A Better City

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Description

We are all aware that public services do not always respond in time to actual problems in the city. Such problems may include open drains, broken asphalt with no safe passing options, damage caused by strong winds, and other similar issues. Our project aims to bring solutions to these problems.

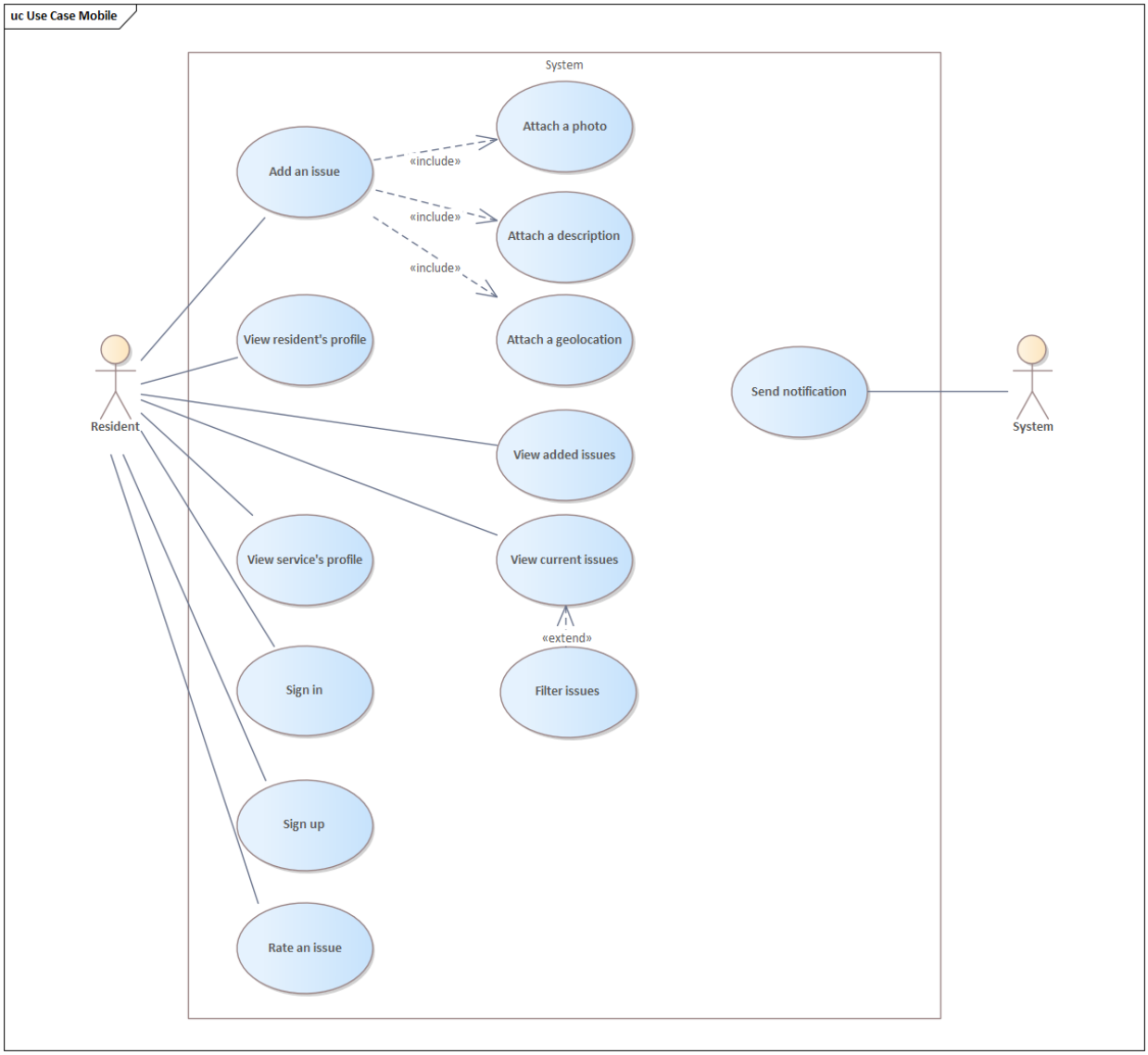
The 'A Better City' project is designed to improve the condition of the city by enabling public services to respond more quickly to current problems and prioritize them based on user ratings for a particular problem.

