

Blockchain-based eCommerce warranty system using NFTs

Team Name: I.S.H

Institute Name: Shri Govindram Seksaria Institute of Technology and Science (SGSITS),
Indore

Team members details

Team Name	I.S.H.		
Institute Name	Shri Govindram Seksaria Institute of Technology and Science (SGSITS), Indore		
Team Members >	1 (Leader)	2	3
Name	Harsh Parwal	Ishita Jain	Sejal Farkya
Batch	2023	2023	2023

Deliverables/Expectations for Level 2 (Idea + Code Submission)

The solution should focus on:

- The blockchain smart contract should allow users to prove ownership
- Provide the purchasing history, warranty period, and other item information
- The warranty card should include the item's serial number and upon purchase be sent to the customer's smartphone.
- The NFTs should be decaying in nature, in that, after a certain period their use for the redemption of warranty benefits offered by the brand/retailer will expire
- **Bonus** - GUI-based tool that doesn't require knowledge of any Blockchain programming to use by Brands and Retailers.
- **Bonus** - Usage of Soulbound NFTs
- **Bonus** - Add any engagement/gamification construct to the loyalty program

Use-cases

- ❑ **P0 Ownership of the product and warranty card will be easily identified.**
Will prevent from false identity claim and undue usage of warranty and product. Each warranty will be unique.
- ❑ **P1 History of purchase, repair and transfer of ownership of a product will be maintained.**
This will prevent from conflict of interest between the dealer and the customer involved, and smart contracts will be giving the final decision without any bias.
- ❑ **P2 Dealer could be benefited in case of second hand transfer by gaining royalty.**
Unlike the traditional mechanism in which dealer is not aware of transfers of a product manufactured by him, through NFT Warranties, he could track this process and proceeds in a way that could increase his customer base and monetary benefits.
- ❑ **P3 Some functionality of NFTs will be made inaccessible in case of warranty expiration.**
This will be helpful in tracking warranty period well, preventing the warranty terms from been tempered in any way. Ownership of the product would still be proved.

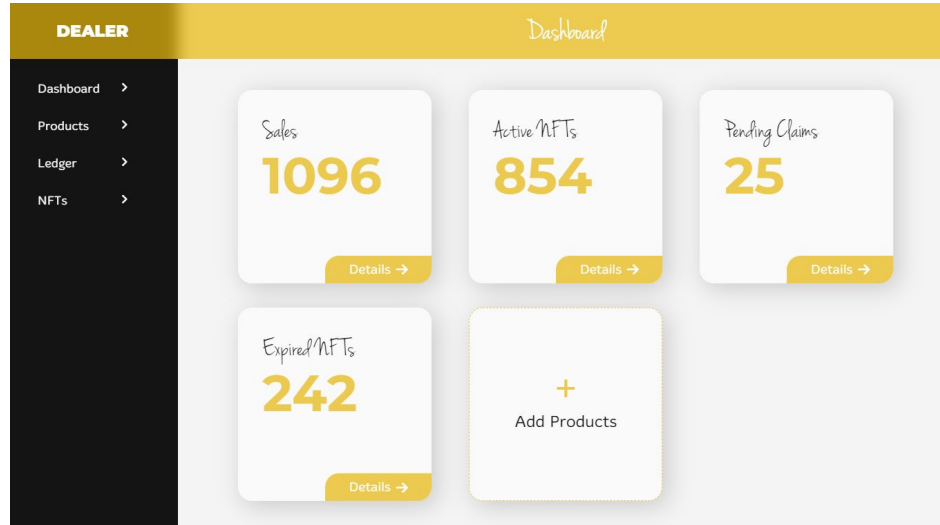
NFTs Seller's Side:	NFTs Buyer's Side:
<ul style="list-style-type: none"> ● The seller can generate as many NFTs as he wants with respect to every unique product key. ● The seller can transfer the ownership of the generated NFT to the respective customer. ● The seller will be notified for a product issue (repair/ replace) reported by a customer if the NFT hasn't expired. ● The seller can track his earnings and royalties using crypto wallet. ● User authorization via email and password, digital wallet login. ● Charged in favor of an NFT creator every time the NFT is resold. ● Giving instant access to sales reports and marketplace profit. 	<ul style="list-style-type: none"> ● The customer is ensured that the identity of the brand is verified as well as authentic. ● While purchasing a product, the buyer will have the complete traceability of the product which he/she is going to buy and full transparency about the history of the product. ● The buyer will be able to keep a track of all the services and NFTs linked to the respective product which will be registered and timestamped. ● The buyer can keep a live check on the ETA to the expiry of the NFT (warranty period). ● User authorization via email and password, digital wallet login.

