EMI FOUNDATION

Contents

1 Introduction

1.1 Purpose

The EMI Foundation project is built on blockchain and it is of crypto tokenized product. Blockchain Technology team aims to deliver this software product as per specification mentioned below. The EMI Foundation Platform is being built for investors to ease their process of participating in “Blockchain Token Sales” or “Initial Coin Offerings (ICOs)”.

These are some of the concerns that exists in the ICO market today that EMI Foundation hopes to address:

1. Missed opportunities: Being an environment which is not easily regulated, the number of token sales have increased dramatically over the past two years, leading to a number of sound and well researched projects missing investment opportunities due to the quantity of other projects in the market.
2. Lack of expert reviews: ICOs having come to be a much easier investment vehicle as compared to traditional venture capital investments have let to vast number of poor concepts and projects raising large sums of money by creating hype and promising investors what they will not be able to deliver. The marketplace presently lacks a portal which provides in-depth analysis and reviews for the vast number of token sales.
3. Language barriers: Cryptocurrency being a global technology has resulted in investors from different parts of the world not being able to comprehend concepts and ideas specified by ICO companies in their documentation.
4. Redundant processes: Active ICO investors would have to deal with undergoing multiple similar Know Your Customer (KYC), Anti-Money Laundering (AML) and registration processes for each ICO they wish to invest in. There is much need for a single platform which would ease this process for investors by requiring only one registration and verification process.
5. Investor protection: The cryptocurrency market has a number of projects which attempts to manipulate investors by pitching scam projects to win favour and raise funds. There is much need in the ecosystem to filter and bring forward legitimate projects with good concepts that investors can put their money in without thought.
6. Scattered information: Useful information regarding token sales, blockchain and cryptocurrency often get muddled and lost due to the vast quantity of such data that exists on the internet. There is urgent need for a platform which presents relevant and comprehensive information regarding these topics in a manner that suits the preferences of the user.

1.2 Project Scope

The EMI Foundation project can be broadly classified into two main entities that will be delivered by EMI Foundation:

1. The EMI Foundation Platform
2. The EMI Foundation ICO

At this point in time, the following document will discuss requirements only for the EMI Foundation Platform.

