

Assignment 1

SENG 696

Research Matchmaking Project

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Introduction

The key idea of this project is to connect clients and providers over a platform. Using this, providers are able to create their projects with description of what they desire and expect a pool of bid requests from clients who are willing to start the engagement with the provider. On the other hand, clients can see the providers' projects in the platform and try to apply to any of them that they are willing to do.

System Specifications

The designed multi-agent system is responsible for the following items:

1. **Provide a mechanism to connect providers and clients**

The ability to search and filter projects and bidding on the projects should be implemented here.

2. **Handle financial matters among clients, providers, and the system**

Sending contracts and managing them, taking a share of the total amount for the system.

3. **Provide an easy-to-use environment**

It should be easy for both clients and providers to use the platform, monitor the progress and communicate with each other.

There are three types of users in the platform:

1. **Provider:** they will provide projects and bring money to the platform. Each provider will have a name, website, logo, resume, special keywords, and hourly compensation.
2. **Client:** they will apply and potentially work on the providers' projects. The history of each client will be available to providers. The system will receive 30% of their income for any transaction.
3. **Guest:** they can see the platform and search for a specific keyword and browse the clients and their projects, but they cannot see the hourly compensation for any provider.

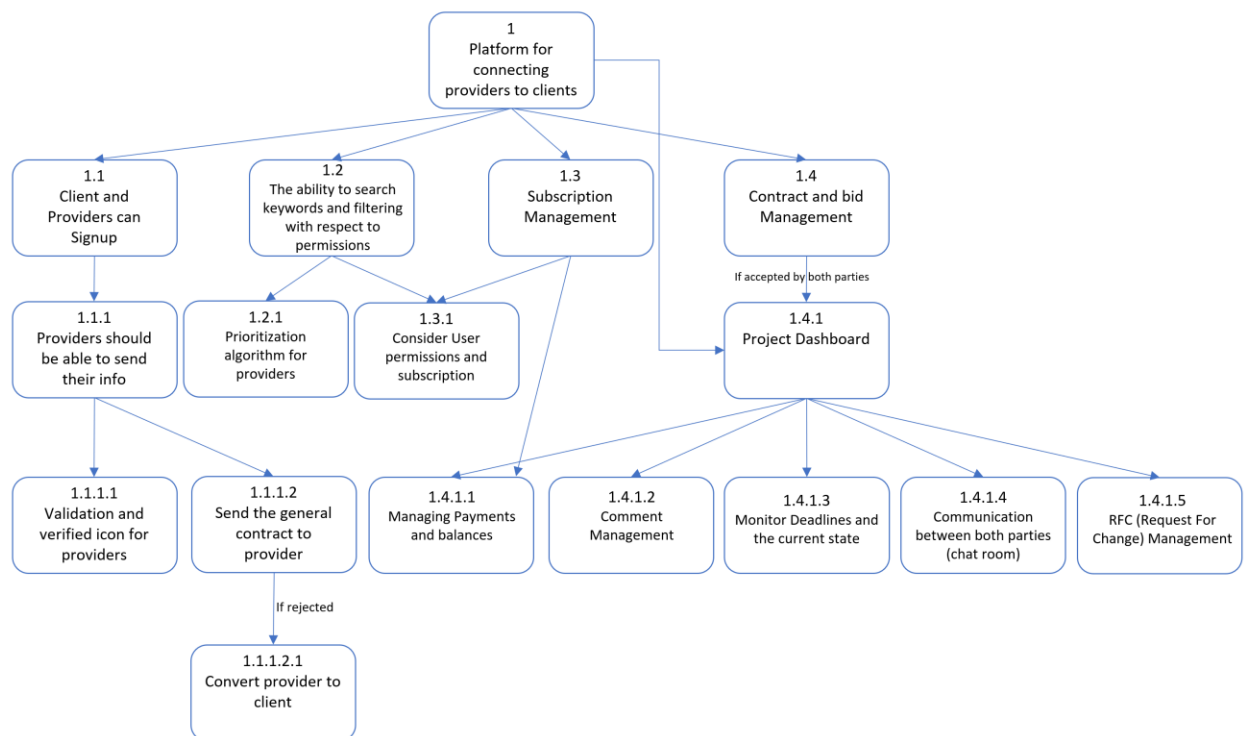
Assumptions:

- Both clients and providers have a balance amount in the platform. Providers can pay to increase their balance in the application. Clients can request withdrawal to receive the balance in their local bank.

- Providers can subscribe to premium plan and there will be a monthly cost for them which will be managed by the server.
- The actual payment using a third-party service will not be implemented in this project. The payments will be treated as a Blackbox. However, an amount will be transferred to a provider account to test the platform.

