Creation of a web and blockchain platform implemented on the Polkadot network

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Abstract
WEB3 and blockchain are new emerging technologies of the decade. They will be ubiquitous in the years to come and represent a major challenge for companies. It is therefore important for a start-up company to take the lead as soon as possible in this field. Perpetual Altruism Ltd want to create a platform in this domain called MyNFT. It will therefore be a marketplace for everything related to NFTs. It is therefore important for this startup to be able to cover a maximum number of blockchains in order to be present on all markets. It will then be necessary to create a platform to collect the important data of each blockchain and to allow a constant maintenance of the platform while following the evolution of the technologies previously mentioned.

Keywords
NFT (Non-fungible token), Javascript, Infrastructure, Blockchain, Database, DevOps

1. Introduction
Let's start with a short summary of Perpetual Altruism Ltd. It is a leading company in the world of blockchain and NFTs, based in London and founded in 2018 by ENSEEIHT alumni. Developer of the Cryptograph digital charity collection works platform launched in 2020 and the GBM auction system. It is important in building a website like MyNFT to be scalable. That's why some tools are created to make the task easier like Github, Terraform, Ansible or AWS services. As for the applications linked to MyNFT, there is one to collect information from the blockchain. It is also important to know that a blockchain is public and that anyone can put what they want in it. The application will have to be able to collect only what has a real value.

2. Information technology infrastructure
It is important to be able to facilitate the deployment of each application in order to be able to evolve the platform as easily as possible.
Some tools allow this, such as Ansible, terraform, AWS, Docker or Github.

Ansible allows you to automate the deployment of an application. It can update, install and launch an application on the principle of push. A mother machine can then on a given number of daughter machines deploy, creates and run a lot of updates or task. The infrastructure field requires a certain mastery of bash and linux infrastructure. This allows us to handle Ansible easily on different machines.

Terraform allow us to deploy a lot of things on different services like AWS or Azur for example. With Terraform you can create a virtual machine or place to store data or docker image. Add to that we can configure everything with a complex structure (security, routes, certificates, …)

AWS came from Amazon and it help enterprise to build their infrastructure. It can manage database, virtual machine and many other things. It creates private or public routes to simplify the communication between virtual machines. With this it becomes simple to create a very complex environment. Many other things exist like services which give a low times response for the website no matter where you are.

The easiest way to deploy something is to use Docker. Docker works on the container principle. If you want to create an application that runs on NodeJS for example. All you have to do is put all the files of the application in a Docker image and launch a container with this image. It will run like a virtual machine on a machine. With this and Terraform, it’s easy to store an image in AWS and after that run this image in a virtual machine instance.
To automatize the deployment of the entire infrastructure correctly we need to use GitHub and his service GitHub actions.

In GitHub you can create many branches on the same repository. So the idea is to create a development and production branch. With GitHub actions you can create a script which will deploy all the infrastructure when we push a modification, on this we can use Ansible, Terraform or Kubernetes for example. So we can test the infrastructure in development branch and if it’s clean we can push the development branch into production branch to be able to have a good production environment quickly. This method is called CI/CD.

To talk a little bit about security, we can add all sensitive information in GitHub secret. This service allows us to hide the information from other enterprise for example.

3. Database

It is important to have easy access to information stored by the company. There are several types of databases that are often used, both SQL and non SQL. To name two well-known names in new companies there is PostgreSQL in SQL and MongoDB in non-SQL.

We also have GraphQL to describe our data.

For PostgreSQL there is an additional tool called postgraphile which allows you to link GraphQL and postgreSQL.
This tool is very powerful and allows then to be able to have complex data between different tables. This is powerfull to give a lot of information for a service, like a research in google.

MongoDB is also very powerful. We can create, store and retrieve data easily with nodeJS in a script without using SQL. It simplifies everything when it comes to update and change data a lot.

4. Web development

We have many possibilities to create a website like C#, java or javascript which is one of the most used.

The advantage of javascript is that it has many frameworks like NodeJS for example, that allow you to work more easily with the blockchain.

It is as said before that nodeJs is mainly used for the backend in myNFT. NodeJS allows us to run a script or a server in a simple way.

In addition, we need another language to talk with the blockchain. And
this language is Solidity. Solidity is a language that have a l ot in common with javascript. With that we
can create and modify contract across the blockchain.

5. Conclusion

To conclude, it was a chance to be part of a company when the website is about to came out. It allows me to discover a lot of thing in the creation of a complex organisation and his website. I had the chance to learn a lot of knowledge that I had never heard of this.