ERP-Coin Functional and Architectural Requirements Design Document

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1 Functional requirements:

User:

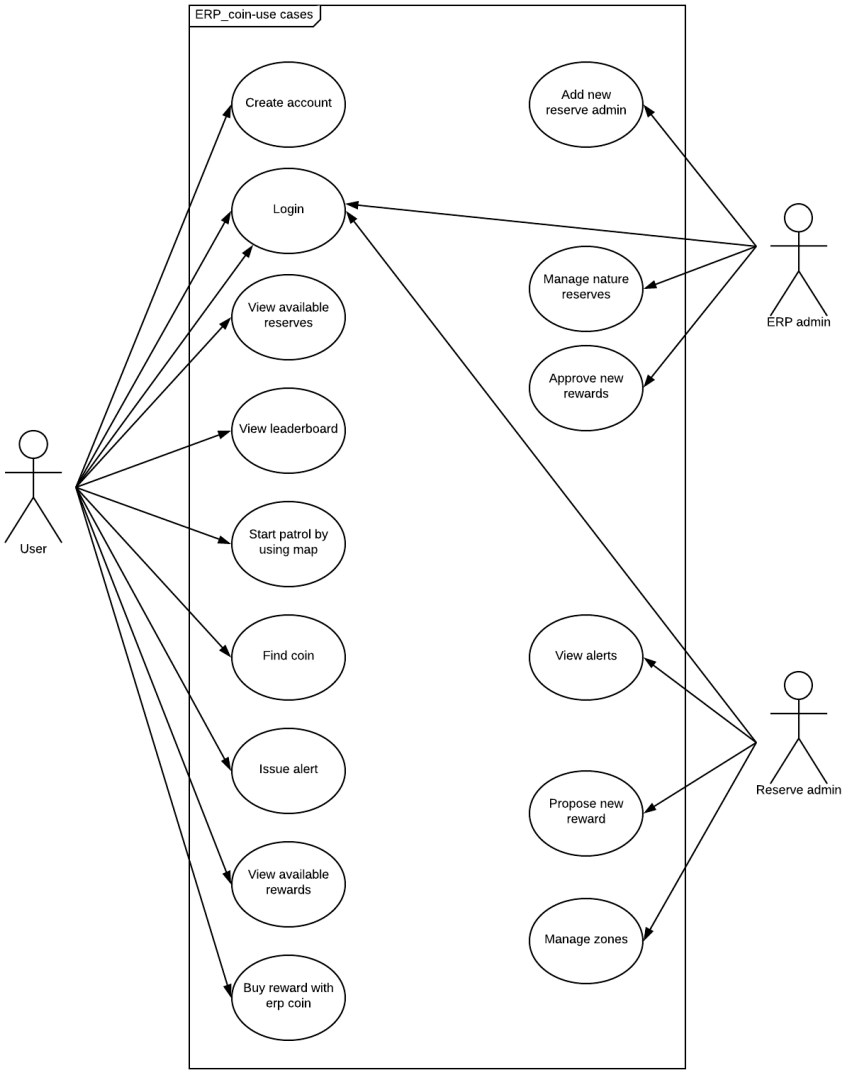
1. As a user I can create a new account on the mobile application.
2. As a user I can log in to my account on the mobile application.
3. As a user I can view a list of available reserves to visit, and select the one I would like to patrol.
4. As a user I can view a leader board showing the users with who have earned the most ERP coins.
5. As a user I can start patrolling an area using the map on the app.
6. As a user I can find ERP coins while patrolling.
7. As a user I can issue an alert when I see something that needs to be reported.
8. As a user I can view a list of available rewards offered by the nature reserve.
9. As a user I can use my ERP coins to buy a reward from the nature reserve.

ERP admin:

1. As an ERP admin I can log in as a ERP admin on the Web Portal.
2. As an ERP admin I can add and remove new reserve admins.
3. As an ERP admin I can add and remove new nature reserves.
4. As an ERP admin I can approve new rewards that have been proposed by reserve admins.