Functionality

The mobile application will provide the following functionality:

1. Adding a new issue, which includes:
    a. Attaching an issue's photo in .png or .jpg format
    b. Attaching a description of the issue (in plain text)
    c. Attaching an issue's geolocation
    d. Adding an appropriate category
2. Viewing the current issues added by other users (residents)
3. Filtering the issues by category or status
4. Rating an issues by clicking a like button
5. Viewing the user's (resident's / service's) profile
6. Viewing the user's (resident's) added issues
7. Sending a notification when an issue's status changes. The statutes are:
    a. Moderation
    b. Published
    c. Deleted
    d. Solved
    e. Solving
8. Signing in
9. Signing up

Use Cases



** The diagram represents just the use cases for the mobile application, which is designed for the residents. A complete diagram can be found in the project's git repository.*

Target User Group

City residents who want to report issues they have observed in their neighborhood, such as broken sidewalks, potholes, graffiti, or litter.

Local business owners who want to report issues related to their business, such as damaged storefronts or overflowing trash bins.

Community leaders and activists who want to track and address issues affecting their neighborhood, such as unsafe traffic conditions or inadequate public services.

City officials and service providers who want to monitor and respond to issues reported by residents and businesses in a timely manner, such as public works departments or sanitation services.

Tourists and visitors who want to report issues they have observed while exploring the city, such as broken signage or missing public amenities.

Analysis of the Existing Solutions

To create a quality and relevant product, it is necessary to analyze the existing solutions on the market. In each application, we identified the positive and negative aspects that will help in creating our project. The following applications were found on the App Store:

1. SeeClickFix
   One of the most popular applications that provides the ability to notify services about problems in the city.

   Pros:

   - Convenient and intuitive navigation.
     Navigation is implemented using a bottom panel that contains the following elements: Home, Notices, New Request, Requests, Profile.

   - Convenient switching between the type of problem images - through a list or on a map.

   - Adding a problem is divided into several understandable steps. The first step is adding a photo, the second step is adding

geolocation, the third step is selecting a category, and the fourth step is checking the data and confirming the request.

Cons:

- Lack of registration directly in the application.
  Registration requires a transition to the developer's website.

2. Fix My Street
   An application that allows users to notify city services about problems in Brussels.

   Pros:

   - Simple navigation.
     The main page has one button that allows you to add a new problem.

   - Convenient division of the problem addition process into several steps.

   - A wide range of problem categories.