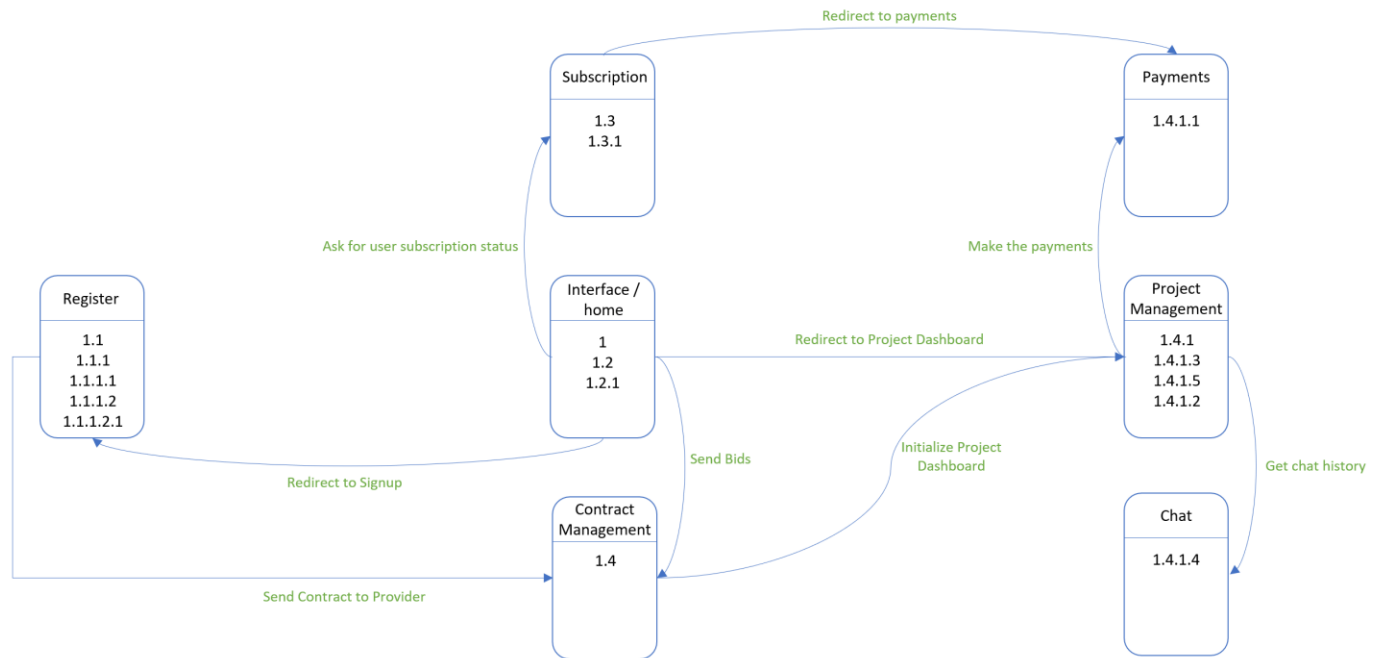
Goal Hierarchy Diagram

Goal Hierarchy

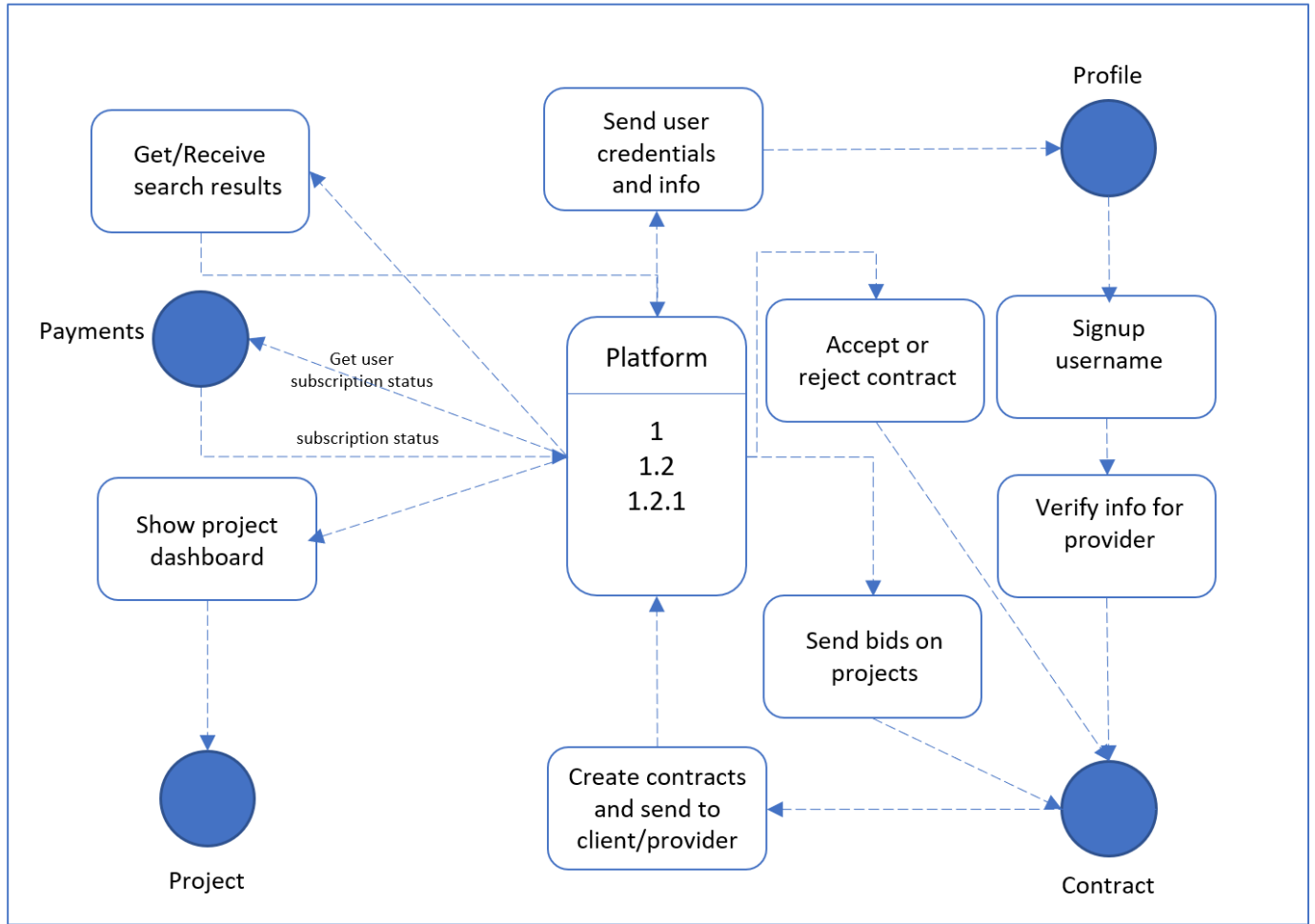


Role Identification

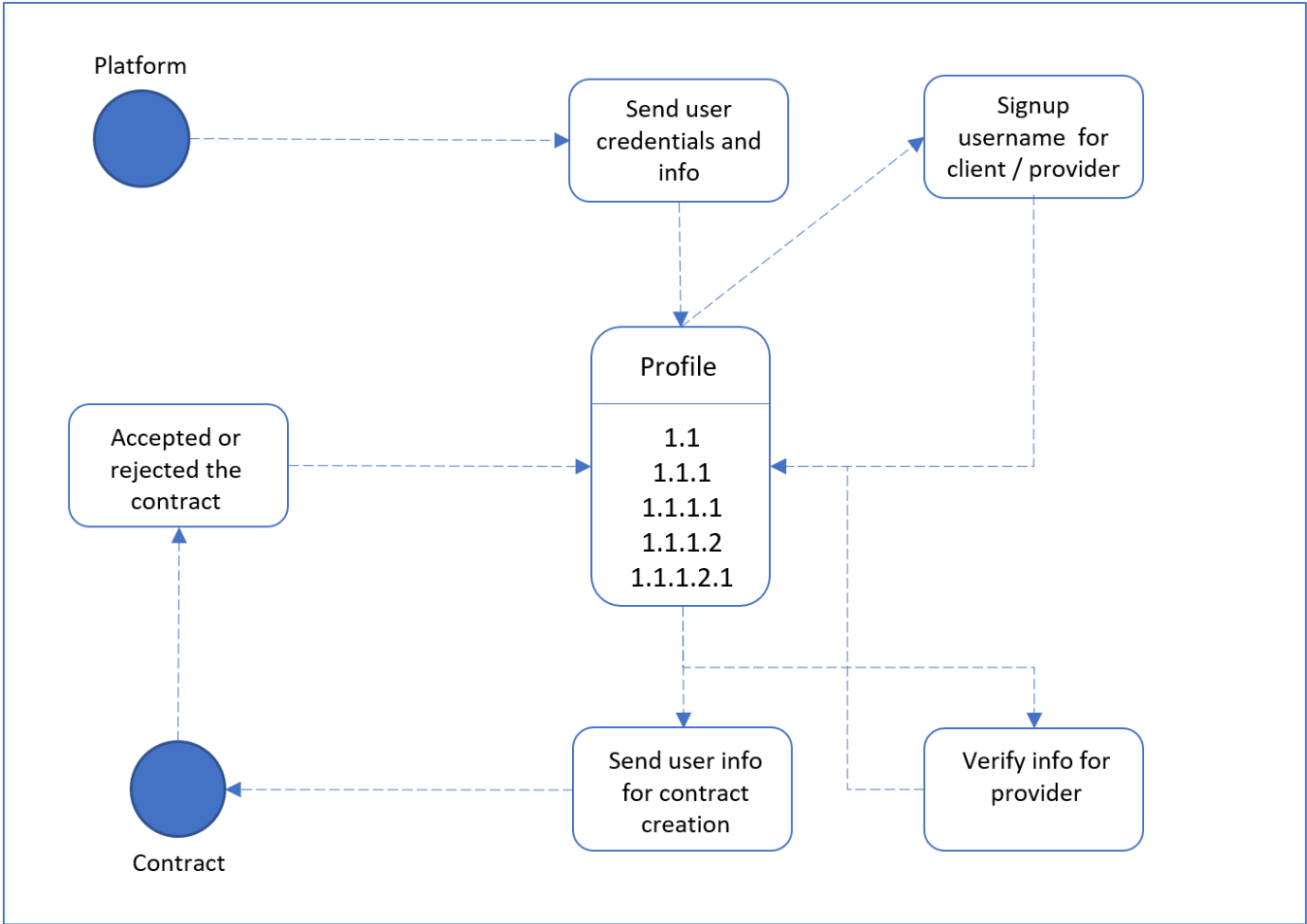
Role Diagram



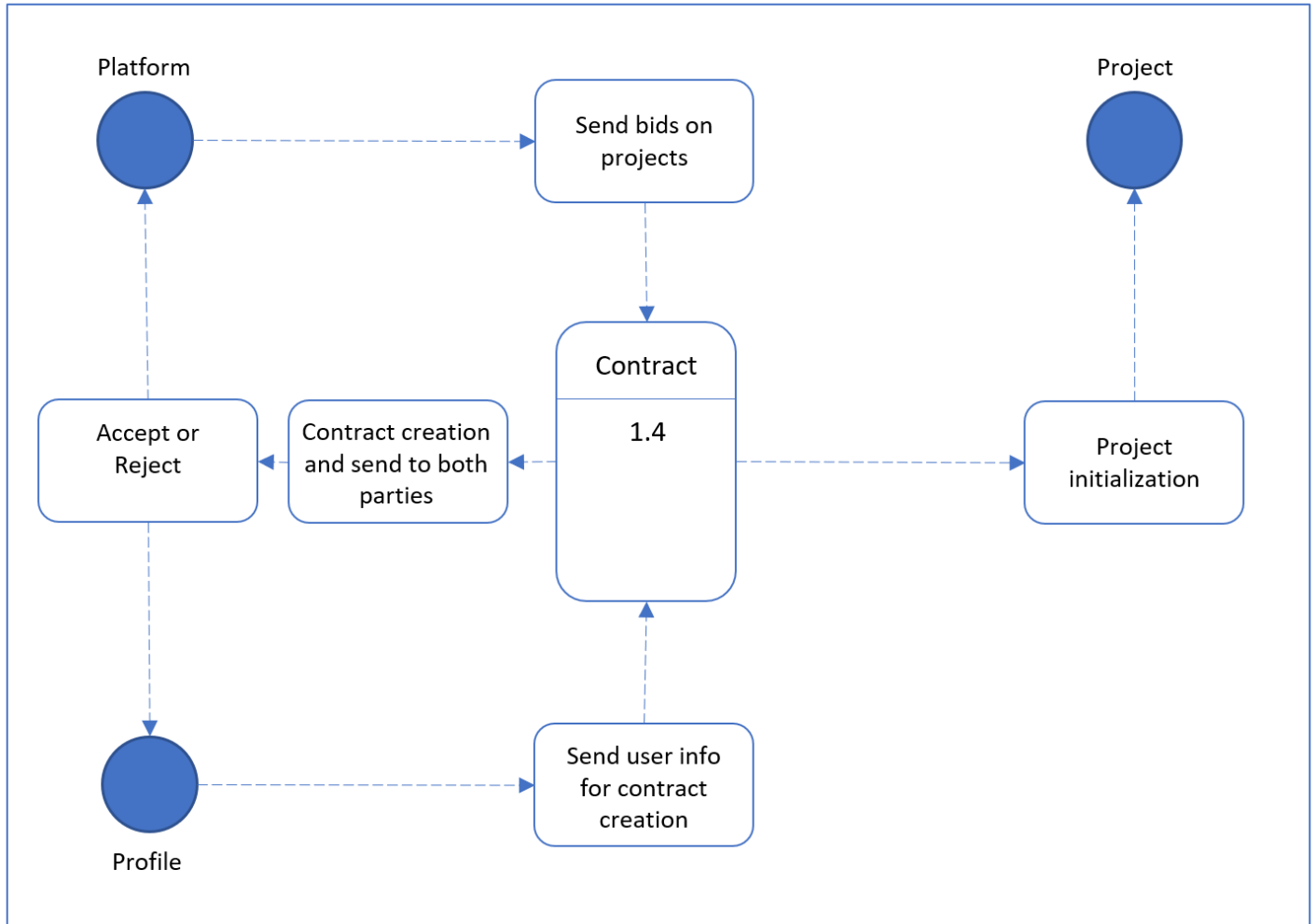
Platform Role Diagram & Tasks



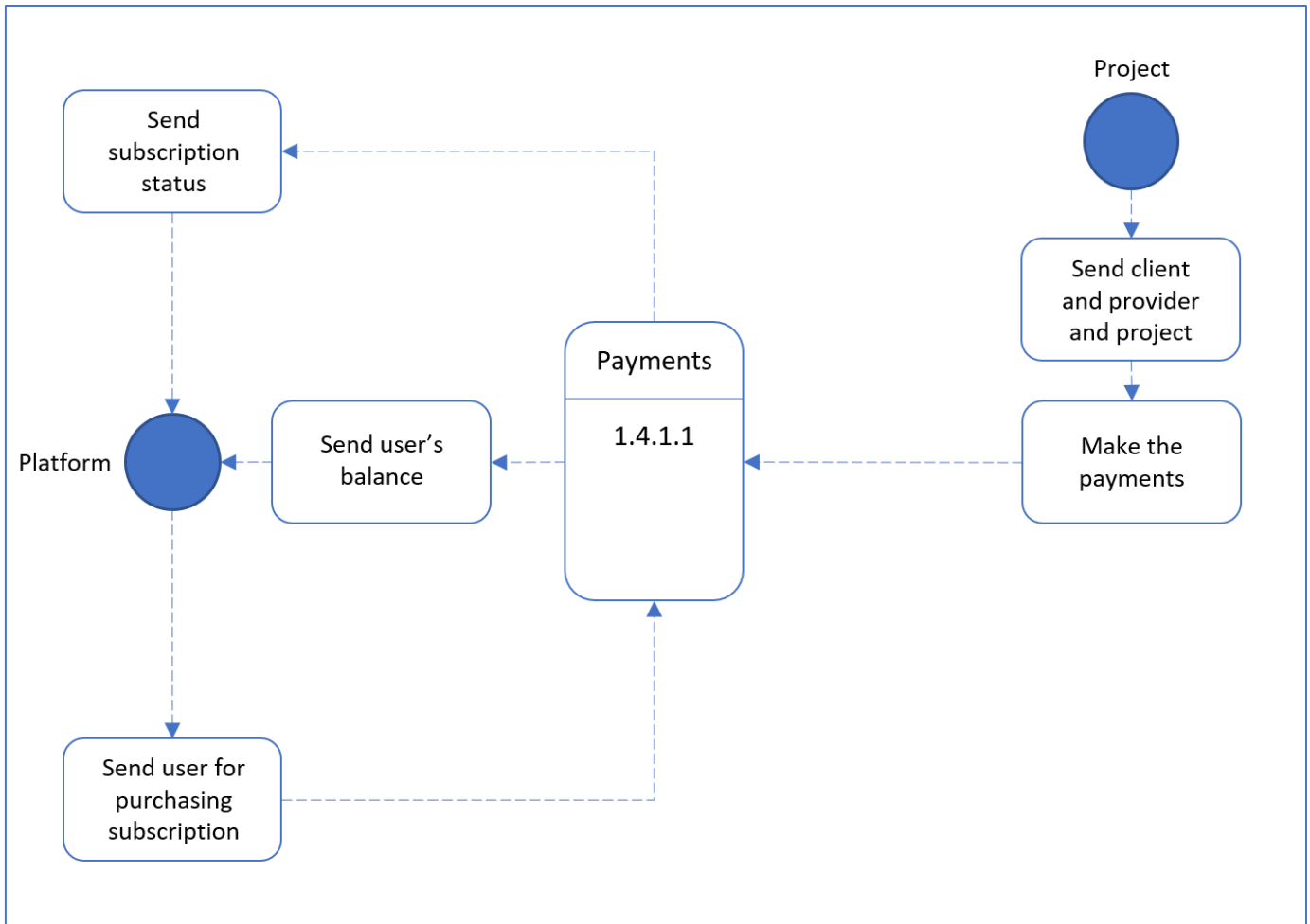
Profile Role Diagram & Tasks