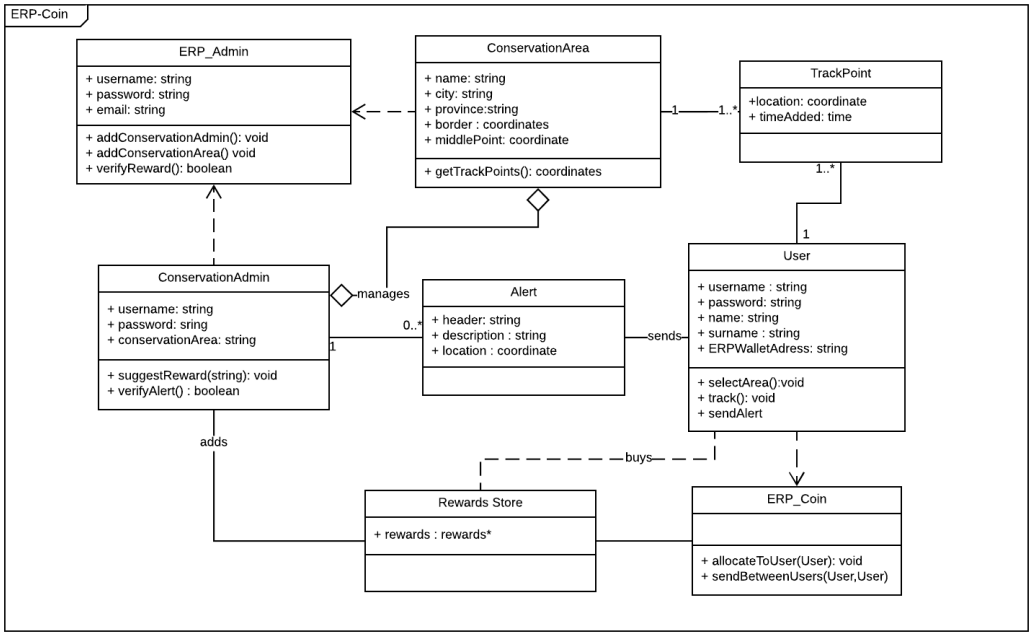
Reserve admin:

1. As a reserve admin I can log in as a reserve admin on the Web Portal.
2. As a reserve admin I can view alerts issued by users patrolling the reserve I manage.
3. As a reserve admin I can propose new rewards that will be offered by the reserve.



2 Domain model:

Users will be the general public that can use the ERP coin application to patrol nature reserves to prevent poaching of Elephants and Rhinos. They will be able to send out alerts when they spot anything they would like to report. As a reward for patrolling Users will be assigned ERP coins that are a Etheureum based tokens. Our system will associate a wallet address with each user and and enable them to send ERP coins between each other. Two different types of admins will be used in this system. ERP admins add new conservation areas to the system allow and assign Conservation admins to that area. The main role of Conservation area admins are to review alerts that have been sent by users since only alerts that have been reviewed by admins will be showed to other users to prevent spam, they will also be allowed to suggest new rewards that will be offered by the area they are assigned to. These rewards will then we reviewed by the ERP admins. Users can view a store where they can use their ERP coins to buy rewards form conservation area. 30em