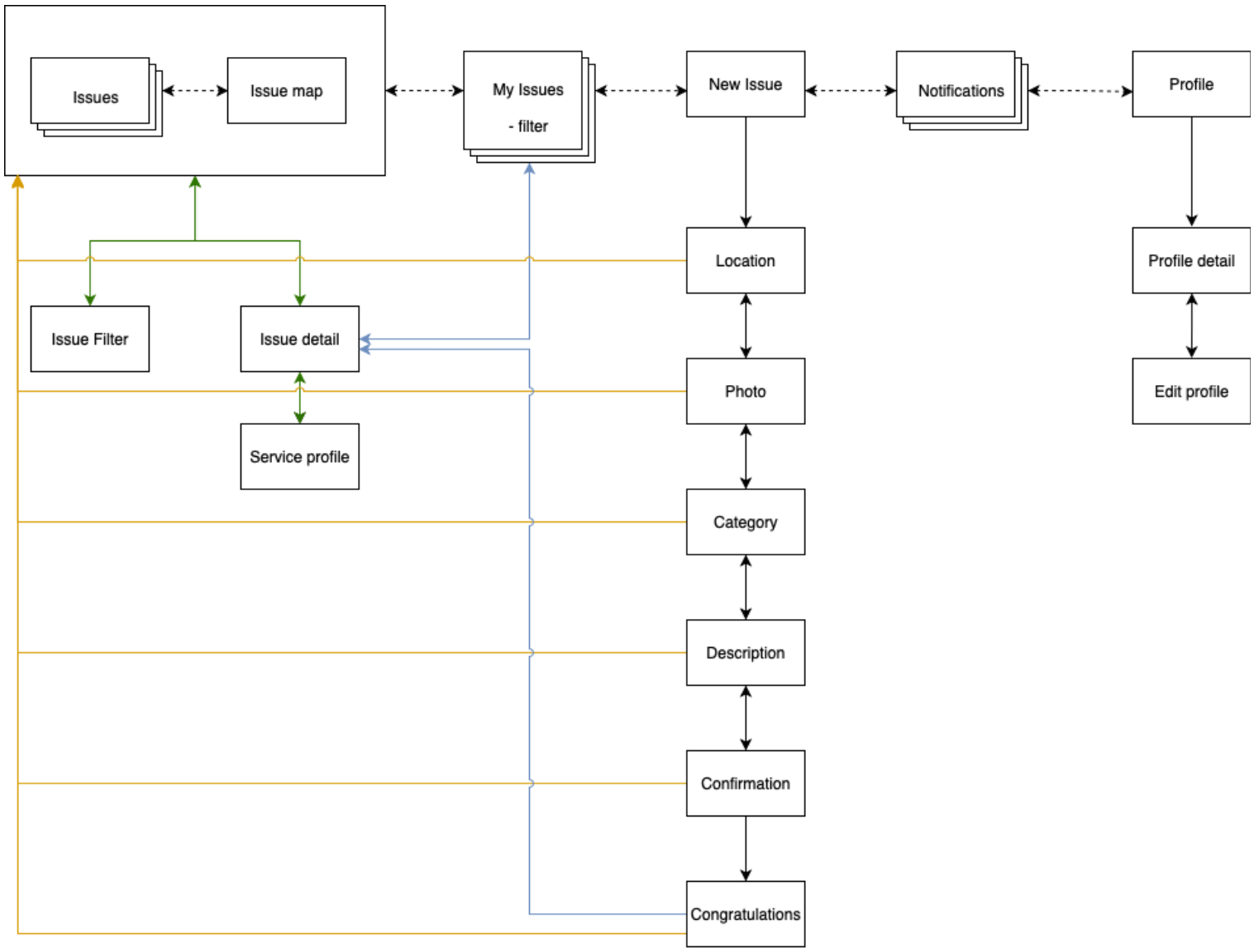
   - Notifications to the user who added the problem at every step of the solution.

   Cons:

   - No ability to view problems added by other users.

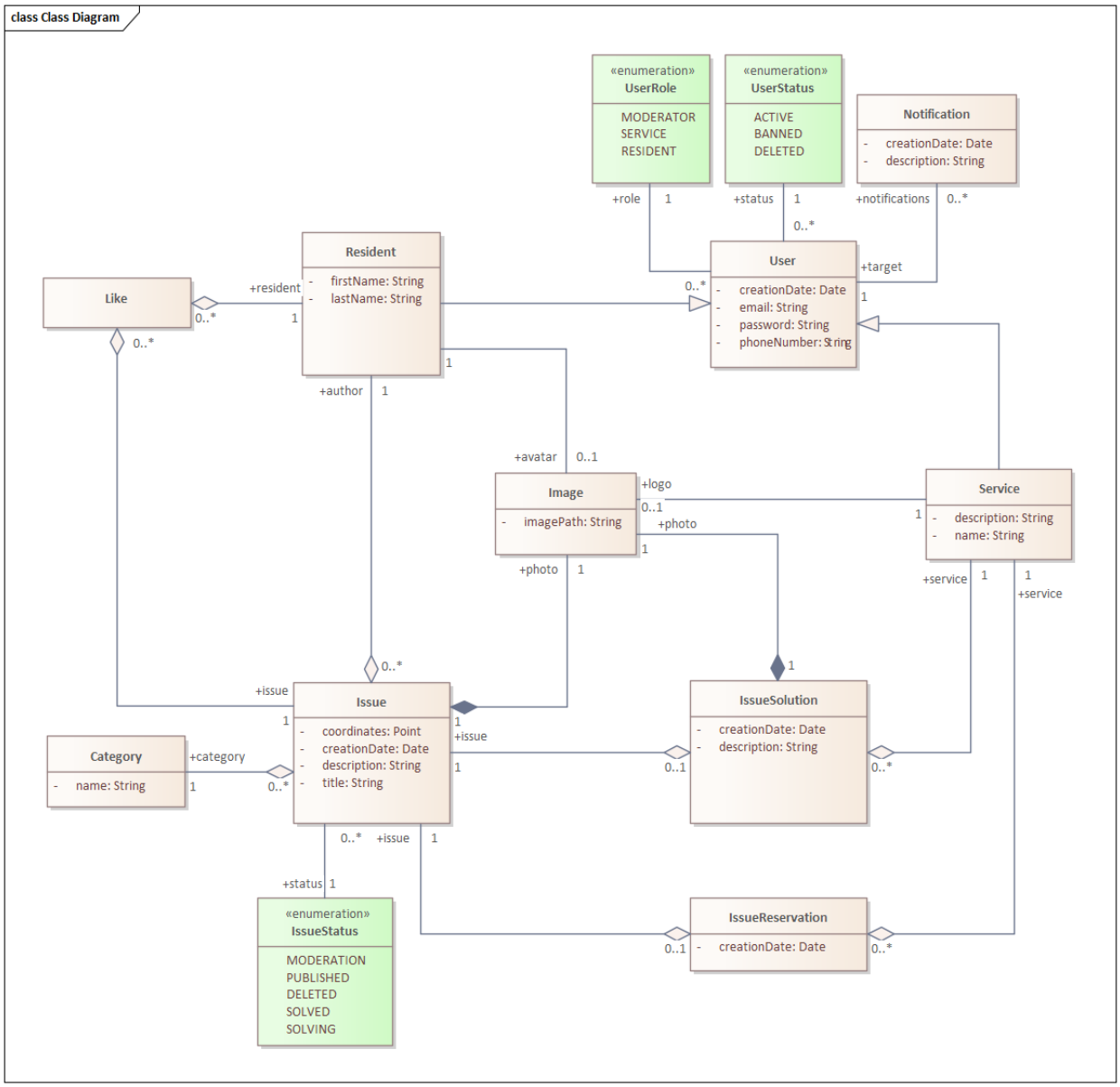
It should be noted that none of the applications function in the Czech Republic, so the functionality of the applications may be incomplete, which can lead to an inaccurate assessment of the positive and negative aspects of the application.