Solution statement/ Proposed approach

In this project, we are linking a physical product sold on E-commerce platform with a digital NFT warranty card.

The flow of our application is as follows:

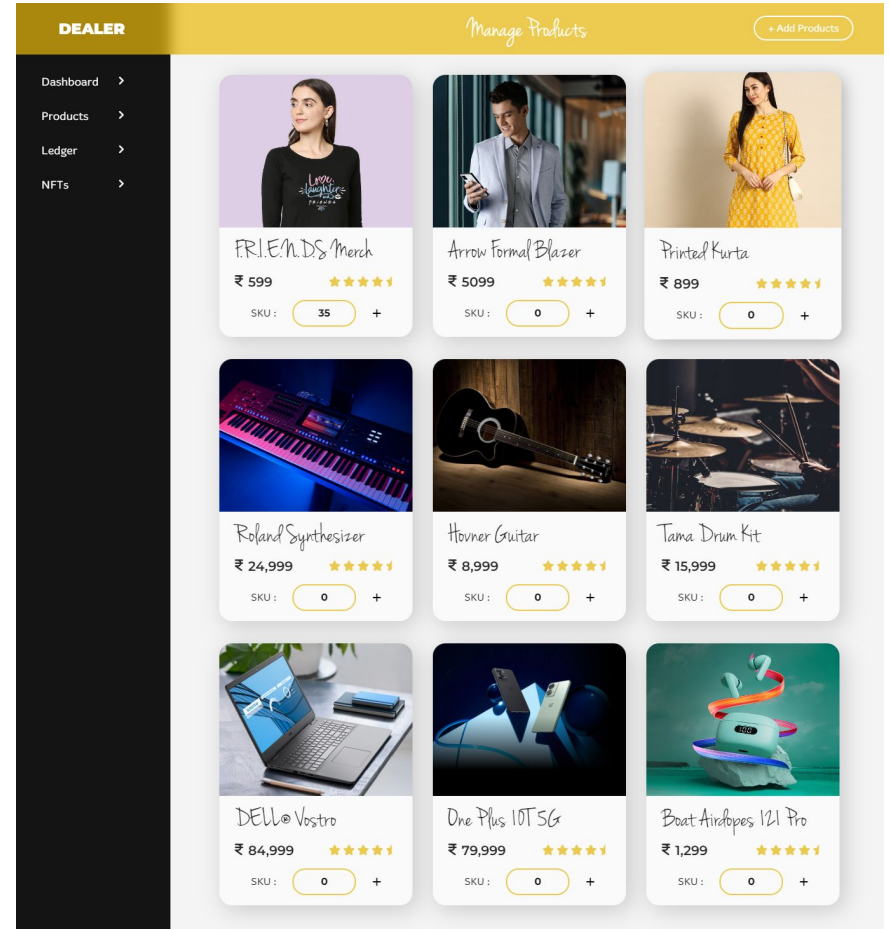
1. **Dashboard:** A dealer will be able to view his current sales statistics which includes details about physical product sales, pending claims as well as active and expired NFT warranties.



This will make it easy for a dealer to track warranty claims and provide more authenticity to the process.

2.Manage Product: While adding a product a dealer will be required to give details about product and add the current stocks in unit available of that product. On pressing the add button, he will be directed to the NFT-Warranty creation form.