1.2.1 EMI Foundation Platform

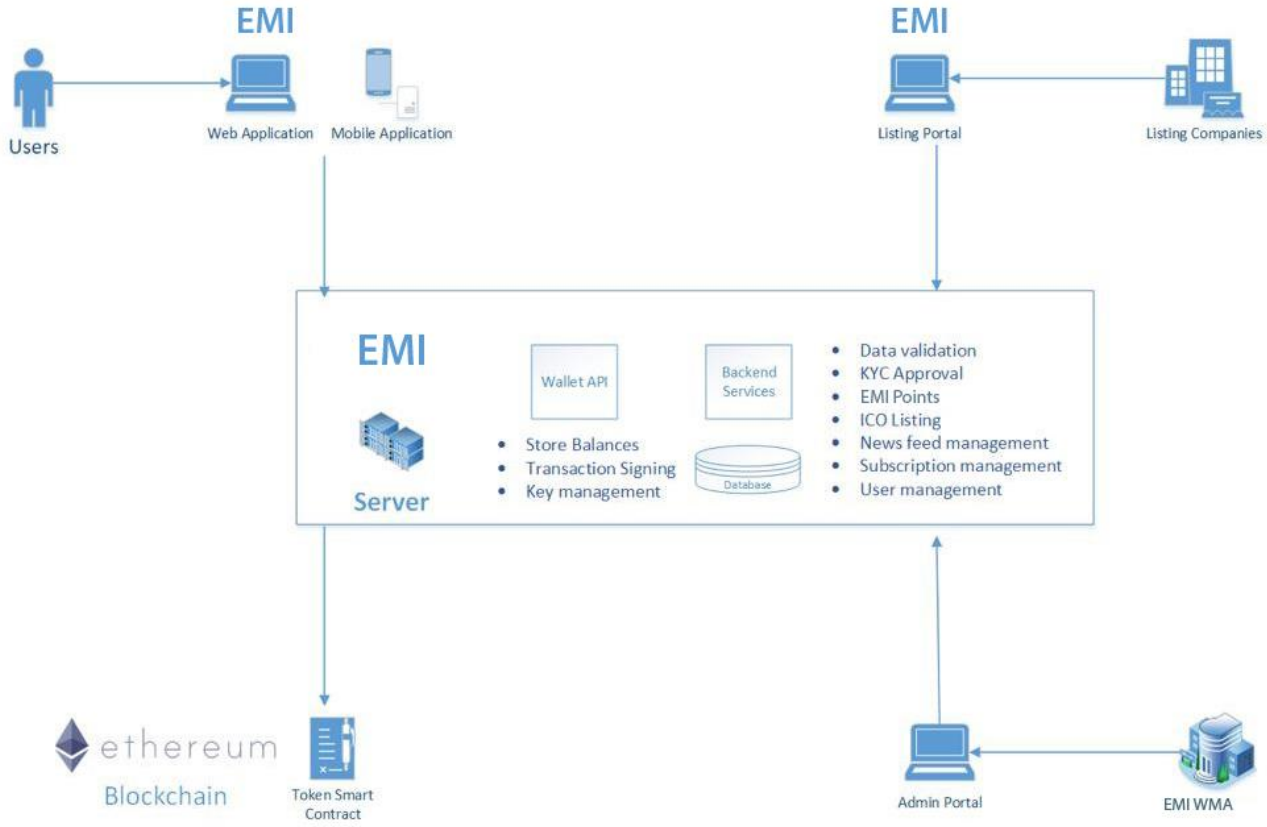


Figure 1: Overview of EMI Foundation Platform

Based on Figure 1, the EMI Foundation platform is the main application that would be used to run the ecosystem. The platform at a high level has the three components:

1. EMI User Application
2. EMI User Wallets
3. WMA Application

The EMI user application will be the primary consumer facing application provided by EMI Foundation. The four primary functions served by the EMI Foundation user application are:

1. A website to know more about our organization and our purpose
2. A marketplace for cryptocurrency token sales and distribution events
3. A Blockchain wallet navigation which would facilitate the storing of the native token “EMI” and cryptocurrencies like Ethers and Bitcoins as well.
4. Our EMI platform roadmap and future vision

The EMI user Wallet application would serve as member for the company once the user registers with the wallet application. Being user application let you create a wallets for EMI platform native coins, Ethereum, NEO and Bitcoin. Wallet application is responsible for storing user cryptocurrencies, listing transactions history of each currency including EMI tokens, Securing wallet and its data within it. It has certain phases for purchasing tokens with great bonus in the wallet with time limit. Users are allowed to purchase tokens with bonus amount if they made purchase in that specified time. Also has profile section where user can check logged in history and has permission to change their user name and an avatar. It also facilitate two factor authentication where user can make their wallet super secure by installing mobile application and enabling OTP based login. Further they have change password feature, user can change their application passwords anytime they wish.

In account section of wallet it has KYC option, User need to upload their respective government issued Identity in order to have complete profile.

The Wallet Management Administration (WMA) application is the central administrative portal built for the EMI Foundation WMA to manage the application. This portal would host features such as: verifying user details, managing user KYC, handling EMI Foundation token transaction systems, publishing relevant news and bulletins regarding ICO announcements, managing the sale of subscription services on the platform among other administrative functions.

1. Figure 2 shows the database process flow of EMI Foundation Platform.
2. This flow describes the manner in which information is shared and updated across the platform from web application to WMA to ICO listing.