Screen Map



** Some arrows have a different color for a better readability.*

Class Diagram



Prototype

We had to make our own components for the prototype, because there were not free and high-quality components available for our project. The prototype can be found in the project's git repository or in the references section.

Testing

Jakob Nielsen's Usability Heuristics were used for testing.

1. Visibility of System Status

   Each screen of our prototype contains a top bar with the name of the current screen, allowing the user to easily orient themselves in the application.

2. Match between System and the Real World

   Our prototype uses understandable and simple language for the average user.

3. User Control and Freedom

   Screens that are not directly accessible from the navigation panel have a "Back" button on the top bar for quick return to the previous state.

4. Consistency and Standards

   Our prototype does not use elements or words that indicate different actions or have different meanings.

5. Error Prevention

   Our prototype contains "Back" and "Close" buttons for returning to the previous state or closing the screen.

6. Recognition Rather Than Recall

   Each screen of our prototype contains the name of the current screen and the ability to return to the previous state, allowing the user to minimize memorizing their actions and facilitate their orientation in the application.

7. Flexibility and Efficiency of Use

   In the first version of the prototype, a mistake was made. It was assumed that there would be two possibilities for displaying problems in the city: as a list or on a map. Initially, it was planned to create two separate screens, between which there was no convenient switcher.

   In the corrected version of the prototype, a convenient switcher for displaying problems was added, allowing experienced users to speed up their interaction with the application.

8. Aesthetic and Minimalist Design

   In the first version of the prototype, it was assumed that adding a new problem would be done in one step. This solution violates this point.

   In the corrected version of the prototype, the process of adding a new problem was divided into several steps. This reduced the amount of information on the screen and simplified the user's interaction with the application.

9. Recognize, Diagnose, and Recover from Errors

   Our prototype does not have notifications that are unclear to the user.

10. Help and Documentation

    Our prototype is based on simple and intuitive interaction. An ordinary user will not need any special documentation to use the application.

References

Project's git repository: https://gitlab.fel.cvut.cz/mingadar/pda

Prototype:
https://www.figma.com/proto/FBVf7kaAyHfietPQXDUQx2/Mobile?page-id=

0%3A1&node-id=1-4&viewport=211%2C711%2C0.2&scaling=min-zoom&starting-point-node-id=1%3A4