Project Specification

Work overview

CRPL (**C**opy**R**ight on a **P**ublic **L**edger)

For this project I'm planning to build a web application/platform for reregistering, managing and disputing copyrights of intellectual property secured on a public open-source ledger. The core technical principle by which the project revolves around is the immutable data structure and public ownership of a blockchain to secure the rights are distributed.

Blockchains have risen in popularity in the past decade since the development of Bitcoin a blockchain and a digital currency under the premise of "decentralisation" meaning theres no central bank or individual but all the users in the network who manage, validate and secure all the transactions.

The technology that allows for this "blockchain" which is essentially a linked list of "blocks" where the link is a hash of the previous block meaning if you wanted to change one of the previous blocks you would have to update all the next blocks in the chain up to the latest therefore making it more secure the more blocks are in the chain. You could manageably do this if it was held on one machine or by one individual, to get around this blockchains are a distributed to every user/node on the network. So the more users participating and the more activity make it harder to affect the chain.

Technologies

This project will produce a web application built in three main modules; Backend API, Client-side frontend and services communicating with the public blockchain.

Backend API - Will be written in C# and built on the .NET platform using the ASP.NET web API framework all hosted on Microsoft Azure.

https://dotnet.microsoft.com/

https://dotnet.microsoft.com/apps/aspnet

Client-side Frontend - Will be a modern SPA web application using the latest version of the Angular framework which is written in TypeScript, HTML, and CSS.

https://angular.io/

Blockchain Services - Is referencing all code that communicated with the blockchain which will be services running as a part of the backend API codebase with the addition of a library for

communication and manipulation of the blockchain. The Ethereum blockchain will be accessed using the Nethereum library (https://github.com/Nethereum/Nethereum) which is built for .NET.

https://ethereum.org/en/

Blockchain

The most popular and valuable blockchain is by far the Bitcoin blockchain with a market capitalisation of around 1 trillion USD at the time of writing, although Bitcoin is a legacy design in comparison with newer platforms which are more efficient, more environmentally minded and allow for more complex functionality through smart contracts compared to bitcoins limited financial capabilities.

The largest of these new chains is Ethereum which is an open-source blockchain with extremely powerful smart contracts allowing whole applications to be built right on the blockchain, these are pieces of immutable code that run on the Ethereum network completing operations and transactions by broadcasting to the network a request for work to be done which will be completed by a node for a fee in the form of the native Ethereum cryptocurrency called “Ether“.

https://en.wikipedia.org/wiki/Blockchain

Motivation

The current thinking underlying this project is that copywriting and the protection of creative works is: complex, generally unknown (people are not familiar with the basic principles) and doesn’t favour small creators. This results in many people being exploited via a lack of understanding and relative power between large corporations and creators.

A globally distributed and open source solution would remove unnecessary friction and democratise creative work protection secured by everyone.

Existing products

I have found a number of products adjacent to my proposal, platforms where you can purchase rights from holds per contract however the underlying copyright is not held with these sites they only offer an agreement whereby they can sell the rights on behalf of them. There are obvious reasons for this as securing a creative work with some third-party service instead of your local jurisdiction is novel indeed.

Name	Key features

https://www.gettyimages.co.uk/	Image marketplace. They purchase images from creators under a royalty free agreement meaning they do not get any money after the sale based on sales. They also offer a rights-ready (“RR”) and rights-managed (“RM”) licences that pays creators based on use/sales. https://www.gettyimages.co.uk/eula
https://www.prsformusic.com/	Royalty distribution platform for artists to get pain for their music from streaming platforms. They offer licensing and a level of protection for artists by being a large company comparatively.
https://www.royaltyexchange.com/buy-royalties	Royalty marketplace where you can buy intellectual property rights for music, movies and trademarks.

Existing knowledge

For this project I will be drawing from my knowledge gained throughout my studies here at Goldsmiths especially from algorithms and data structures, web development and most of all last years group project as a lot of technical skills will be carried over from that project into this project mainly the tech stack used, the principles of agile and test-driven development.

Knowledge gained

I will be researching and gaining a firm knowledge in the copyright law required to implement a digital implementation, therefore I will also need to have the knowledge, theory and skills to actually implement this representation of copyright law within a smart contract.

https://ethereum.org/en/developers/docs/smart-contracts/

Included in this knowledge is the methodology in verifying the owner of a work, the process of registering the work and the steps in disputing the ownership of a creative work in the current systems in the world (an understanding of the real to better the new).

https://www.gov.uk/copyright

https://copyrightservice.co.uk/copyright/international_copyright

https://en.wikipedia.org/wiki/Berne_Convention

Timeline

Week	Date	Milestone

1	18/10/2021 22/10/2021	Initial supervisor meeting Project specification due
2		Research blockchain, smart contracts, solidity language, copyright law.
3		Start developing prototype
4		
5	15/11/2021	Prototype due
6		Start GUI design Finalise feature set
7		Present GUI design to user for feedback Finalise GUI design
8		Technical design (UML, diagrams, libraries, database) Finalise tech stack (backend, frontend, blockchain, database, user authentication)
9		Develop test strategy (unit testing, user testing, acceptance testing)
10	Christmas break	Start developing backlog
11	Christmas break	Start time estimation for backlog tasks
12	Christmas break	Finalise Interim report
13	Christmas break	Finalise backlog and sprint structure Setup dev environment, CI and CD Start development
14	17/01/2022	Interim report due
15		End of sprint 1 Sprint review with round of user testing Start of sprint 2
16		

17		End of sprint 2 Sprint review with round of user testing Start of sprint 3
18		
19		End of sprint 3 Sprint review with round of user testing Start of sprint 4
20		Performance testing
21	11/03/2022	End of sprint 4 Presentation (100% functionality finished and working)
22-29		Work on report
30	06/05/2022	Project due

MVP

Feature	Description	Priority
Copyright smart contract	Immutable code on a public ledger “blockchain“ for the purpose of establishing ownership or the copyright to a piece of work.	CORE
Multi-party distribution	The ability to establish a complex ownership structure which includes multiple individuals/groups.	CORE
Rights transfer	The ability to transfers the ownership of the copyrights to a piece of work.	CORE
Work verification	Verification that the work is original within reasonable accuracy for the platform. Searching records existing on the platforms database plus any possible external sources (will need to decide on a ridged process for this).	CORE
Dispute filing	Allowing any user to dispute a copyright with sufficient evidence.	CORE
Digital signing	Digital signing a work for authentic verification based on our records (some unique metadata).	CORE

Version control

https://github.com/MrHarrisonBarker/CRPL