3. For a larger image, please refer to Appendix A.

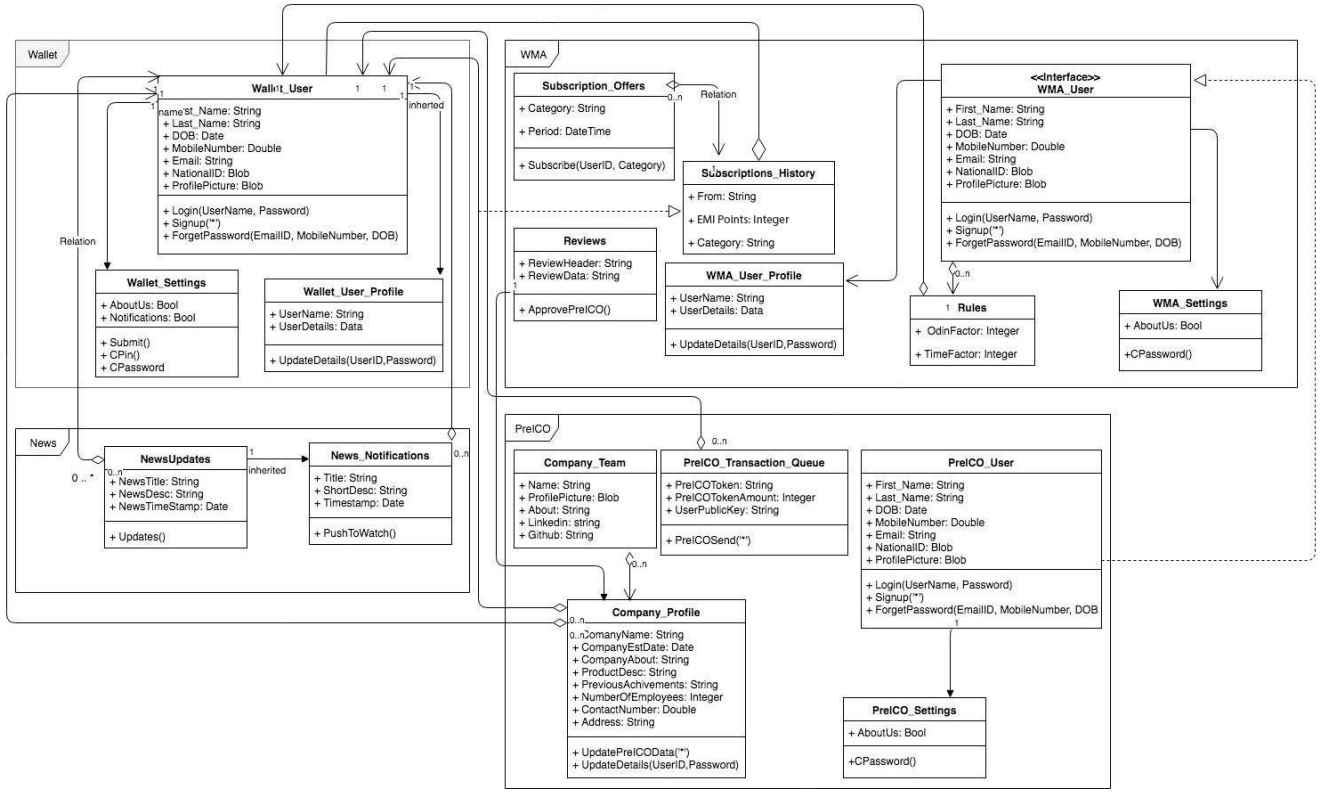


Figure 2: Overview of EMI Foundation Platform database process flow

2 Use Cases Overview

2.1 EMI Foundation Platform

1. The EMI Foundation Platform consists of the features listed below:

    1.1. Users can invest in a wide range of ICOs based on their interests

    1.2. Users can invest in potential ICOs during or before the ICO period, depending on their EMI Foundation platform subscription level

    1.3. ICOs are evaluated by EMI Foundation WMA and reviewed using various criteria

2. With these features in mind, the EMI Foundation Platform is supported by three structures:

    2.1. EMI Wallet

    2.2. EMI ICO Portal

    2.3. EMI WMA Portal

2.1.1 EMI Foundation Wallet

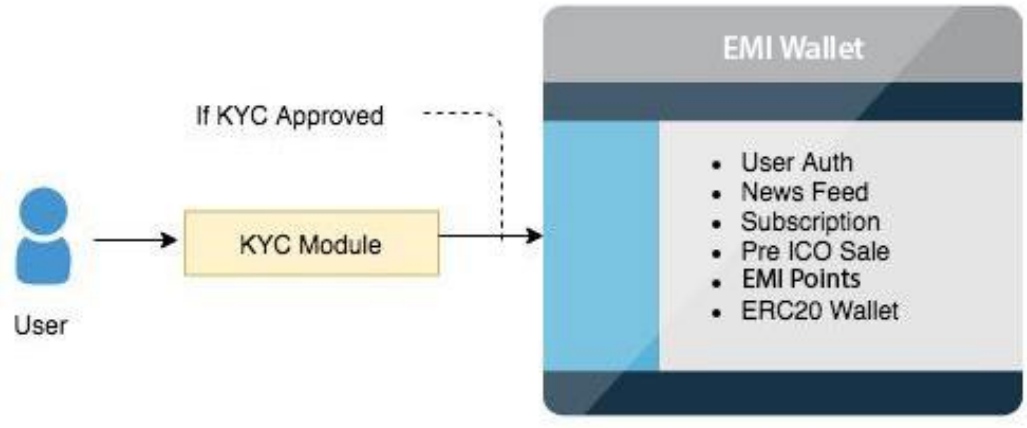


Figure 3: Overview of EMI Foundation Wallet

1. EMI Foundation Wallet (Fig. 3) will allow users to do the following:

    1.1. View listing of ICO tokens against equivalent dollar amount of EMI Foundation tokens

    1.2. Purchase ICO tokens using Ethers, Bitcoins and some other altcoins

    1.3. Subscribe to various ICO-related news and updates based on their interests

    1.4. Redeem EMI Foundation Points for various privileges

    1.5. Read brief information regarding listed ICOs (*e.g.,* project description, white paper, roadmap, team members, etc.)

2.1.2 EMI Foundation ICO Portal

1. In the EMI Foundation ICO portal (Fig. 4), companies/organizations interested in listing their ICO on EMI Foundation will be able to do the following:

    1.1. List ICO tokens against EMI tokens

    1.2. Configure ICO tokens as premium, standard, or hybrid ICO

    1.3. View listing status and review done by EMI WMA

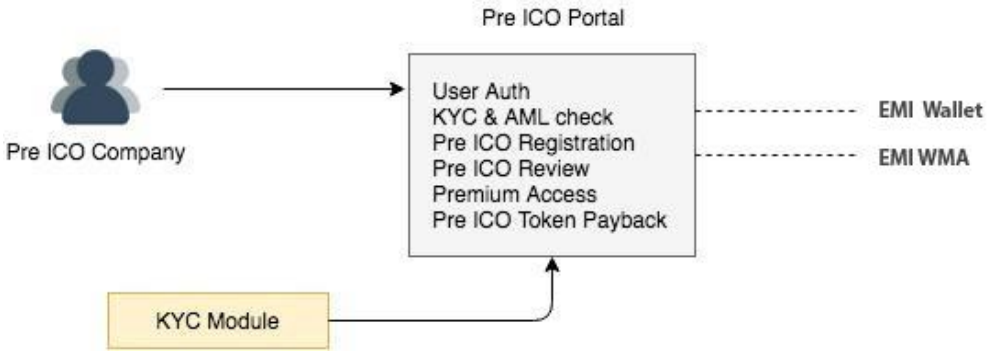


Figure 4: Overview of EMI Foundation ICO portal

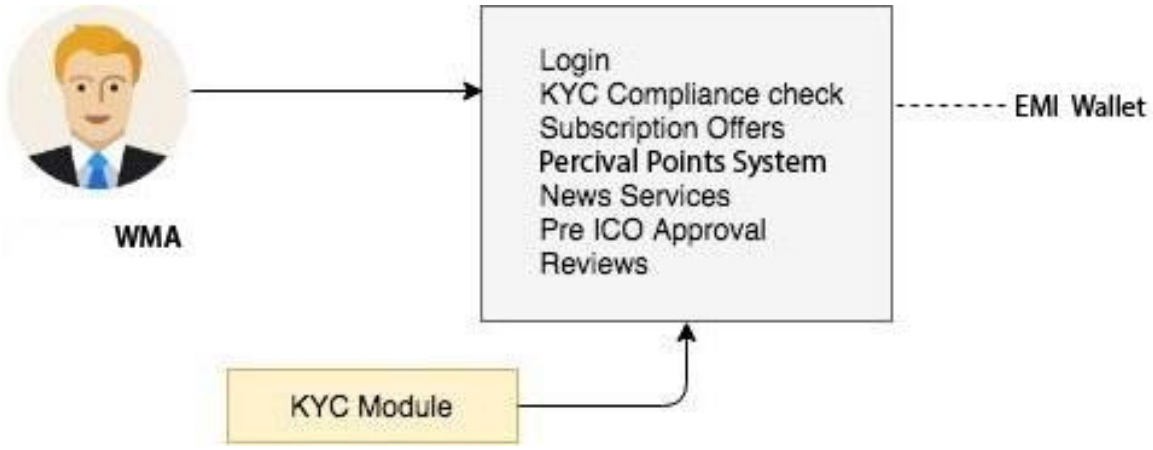


Figure 5: Overview of EMI Foundation WMA portal

2.1.3 EMI Foundation WMA Portal

1. In the EMI Foundation WMA portal (Fig. 5), an administrator will be able to perform the following functions:

   1.1. Review and approve ICO listing on EMI Foundation platform

   1.2. Curate relevant news and informational articles regarding investing in ICOs

   1.3. Configure subscription models for EMI Foundation users for premium access

   1.4. Configure EMI Foundation points redemption

3 Requirements Specifications

3.1 EMI Foundation Platform

3.1.1 EMI Foundation Wallet

1. EMI Foundation Wallet users will be able to use the application in the following manner:

    1.1. Register an account on EMI Foundation Wallet

    1.2. Complete KYC application

    1.3. Access various features of the EMI Foundation Wallet application

3.1.1.1 User Registration and Access

1. To purchase ICO tokens, interested investors must first register to use EMI Foundation Wallet.

2. The details collected through the registration are as follows:

    2.1. Full name

    2.2. Email address

    2.3. Password

3. All Wallet users are assumed to be individuals.
4. Registration by companies or corporations will not be accepted.

3.1.1.2 KYC Process

1. After successfully registering on EMI Foundation Wallet, the user should proceed to complete the KYC application.
2. The following details will be captured: Any electronic Govt issued ID card or photo of Hard ID card.

3.1.1.3 Wallet Features

1. Refer to Table 1 for EMI FOUNDATION wallet features and basic description.
2. Registration for EMI FOUNDATION wallet is a two-step process:

2.1. Basic details of the EMI FOUNDATION wallet users is collected.

2.2. User KYC application is completed.

2.3. Once the KYC is approved by EMI FOUNDATION WMA, registered users will have complete access to the EMI FOUNDATION wallet interface to create and transact EMI tokens.

3. The subscription feature allows users to gain access to ICOs. Subscription can be obtained by redeeming EMI FOUNDATION points.

3.1. EMI FOUNDATION points are awarded to wallet users for accumulating and storing EMI FOUNDATION tokens for a certain duration of time.

3.2. This period will be determined by EMI FOUNDATION WMA and will be a configurable setting in the EMI FOUNDATION WMA portal.

4. Users will be able to create an Ethereum wallet to hold both EMI FOUNDATION and ICO tokens

4.1. The generated seed (or passphrase) for the wallet is unique and unrecoverable.

This seed is authenticated using user password.

4.2. Users are responsible for securing their passphrase, as it cannot be retrieved once lost.

4.3. Without this passphrase, users will not be able to access their Ethereum wallet.

4.4. EMI FOUNDATION WMA is neither responsible nor liable for passphrase loss, storage, and recovery.

5. With the Ethereum wallet, users will be able to send ETH and EMI FOUNDATION tokens to any user using their wallet address, as well as the following functions:

5.1. Check token balances for all tokens held in wallet

5.2. Check prices of ETH and tokens in USD/ETH/BTC.

6. Accessing the Ethereum wallet:

6.1. To unlock, users must provide their password.

6.2. Users can also close the wallet by deleting it from their local storage.

6.3. In order to load their existing wallet, users must provide the correct seed and password combination.

7. Referrals Management, User can refer his people and make member with EMI, by refer referee will get extra points in tokens.

