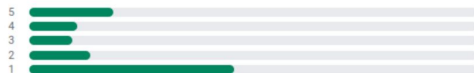
185 classificações



Play store (Feb 10)

2,4

352 críticas



Opengreengarage

★ ★ ★ ★ ★ 26 de agosto de 2024

Muito difícil de comunicar ocorrências

1 pessoa considerou esta crítica útil

F C

★ ★ ★ ★ ★ 10 de fevereiro de 2024

Quando se consulta uma ocorrência (por exemplo, através do mapa), um dos campos que deveriam ser visíveis é a data de criação da ocorrência. A não ser que o autor inclua a data na descrição da ocorrência, ficamos sem saber quando é que foi registrada.

Este conteúdo foi útil?

Persona – Local Resident

- **Background:** João is a citizen who frequently commutes within the city and wants to contribute to the improvement of urban quality.
- **Motivations:**



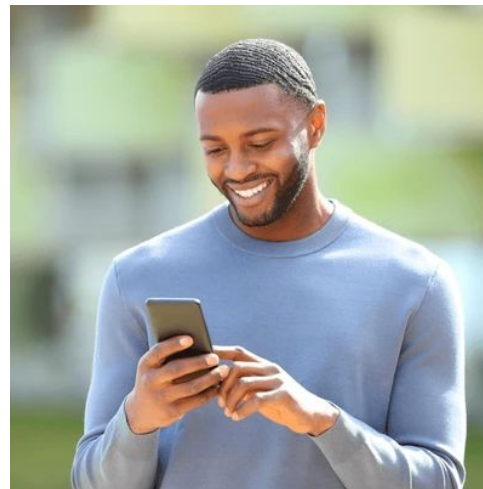
Easy-to-use mobile app



Notification feedback



Check occurrences status



Persona: João, 35 years old

Persona – City Control Operator

- **Background:** Ana is a municipality employee working in the city's urban management department, monitoring issues reports.
- **Motivations:**



System to categorize and group reports



Map-based interface

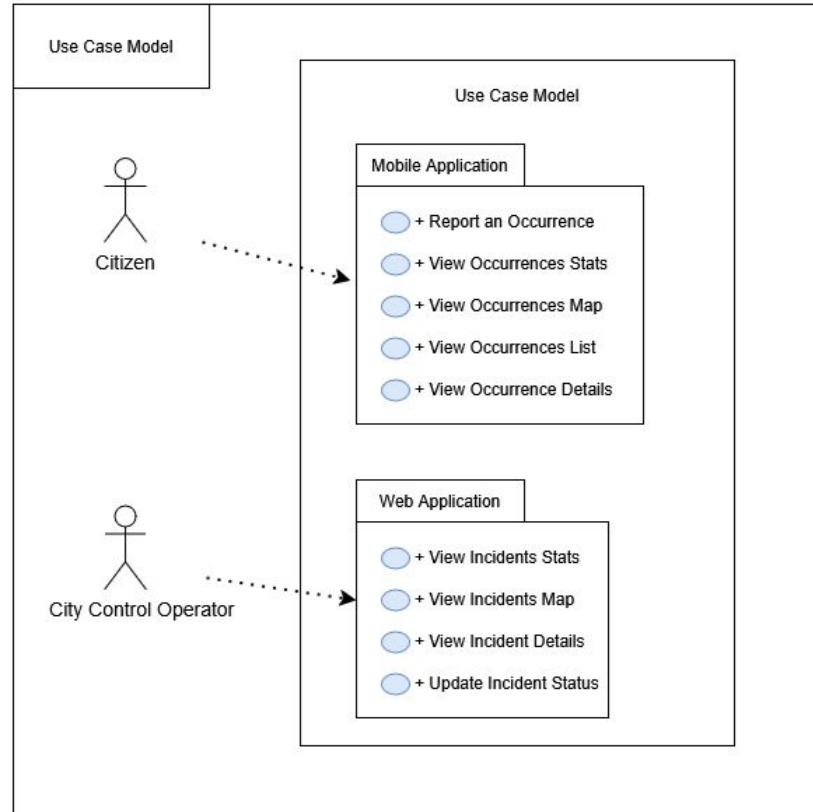


Dashboard with priority ranking



Persona: Ana, 45 years old

Use Cases



Functional Requirements

- **Mobile Application (Citizen)**
 - Report urban issues with **AI descriptions**
 - Track status and history of occurrences
 - Get notified when the problem is fixed.
- **Web Platform (City Control Operator)**
 - Manage **non-duplicated** incidents via dashboard and map
 - Update status and analyze historical data