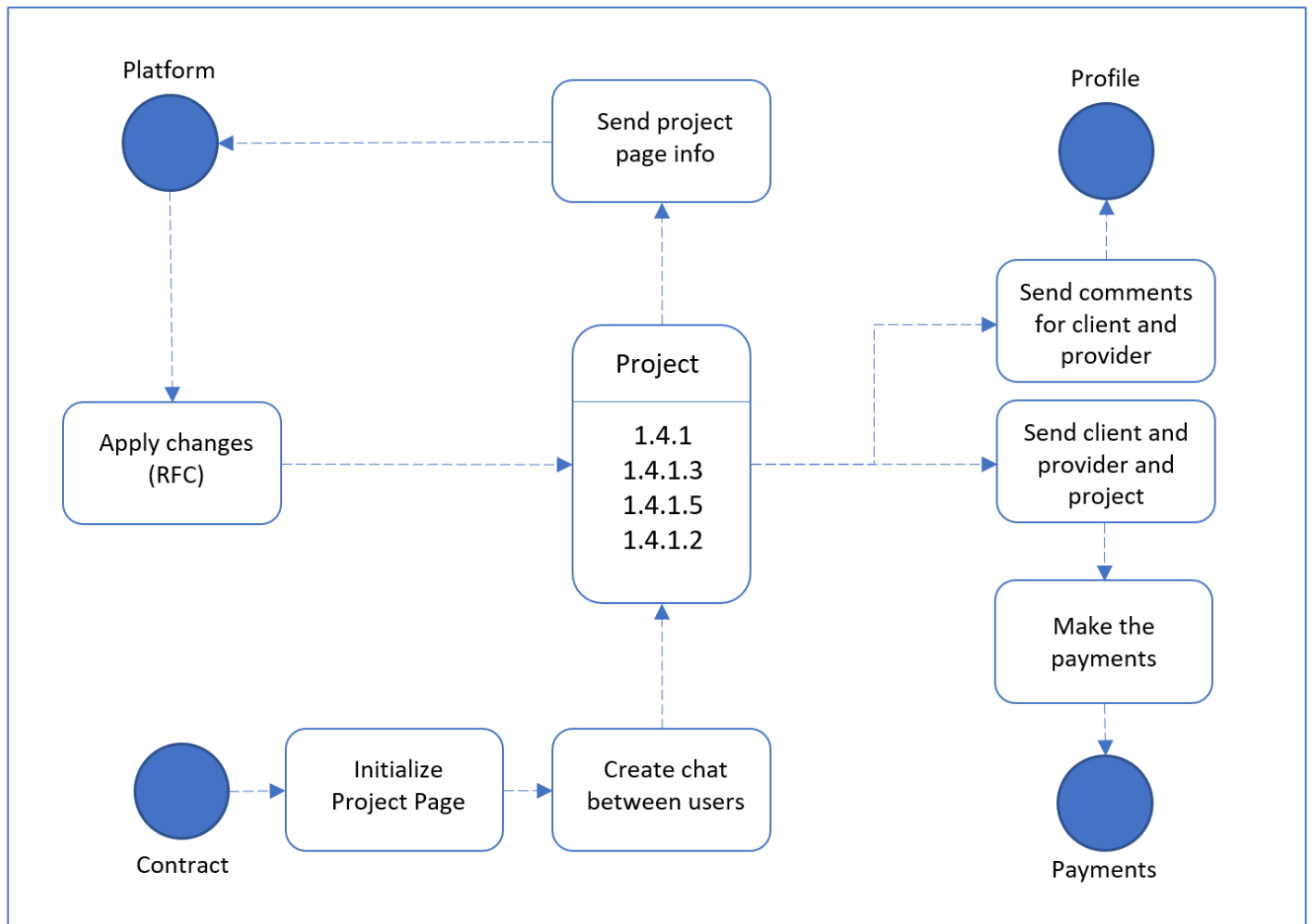
Contract Role Diagram & Tasks



Payments Role Diagram & Tasks



Project Role Diagram & Tasks



Agents Description

Platform Agent:

- Show home page to users
- Show available projects based on prioritization algorithm
- Provide a search functionality for users
- Show client/provider current engagements
- Send bids on projects to Contract agent
- Redirect to signup agent if a guest clicks on register button

Profile Agent:

- Handles the signup procedure for both clients and providers
- Provide a dashboard for providers to send their info
- Validate the providers, and if validated successfully, give them a verified Icon

- Send the system contract to Contract agent and if they reject it convert them to normal clients

Contract Agent:

- Handle bids from different clients
- Show the bids and users history retrieved from Profile agent to provider, hence they can select among them
- Generate and send a contract to both provider and selected client
- Handle accept and rejection of contract accordingly

Payments Agent:

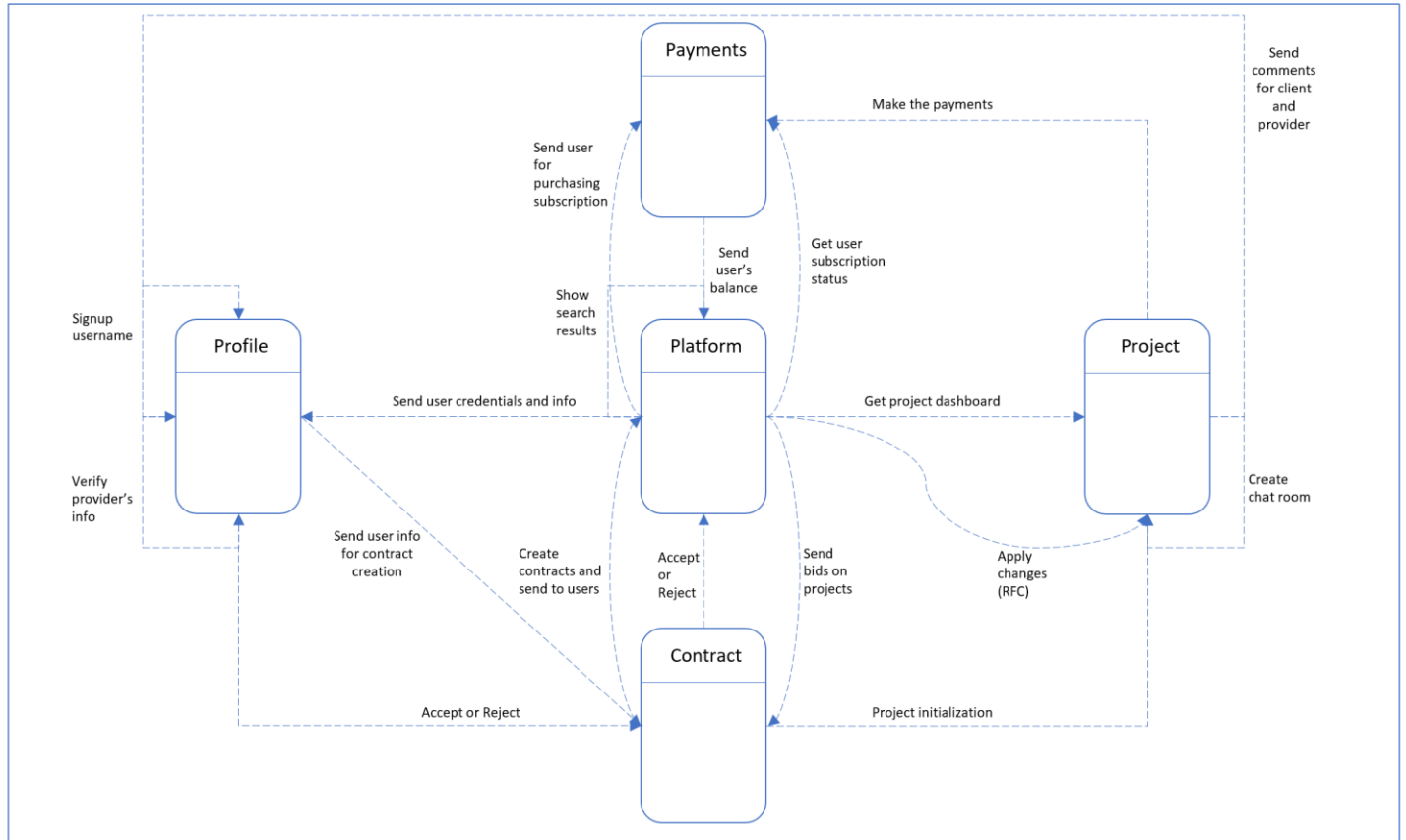
- Maintain users' balance in the platform
- Handle the request for buying a subscription
- Handle the project payments upon completion or during the project based on the project type
- Handle the payment method for providers/clients (blackbox)

Project Agent:

- Show the project status and deadlines
- Provide a panel to make changes (RFC)
- Provide a panel for both client and provider to communicate (chat)
- Handle comments between client and provider and store them in their history
- Notify payment agent when the project is finished