7.1. Any user who registered and has complete profile can allowed to refer

7.2. User will be having unique reference code after his registration, can be found in wallets account section.

7.2. Referred person will be welcomed with Phase wise benefits on his purchases and time of purchases.

7.3. Any user can track his own referred users details in his wallet.

3.1.2 EMI Foundation ICO Portal

1. This portal will be available only to the organizations that wish to list their ICOs on the EMI FOUNDATION platform.
2. Refer to Table 2 for EMI FOUNDATION wallet features and basic description.
3. Landing page displays general information on EMI FOUNDATION as well as the login and registra-tion forms.

3.1. The registration page contains all details regarding the company's user who registered in the ICO portal.

4. ICO tokens listed in the marketplace are purchased by EMI FOUNDATION Wallet users, who will be using EMI FOUNDATION tokens, which will then be sent to the ICO Company's wallet address.

5. KYC check will be initiated by the EMI FOUNDATION WMA to ensure the company is in compliance with the ICO requirements.

5.1. Once approved, the company can then register particulars for the ICO listing process.

5.2. WMA will review the listing.

5.3. Once approved, the ICO will be listed in the EMI FOUNDATION Marketplace, where the ICO tokens will be listed according to its equivalent amount in EMI FOUNDATION tokens for Wallet users to purchase.

Feature	**Description**
Login	Enter username & password
Registration	Name, Email, Referral code, Password.
Landing Page or Dashboard	Wallet creation, (Ethereum/EMI, Bitcoin, NEO) Navigation Menu Displays the QR code for the wallet address Display available balance of different platform currencies Currently Running Phase time
Buy EMI	Displays EMI supporting crypto platform currencies to purchase Displays Created wallet account balance, QR code and address View Transactions option for see transaction details like its status, quantity.
Wallets	Displays wallet account(s) information which user created in our platform.
Reports	Purchase History which Displays EMI tokens Purchase history with full details Transaction History Displays your Other crypto platform transactions information

Referred Users	Displays users details whom he referred and they registered with EMI Foundation
Account	Shows user's profile Possible to edit the information through this page Referral Code to refer others under his membership Two Factor Authentication link to secure wallet Update KYC
KYC	Upload picture/image of valid document
FAQ/Help Center	Shows list of FAQ/Help for the users to read
Security	Security: 2FA, Activate Two Factor Authentication Login History: shows recent wallet login details Reset Password: To change wallet login password.
Other features	Generate Wallet Change of language Send Transaction Get price of ether and tokens

Table 1: EMI FOUNDATION Wallet features and description.

Feature	**Description**
Landing page or Home	No of Users on EMI platform No of email verified Users No of Zero token users Remaining EMI Tokens Admin account Bitcoin balance

	Admin account Ether balance
	Phase wise token sold graphical information
	Navigation menu
Dashboard	Admin's all Account details with QR code and balance of each
	Navigating menu
Users	Registered user information
	Searching users info by mail ID
	Airdrop user list
	Affiliate admins list and details
	Create option for affiliate admins
	Possible actions on each user from list
Phases	List of Phases created
	Complete Details of each phase
	Option to create new phase
	Option to customise existing phases and changing status
Reports	Purchase History
	Transaction History
KYC	Pending KYC list to see requested user list and option to verify and change the status
	Approved KYC list to check who are the users approved and an option to change the status
	Rejected KYC list to check who are the users rejected in KYC and an option to change the status
Account	Profile details
	2FA to keep more secure the wallet login
	Login History
	Change password

Change passible profile information

Table 2: EMI FOUNDATION ICO portal features and description.

3.1.3 EMI Foundation WMA Portal

1. Refer to Table 2 for EMI FOUNDATION wallet features and basic description.
2. The WMA portal is managed by a representative approved by EMI FOUNDATION WMA.
3. This portal is used by EMI FOUNDATION WMA to

   3.1. Manage the ICO token list and phases.

   3.2. Provide information related to ICOs and crypto market trends.

   3.3. Manages and enables various subscription models for EMI FOUNDATION Wallet users.

   3.4. Configure criteria for redemption of EMI FOUNDATION points from EMI FOUNDATION tokens.

4. EMI FOUNDATION Wallet users will be able to receive news as soon as possible using the subscription model.
5. Calculation for EMI FOUNDATION points depends on criteria set by EMI FOUNDATION WMA.

   5.1. Wallet users will receive points in their wallets for staking their EMI FOUNDATION tokens for certain duration of time.

   5.2. These points can be redeemed to purchase EMI FOUNDATION subscriptions.

   5.3. Subscriptions allow users to access premium ICOs, where users will receive latest news updates about other upcoming premium ICOs.