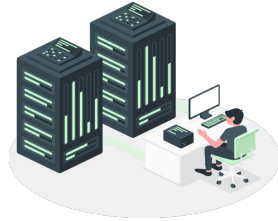
Future Requirements: Discussion with CMA representatives

Non-Functional Requirements

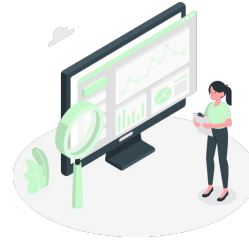
Performance



Scalability



Availability



Security & Privacy



Architecture

- Agile methodology

[Documentation](#) / [resources](#) / [architecture](#) /

Add file ▾



pedropintoo docs: architecture v1.0.1

48b1dad · 4 minutes ago

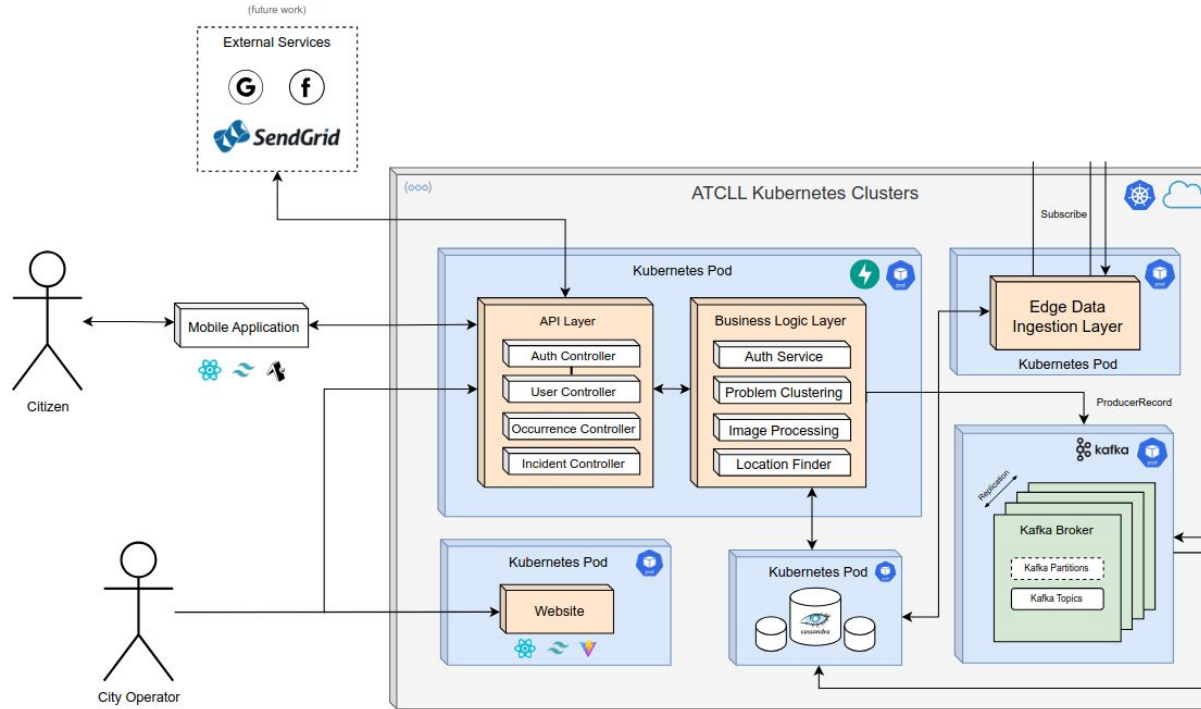
History

Name	Last commit message	Last commit date
..		
0.0.1	docs: architecture 0.0.1	3 weeks ago
0.0.2	docs: architecture v0.0.2	2 weeks ago
1.0.0	docs: system architecture in docusaurus deploy	2 weeks ago
1.0.1	docs: architecture v1.0.1	4 minutes ago
.gitkeep	docs: first commit	3 weeks ago



