

Cargo Management System Using Ethereum Blockchain

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Abstract-The Cargo management system is developed in truffle framework, Solidity, Php and has the MySql database. The objective of this product is to deal with all the cargo business. The product stores the subtle elements of the packages the client need to dispatch. The name of the package, weight, number of packages or compartments, starting point port, and the destination port. During shipping as indicated by the data given by various clients, every one of the bundles is loaded and shipped. The quantity of packages is noted down in the product and the same report is given to the clients of the destination port. At the point when the packages achieve the destination place, the client of the destination place verifies whether every one of the packages is available and are come to securely. If so bundles of clients are partitioned again and they are sent to their goal put either through train or through street transport. At the point when the packages have achieved their last address, a notice is sent to the client of the cause place. The client must pay the transportation to add up to the freight administration.

Keywords-Ethereum Blockchain, Cargo Management, Status of Cargo

I. INTRODUCTION

Transporting things from one place to another is a very important aspect of our life. It makes one easy to migrate and make things available to the places where things are not available. But the issue is how we do it.

A few of the options are by the trucks another means of transport. The transport system used in the different conditions is different as for inside country and between normal and attached places the trucks are best for transporting, for low weight and expensive goods airways are good but when we come to very heavy goods which are needed to transport from one country to another which are connected with waterways.

So here we come up with a cargo management system with the feature from where one person who needs to transport the material will be registered and the organization will transport the cargo to the destination place. The objective of this product is to deal with all the cargo business. The product stores the details of cargo from the sender including, the name of the package, weight, number of packages, starting point port, and the destination port. During shipping as indicated by the data given by various clients, every one of the bundles is loaded and shipped. The quantity of packages is noted down in the product and the same report is given to the clients of the destination port. At the point when the packages achieve the destination place, the client of the destination place verifies whether every one of the

packages is available and are come to securely. If so bundles of clients are partitioned again and they are sent to their goal put either through train or through street transport. At the point when the packages have achieved their last address, a notice is sent to the client of the cause place.

II. BACKGROUND

Technologies used in this project:

1. Truffle A world-class development environment, testing framework, and asset pipeline for blockchains using the Ethereum Virtual Machine (EVM), aiming to make life as a developer easier. [1] With Truffle, you get:
 - Built-in smart contract compilation, linking, deployment, and binary management.
 - Automated contract testing for rapid development.
 - Scriptable, extensible deployment & migrations framework.
 - Network management for deploying to any number of public & private networks.
 - Package management with EthPM & NPM, using the ERC190 standard.
 - Interactive console for direct contract communication.
 - Configurable build pipeline with support for tight integration.
 - External script runner that executes scripts within a Truffle environment.
2. Ganache is a personal blockchain for rapid Ethereum and Corda distributed application development. You can

use Ganache across the entire development cycle; enabling you to develop, deploy, and test your dApps in a safe and deterministic environment. Ganache UI is a desktop application supporting both Ethereum and Corda technology. Also, an Ethereum version of ganache is available as a command-line tool: ganache-cli (formerly known as the TestRPC). All versions of Ganache are available for Windows, Mac, and Linux. [2]

3. Solidity is an object-oriented, high-level language for implementing smart contracts. Smart contracts are programs that govern the behavior of accounts within the Ethereumstate.[3]

- Solidity was influenced by C++, Python, and JavaScript and is designed to target the Ethereum Virtual Machine (EVM).
- Solidity is statically typed, supports inheritance, libraries, and complex user-defined types among other features.
- With Solidity , you can create contracts for uses such as voting, crowd funding, blind auctions, and multi-signature wallets.
- When deploying contracts, you should use the latest released version of Solidity .

4. React makes it painless to create interactive UIs. Design simple views for each state in your application, and React will efficiently update and render just the right components when your data changes.Declarative views make your code more predictable and easier to debug.[4] Build encapsulated components that manage their own state, then compose them to make complex UIs. Since component logic is written in JavaScript instead of templates, you can easily pass rich data through your app and keep state out of the DOM.

5. MetaMask comes pre-loaded with fast connections to the Ethereum blockchain and several test networks via our friends atInfura. This allows you to get started without synchronizing a full node, while still providing the option to upgrade your security and use the blockchain provider of your choice.Today, MetaMask is compatible with any blockchain that exposes an Ethereum-compatible JSON RPC API, including custom and private blockchains. For development, we recommend running a test blockchain like Ganache.[5]

6. PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. PHP is mainly focused on server-side scripting, so you can do anything any other CGI program can do, such as collect form data, generate dynamic page content, or send and receive cookies. But PHP can do much more.Three main areas where PHP scripts are used.[6]

- Server-side scripting.
- Command line scripting.

- Writing desktop applications.