6. Reviews of each ICO listing will be conducted. Each listing is rated and approved based on certain criteria such as (but not limited to the following list):

   6.1. ICO team strength

   6.2. Product quality

   6.3. Company history

Feature	Description
Login	Complete username & password fields
ICO approval	Review & decline listing action Show button to edit form “Approval” Comment box
Subscription rules	Configure subscription models
Phase rules	Configure point and token equivalency, time period, etc.
News Update	Upload company logo image and company description.
KYC approval	Approve Wallet users KYC application

Table 3: EMI FOUNDATION WMA portal features and description.

3.2 Detailed Non-Functional Requirements

3.2.1 Infrastructure

3.2.1.1 Availability

1. Environment was built based on Digital Ocean infrastructure, which includes:
    1.1. Ansible
    1.2. Terraform
    1.3. Terraform-Inventory
    1.4. Git
2. Digital Ocean configuration will ensure high availability of transaction services and enable any server in a cluster to redirect transactional work to other servers within the same cluster.
3. Database configuration will have a failure feature: read-only replica enabled.
4. Application availability is expected to be 99.5% with ability to schedule downtime for maintenance as required.
5. Maintenance requirements include:
    5.1. Version updates
    5.2. Database updates/upgrade
    5.3. Application updates/changes

3.2.1.2 Scalability

Digital Ocean Auto Scaling feature monitors applications and automatically adjusts capacity to maintain steady and predictable performance at the lowest possible cost.

3.2.1.3 Maintainability

1. The application framework is based on the following tools:
    1.1. PHP
    1.2. Codeignator
    1.3. HTML
    1.4. NodeJS
    1.5. Ethereum standard libraries

2. Maintenance requires a development programmer who has at least one year of experience supporting the application framework.
3. The aforementioned developer will be able to add a new product feature, modify source code, and test developed code with no more than one week of labour.
4. The Python-based codes are readable, which allows the code to be reusable and maintained.
5. Code maintenance is also made easy as the framework uses Django REST API so that the endpoints can be exposed for external use. Django standards emphasizes cohesiveness, testability, and scalability.

3.2.1.4 Reusability

1. The application is based on PHP/Codeignator, a modular framework that helps in ease of code usage and easily debugged.
2. This makes the application reusable and easily plugged into a project with clearly defined functionalities.
3. The application developed adhere to Codeignator, Nodejs, Ethereum, and HTML guidelines and standards.

3.2.1.5 Confidentiality

1. Investor personal data will be stored in protected databases and processed through system for KYC validation.
2. Firewall will ensure that standard contracts for data protection as well as non-disclosure agreements are in place with System.

3.2.1.6 Integrity

1. Transactional values, token prices and wallet information are derived directly from Ethereum Network.
2. Totals and sub totals shall be considered transient data and never committed to permanent storage.

3. Application provides built-in migration tools which are designed in a way to replicate all the changes you make on the models to the database.
4. Migration process are used to keep codes in sync with database schema to ensure correct versions are maintained.

3.2.1.7 Portability

1. Application software may be ported to any cloud-based environment with features similar to the Digital Ocean environment.
2. Application is also portable to hardware servers with the similar memory and processing power.

3.2.1.8 Expected Performance Metrics

Average Page Load Time	< 6 sec	Application takes less than 4 sec is the time taken to load the page. (50 Users)
Max Page Load Time	< 60 sec	Dependency on the number of the users (50 Users)
Minimum Through-put	Per Scenario	Dependency on the number of the users (50 Users)
Max No. of Regis-tered Users	> 1000k	Numbers projected based on loads tested.

Max Concurrent Connection	> 1240	Per server, servers can be scale up as required.
Max Records in DB	> 100k	Numbers projected based on loads tested.
Max DB Size	50GB	Numbers projected based on DBA estimates.

Table 4: Expected performance metrics.

3.2.2 Security

3.2.2.1 Infrastructure Security

1. Secure connection
   1.1. All remote connections to web servers and databases are secured and restricted by VPN tunnel.
   1.2. Connection between clients and web server is secured by TLS protocols.
2. Access control
   2.1. Access to all the instances are protected by their security group.
   2.2. Web servers only accept SSH connection from VPN network and HTTP/HTTPS through load balancer.
   2.3. Digital Ocean applications are protected by complex passwords and Multi-Factor Authentication (MFA)
3. Authorization
   3.1. SSH connection to all the instances are protected by SSH keys and SUDOERS password.
   3.2. EMI Foundation databases have three different levels of access control: web server, DevOps and database administrators, respectively.
4. Intrusion detection
   4.1. All connections to web servers will first be passed and checked through Cloudflare.
   4.2. Any malicious requests like DDoS attacks will be blocked before it arrives to the server.
5. Log analysis
   5.1. All audit logs of EMI Foundation servers will be forwarded to centralized log manager in AWS where these logs are analysed by EFJ's Incident Response team.