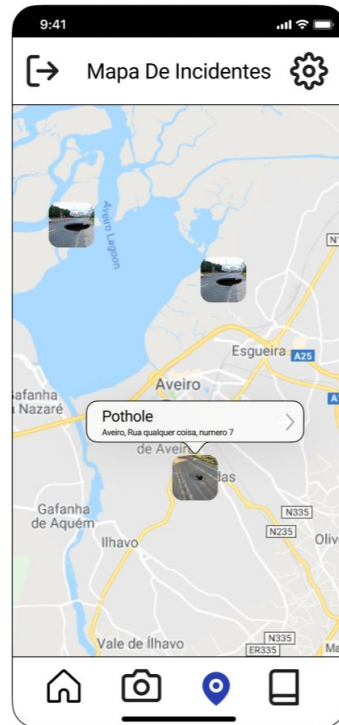
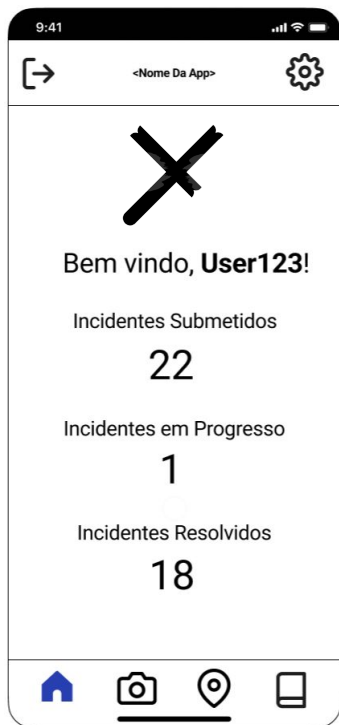
Architecture

- Detailed version (v1.0.1)



Mockup – App Mobile

How to boost installation?
How to increase usage?



Mockup - Web Platform

Sign out

AVEIRO
Câmara Municipal

Início

Mapa

Pendente

Em Progresso

Resolvidos

Painel de Controlo

Semáforos

Falhas ou configurações incorretas.

8

Drenagem Urbana

Acúmulo de água nas vias ou falhas no escoamento.

5

Pavimento

Buracos e superfícies irregulares.

13

Sinais de Trânsito

Sinais ausentes, danificados ou obstruídos.

23

Infraestrutura

Bancos, lixeiras ou abrigos de autocarros danificados.

4

Iluminação

Postes apagados ou com funcionamento irregular.

9

Outros

Qualquer outro problema urbano.

1

Categoria	Gravidade	Estado	Data de Submissão	Ocorrências	Detalhes
Semáforos	Alto	Em progresso	11/01/2025	10 users	
Semáforos	Médio	Pendente	13/02/2025	10 users	
Semáforos	Baixo	Pendente	11/01/2025	10 users	
Semáforos	Médio	Em progresso	05/12/2024	10 users	
Semáforos	Alto	Resolvido	09/11/2024	10 users	
Semáforos	Baixo	Resolvido	12/09/2024	10 users	
Semáforos	Baixo	Resolvido	23/09/2024	10 users	
Semáforos	Alto	Pendente	20/07/2024	10 users	
Semáforos	Alto	Pendente	15/05/2024	10 users	
Semáforos	Baixo	Resolvido	11/05/2024	10 users	
Semáforos	Médio	Resolvido	05/11/2023	10 users	
Semáforos	Médio	Em progresso	01/11/2023	10 users	

← Prev

1 2 3 ... 5 6 7

Next →

Sign out

AVEIRO
Câmara Municipal

Início

Mapa

Filtrar por:

☐ Selecionar todos

☐ Pavimento

☒ Semáforos

☒ Sinais de Trânsito

☒ Iluminação

☒ Infraestrutura

☐ Drenagem Urbana

☒ Outros

1 Buracos e superfícies irregulares

Sign out

AVEIRO
Câmara Municipal

Início

Mapa

Ocorrência 1

Rua Camões da Beira, Oliveirinha

Descrição

Buraco na estrada. Perigo iminente para os veículos.

Categoria: Semáforos

Gravidade: Alta

Ocorrências: 5

Estado: Pendente

17-03-2024

Ref # NJ-FRE-7P23

Categoria: Urbano

Pendente

Em Progresso

Resolvidos



Questions?

📍 Aveiro Tech City Living Lab

AI-Powered Platform for Smart City Issue Detection & Resolution



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