3 System architecture:

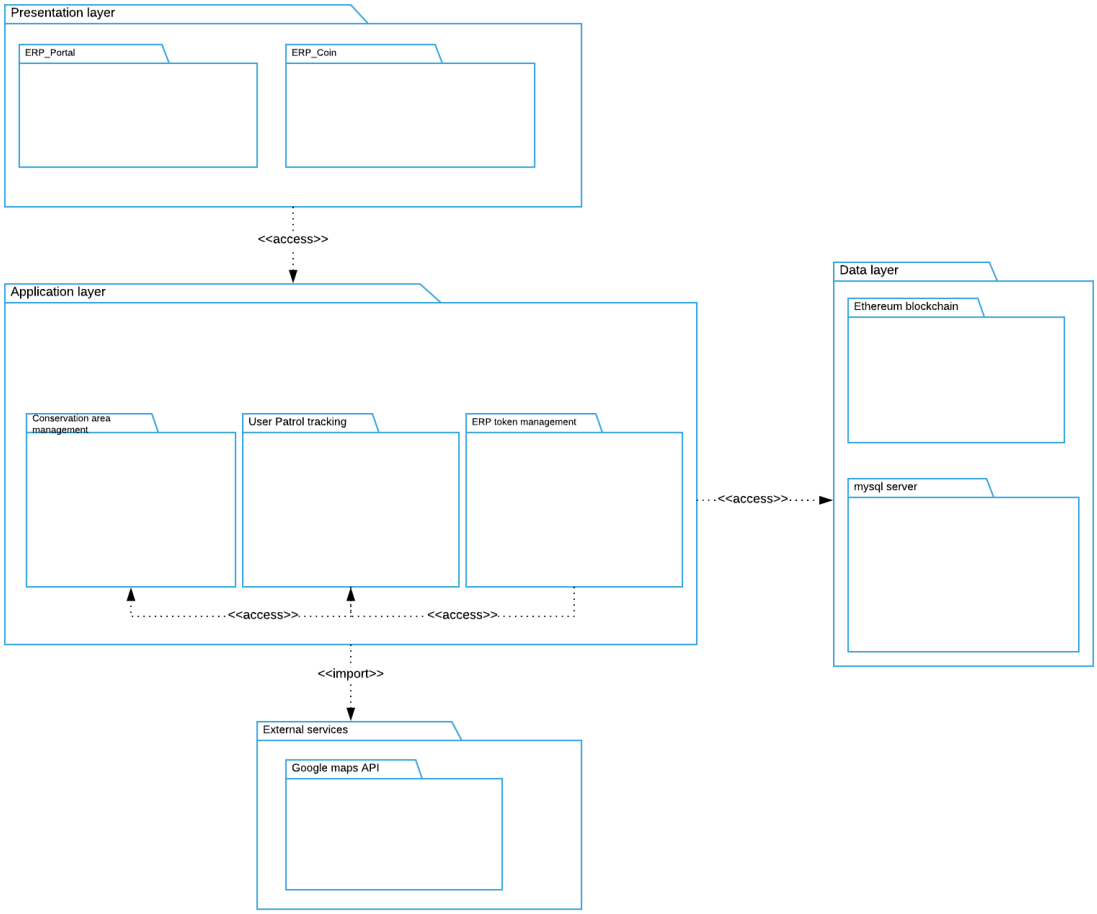
The system has been designed as a three tier architecture. The system will need to be highly interactive and constantly respond to user request while also tracking them during this patrol. This architecture allows for the user system to consist of three sub components the Presentation layer, the Application layer and the Data layer. This creates low coupling between these subsystems allowing each one to function on a different device. The Presentation layer will run on the user device while the Application layer will run om a central node while the Data layer will run on a secure remote site.

The Presentation layer will consist of three interfaces each used by different actors. The first is the User mobile interface called ERP coin that will be used by users to patrol the reserve and earn coins. The second interface will be used by ERP administrators to manage reserves and approve new rewards. The third interface will be used by Reserve admins to view alerts issued and propose new rewards to ERP admins. All three of these user interfaces will only communicate with the application layer and never directly with the database layer for security reasons.

The Application layer will consist of three components, the first of which is the Area management, this component will be responsible for rendering area borders and keeping track of how often areas within the reserve have been patrolled. The second component is the Patrol tracking, which is responsible for tracking the current locations of active users and notifying the area management as well as adding new conservation areas by admins. The last component is the token management that will be responsible for issuing new tokens to users as they patrol and allowing users to buy rewards using their tokens. Both the Area management and Token management will be rely on constant feedback from the Patrol tracking, for this reason it is important that all three these components run on the same machine. The area management and token management will access the Database layers interface when needed.

The Database layer will consist of a server on which the database is run which is used to store information about users, rewards and areas. It will also be used as a wrapper for the Ethereum blockchain, on which the token will be stored. This layer will only be accessed by the application layer to ensure that the data stored on this server is secure.

A diagram of the three tier architecture follows:


Presentation layer
ERP_Portal
ERP_Coin
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Application layer
Conservation area management
User Patrol tracking
ERP token management
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Data layer
Ethereum blockchain
mysql server
<<import>>
External services
Google maps API