3.2.2.2 Product Security

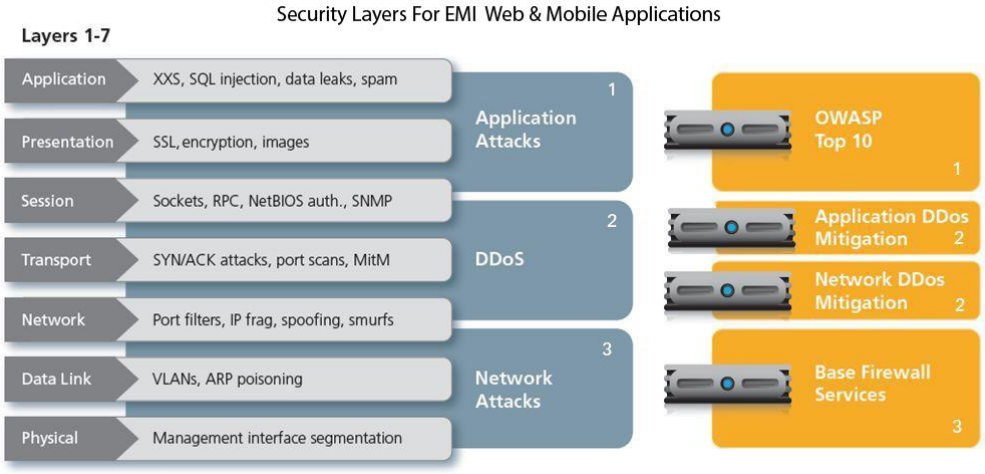


Figure 6: Security layers for EMI Foundation web and mobile applications

1. Two-Factor Authentication using Google Authenticator:
   1.1. Users can opt-in for two-factor authentication (2FA). This will allow users to login only after they enter the OTP generated in the Google Authenticator App.
2. Password encryption
   2.1. Passwords are encrypted with industry standard hashing algorithms and random salt values.
   2.2. The password stretching mechanism used is recommended by NIST (National Institute of Standards & Technology, U.S Dept. of Commerce).
3. SSL/HTTPS
   3.1. The web application and the REST API endpoints operate via SSL.
   3.2. This eliminates man-in-the-middle attacks and eavesdroppers in the same net-work.

3.3. The entire site is behind HTTPS, which ensures that authentication credentials or any other information transferred between the user and server are encrypted.

4. Intrusion detection

4.1. All connections to web servers will first be passed and checked through Firewalls.

4.2. Any malicious requests like DDoS attacks will be blocked before it arrives to the server.

5. JSON Web Token Authentication

5.1. The REST API endpoints consumed by the Mobile App is protected with JWT Authentication (JSON Web Token).

5.2. The authorization server then uses the JWT to check whether the logged-in user is allowed to perform the request before performing any change with side effects.

6. Cross site scripting (XSS) protection

6.1. XSS attacks are avoided by escaping/encoding all the characters that are dangerous to HTML.

7. SQL injection protection

7.1. An ORM (Object Relational Mapping) is used to transact with the database.

7.2. Raw queries are never executed in the database to completely avoid possibilities of any SQL injection.

8. Cross site request forgery (CSRF) protection:

8.1. CSRF protection works by checking for a secret (CSRF token) in each request. This ensures that a malicious user cannot simply “replay” a form to the website and have another logged in user unwittingly submit that form.

9. Validating and sanitizing data

9.1. All data posted to the web app or the REST APIs are validated and sanitized in the client side and server side.

10. Filtering out sensitive data

10.1. Confidential information such as seed phrases or private keys are not stored anywhere and are filtered out from the log files.