Agent System Architecture

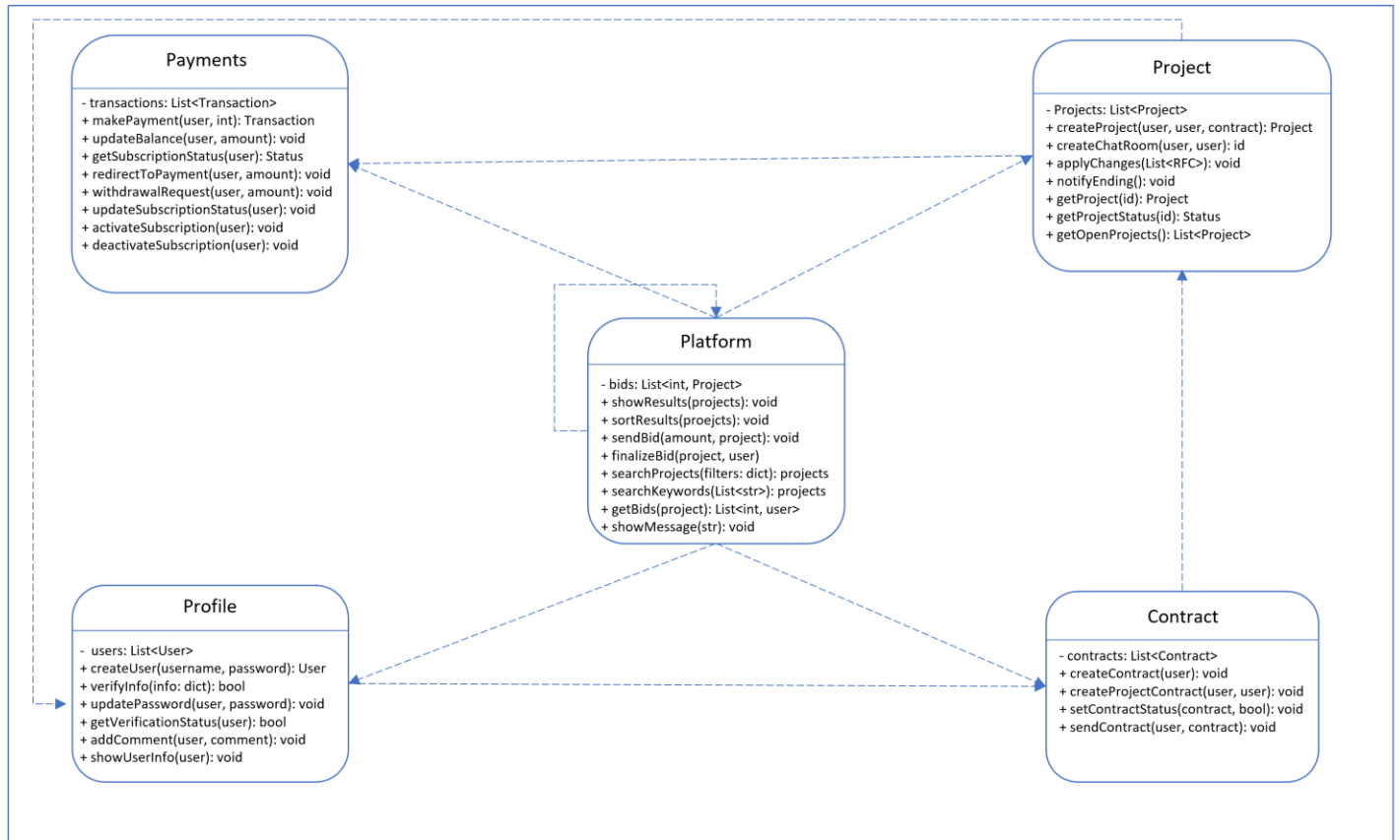
Agent's Architecture



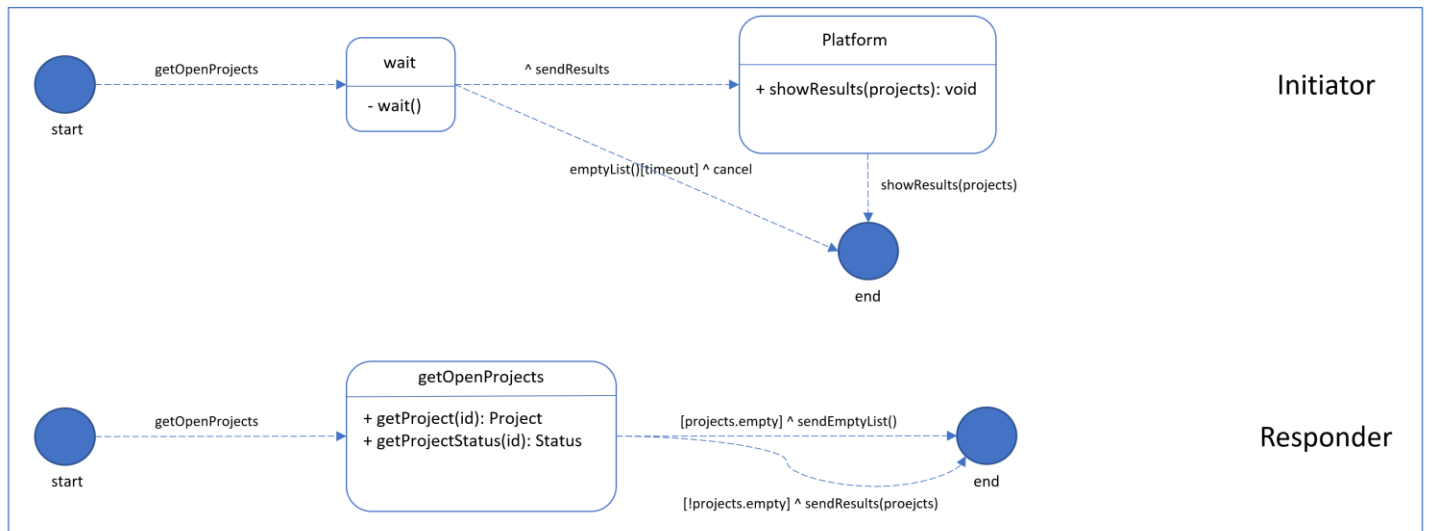
Agent Internal Architecture

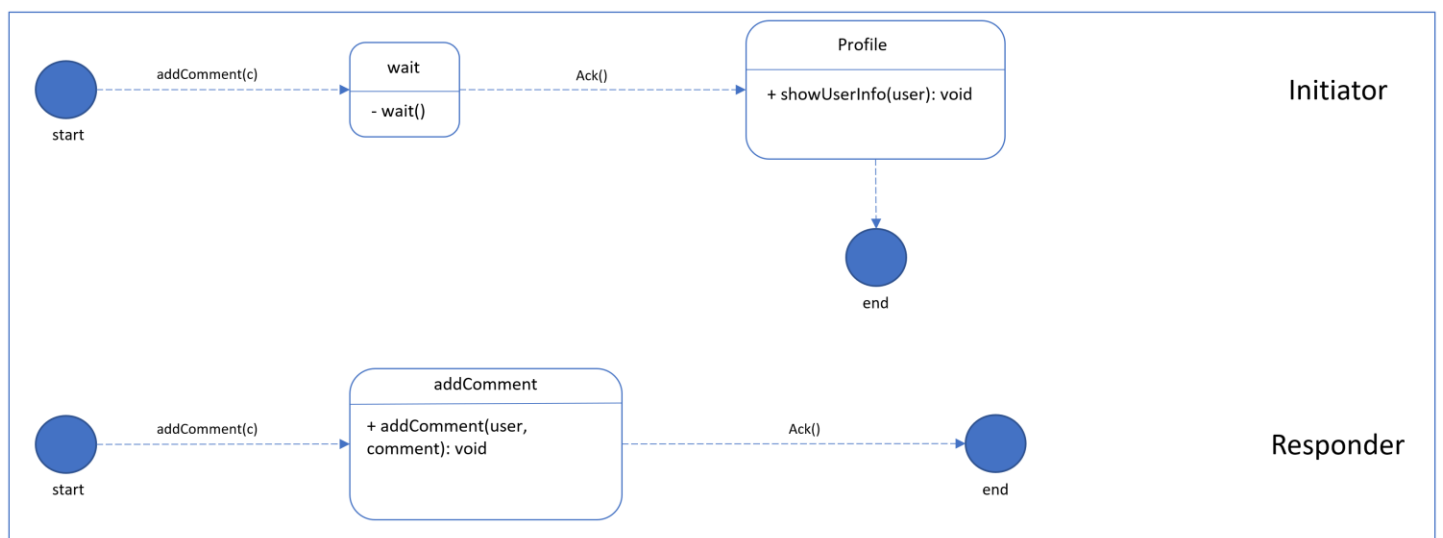
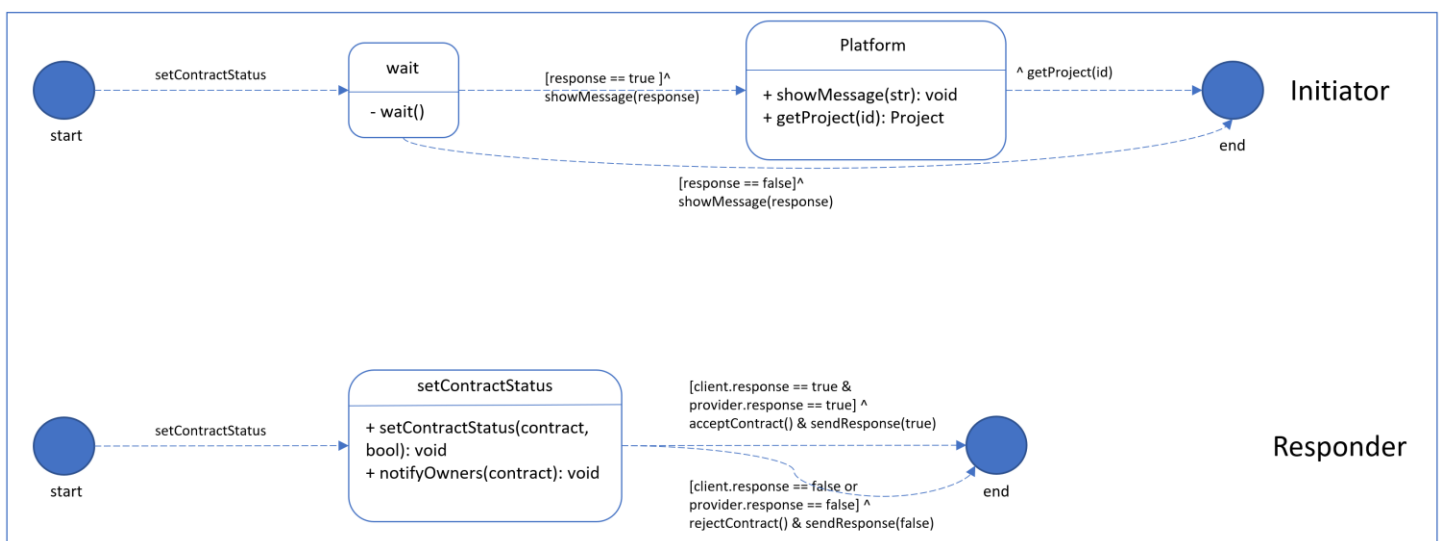
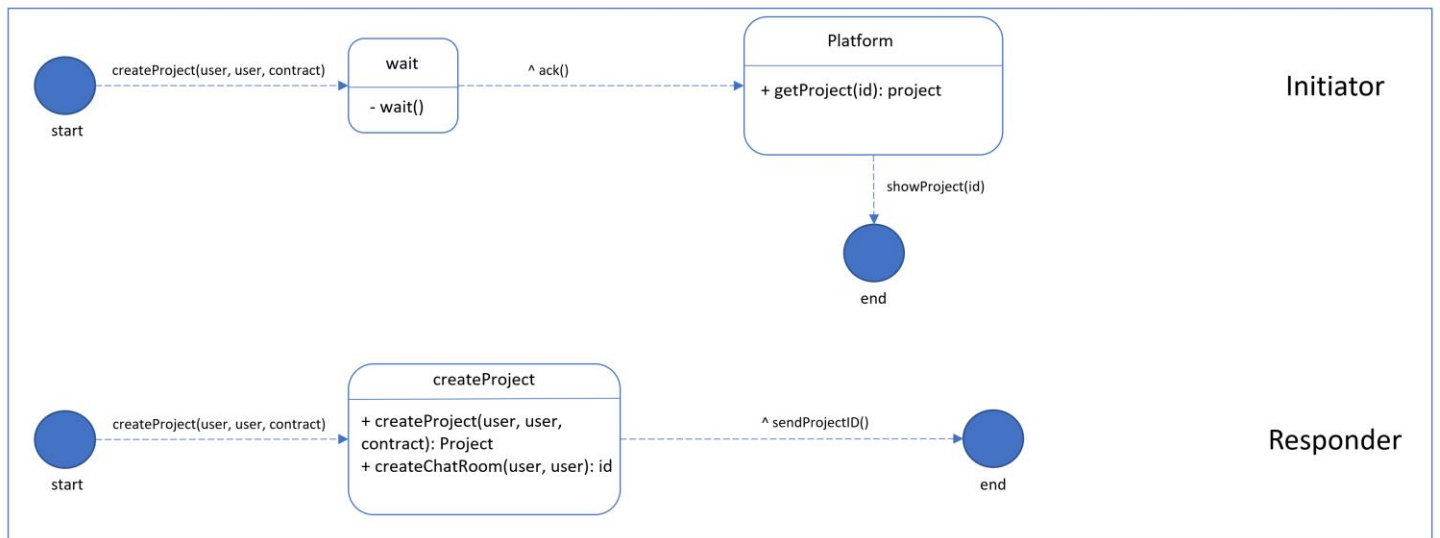
For simplification of the diagram, several arrows from agent's architecture diagram are removed. In the below diagram, if there is an arrow between two agents, then the arrow might be bidirectional.

Agents' Class Diagram



Conversation Diagram





Based on requirements document, only the provider can update the project and change the deadlines. Therefore, in the below diagram it is assumed that the initiator is a provider and without any questioning, the changes will apply.

