Innovature consulting service implements “Patent Ownership Portal” for secure handling of patents.

## Project Overview

This is a blockchain based application that helps to keep a patent document in a safe and secure format. The main concept of the project is to secure the patent workflow by using blockchain technology. This portal contains mainly three types of users.

* Patent Holder
* Patenting Authority
* Public

Patent holders can upload the application to the portal and send it to the Patent authority for approval. The details of the patents will be stored in a secured format.The patent authority can review the application and approve/reject it. Once the patent is approved, an NFT will be generated.

Patent holders can also list their approved patents for sale for a price of their choice. Once a patent is listed for sale, interested users can place their bids on patents. Once their bid is approved by the patent owner, the ownership of that patent will be transferred to them from the initial patent owner.

Public users can view all the patents approved by the authority.

## Business/ Technical Challenges

**Immutability of smart contracts:** Smart contracts are simply programs that run on the blockchain. Due to the immutable nature of blockchain, no change is possible on a deployed smart contract. Hence, a faulty smart contract can result in huge monetary losses. Therefore, it is important for smart contract developers to fully check the correctness of their code before deploying it on the blockchain. Also, it won’t be possible to make any additional upgrades on existing smart contracts. In such cases, new smart contracts must be written and deployed.

**Limited Amount of Ethereum:** Upto a limit, it was possible to simulate a fake blockchain environment using Ganache, a tool from truffle suite. But for a more realistic approach, we deployed our blockchain programs to testnets provided by Ethereum. Unlike Ganache, where we had unlimited fake ethereum, for testnets, we had to depend on online faucets for Ethereum which provided only a very limited amount. Due to this, we could only invoke our blockchain transactions in a very limited manner.

## Technologies Used

| Application Type | Web Application |
| --- | --- |
| Development Language | Javascript, Solidity |
| Database | MongoDB, Ethereum Blockchain |
| File Storage | AWS S3 |
| Frameworks | React, Node, Truffle |
| Tools/ Libraries | Ganache |

## Implementation Approach

Agile methodology was followed to manage frequent changes, ensure continuous delivery, and early detection of issues. The system was designed by incorporating the major competitive features which provides an advanced level of user experience. The Web Application integrated MongoDB database and Javascript as development language.

## Business Benefits & Key Features

**Feature-rich Solution**: The solution incorporated almost 90% of the competitive features available in the market, in the first version. This ensured customer delight and improved user experience.

**Enhanced Security:** Blockchain Technology increases trust, security, transparency, and the traceability of data shared across a business network. It uses a shared and immutable ledger that can only be accessed by members with permission.

**Reporting Dashboard**: Different types of analytic reports were generated. This includes weekly/ monthly registered users count and patent (applied/rejected/approved) statistics.