11. EMI Foundation Mobile Wallet

11.1. Access to EMI Foundation Wallet will require password authentication with SSL authentication.

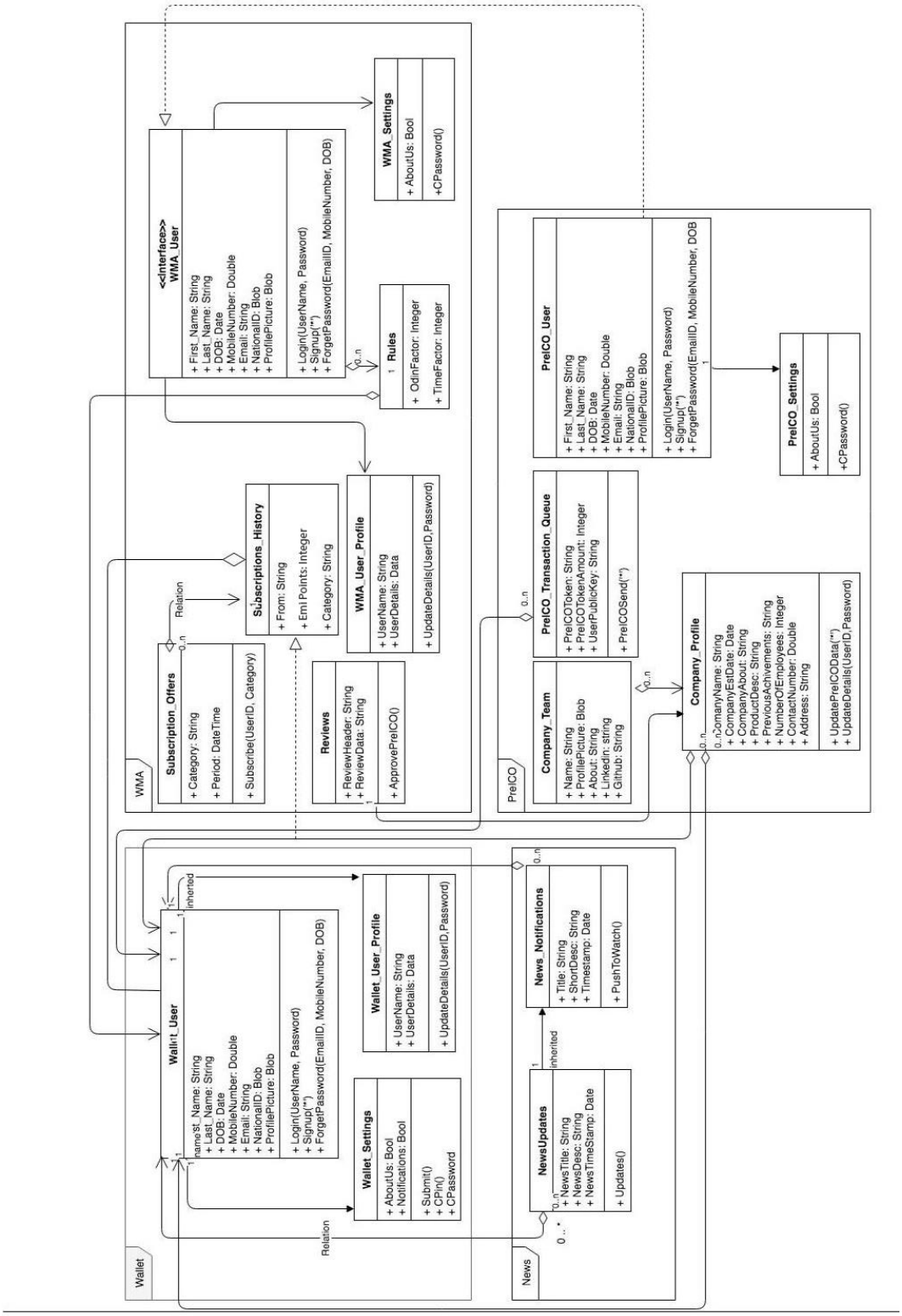
11.2. This is reinforced within app authentication, requiring a PIN code, a logout feature for multiple invalid login.

11.3. The PIN implemented has one-way hashing encryption protection.

11.4. Another security feature for mobile wallet include obfuscation protection of APK reverse engineering.

11.5. Physical access security and mobile device security requirement are out of scope for this development and falls within the responsibility of mobile device owners.

A. Database Process Flow



B Glossary

Anti-Money Laundering (AML)	Set of procedures, rules and regulations designed to curtail money laundering or criminal use of financial institutions and instruments.
Initial Coin Offering (ICO)	Unregulated means through which funds are raised for a new blockchain venture, which can be a new cryptocurrency or an application. This is typically employed by startups to bypass rigorous and regulated capital-raising processes required by venture capitalists or banks.
Know Your Customer (KYC)	Process of obtaining information about the clients regarding their identity, address, and other details to avoid misrepresentation and misuse of financial services..
EMI Foundation Wealth Management	The wealth management firm responsible for hosting EMI Foundation
AG (EMI Foundation WMA)	ICO, allocating funds for the EMI Foundation project, and managing the EMI Foundation platform.
Administrator	Administrator(s) can verify user KYC, block and unblock users, and block and unblock Ethereum wallet addresses.
Blockchain	A digitized, decentralized, and public ledger that records a continuously growing list of transactions. Each record are linked and secured using cryptography.

Cryptocurrency	Digital currency in which encryption techniques are used to regulate the generation of units of currency and verify fund transfers. The regulation and verification of such transactions occur independently of a central bank or entity. In essence, it is a peer-to-peer digital cash system.
Ether	Ether is the native currency of the Ethereum network. It can be exchanged among participants, and at the same time, be used to pay transaction fees for executing smart contracts.
Ethereum	Ethereum is an open-source blockchain network that features smart contract functionality.
Gas	Gas refers to the total computation required to process a smart contract transaction on Ethereum. Each unit of gas has a price fixed by the Ethereum miners.
Investor	Investors must register on the site and submit required documents for the KYC process. They can only invest in the ICO by buying the ICO tokens after the administrator accepts their KYC request.
Owner	Owner(s) can pause, resume and stop the ICO.
Token	Cryptocurrency designed, produced and sold in allocated amounts by the team, organization, or company hosting the

	ICO.
Token swapping	Process of exchanging EMI FOUNDATION tokens for the ICO tokens.
Utility Token	Tokens that provide users with access to a product or service. Also known as app coins or app tokens.
Wallet	An application that stores private and public keys and interacts with various blockchain systems. This application enables users to send and receive digital currency and monitor their balances, among other functions.