III. EXISTING SYSTEM

1. How it works

Existing systems are the centralized system that means they completely depend on a database. If something happened to that database all data will be lost. That leads to many problems in an organization.

2. Limitations of the Existing System

- **Lack of integrity:** Storage maintenance is not integrated.
- **Poor reliability:** Since the data is handled manually, it is prone to data entry error and manipulation errors making the data less reliable.
- **Time-consuming:** Since the system is maintained manually, it is a very tedious job to generate reports by checking all the needed data.
- Difficult to maintain large files.

IV. PROPOSED SYSTEM

A Ethereum blockchain-based application would help to protect data and avoid loss of data in any circumstances. Using blockchain, you can implement a system that collects data from many interconnected systems and deliver details to the users of that system. This system was implemented in ethereum blockchain and development completed with the help of the truffle framework.

V. RESULT AND DISCUSSIONS

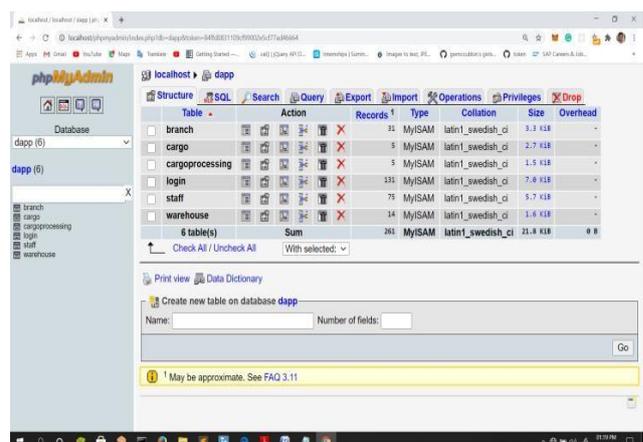


Fig 1 Database Design.



Fig 2 Cargo Management system Home Page.

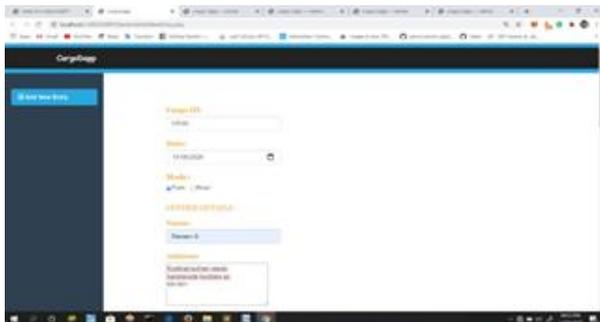


Fig 3 Add New Entry.

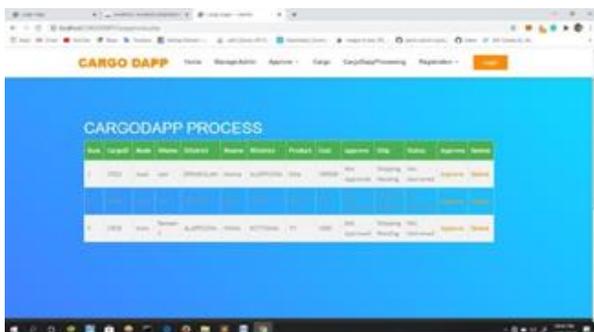


Fig 4 Cargo Process.

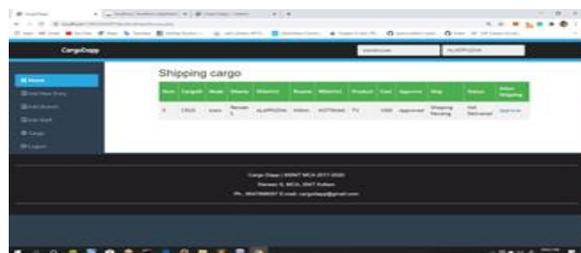


Fig 5 Warehouse Home.

VI. CONCLUSION

The package was designed in such a way that future modifications can be done easily. The following conclusions can be deduced from the development of the project.

- Cargo Manager of the entire system improves efficiency.

- It provides a friendly graphical user interface which proves to be better when compared to the existing system.
- It gives appropriate access to the authorized users depending on their permissions.
- It effectively overcomes the delay in communications.
- Updating information becomes so easier.
- System security, data security, and reliability are striking features.
- The System has adequate scope for modification in the future if it is necessary.

The shipping and logistics industry is searching for new technologies to improve the existing processes, cut costs, and increase the transparency of the supply chain. Blockchain technology offers a solution to the most current issues. There are certain challenges associated with the implementation of blockchain, but the more companies start implementing this technology, the more examples of successful utilization we will see. Several implementation strategies are being tested now, and the industry is going to change forever as more organizations get involved.

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