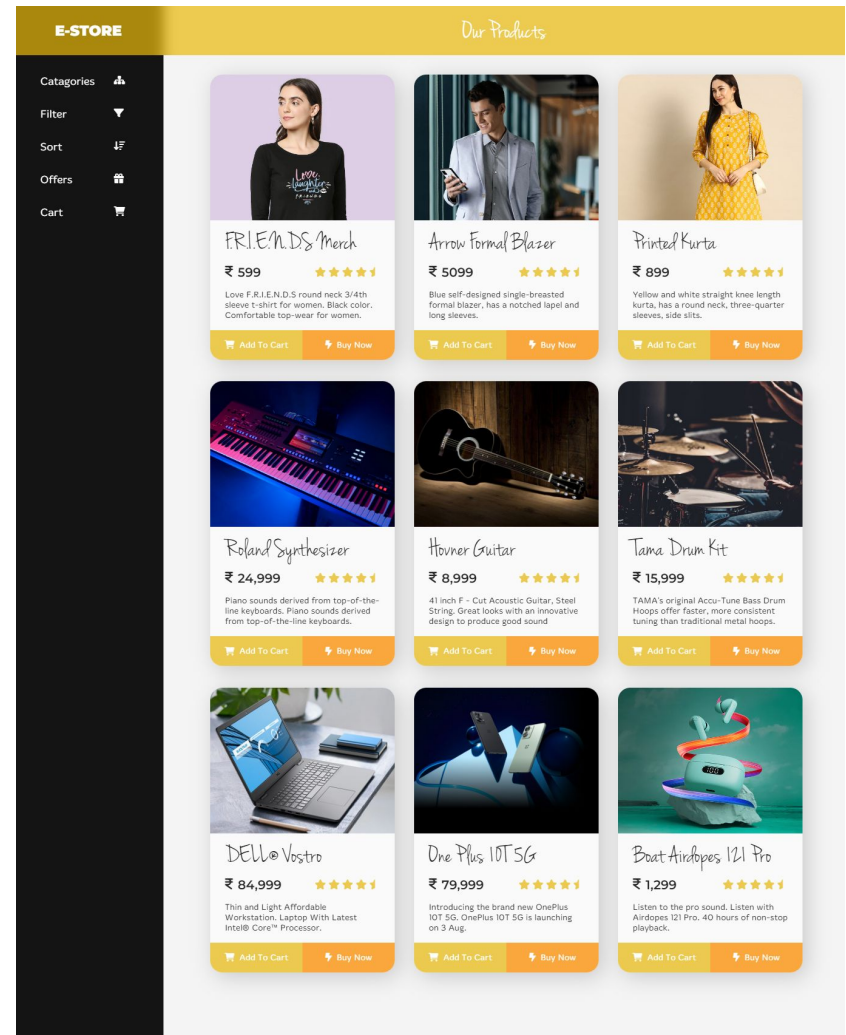
This will help the dealer to create NFT-warranties in bulk, without any prior knowledge of NFTs.



2.Create NFTs: User will be required to provide details about NFT-warranty such as ProductID, GTIN, MPN, Warranty period to create a unique NFT which could be linked to a specific product.

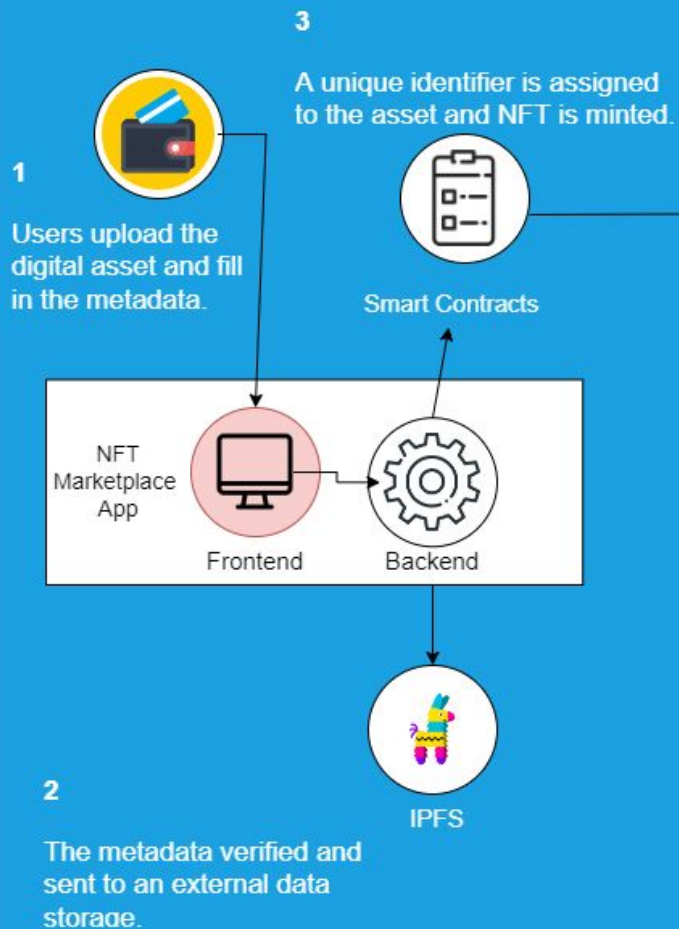
An unique NFT would guarantee true ownership claims and proper history tracking of events such as purchase, repair and resell. This will provide a sense of transparency to both the dealer and the customer.Bulk NFTs would be created together at the backend.

3. Our Products: Customer will be able to view all available products and on buying a particular product,he will be prompted to create or associate a NFT-wallet with his ecommerce account.



4. On buying a particular product, a NFT corresponding to that product Id will be transferred from Smart Contract to Customer's wallet. Customer will have complete access of his warranty details and could transfer the ownership on reselling if required. In this way, brand will not lose track of their products and can communicate with their customers for product's lifecycle reasons such as secondhand resale.

Architecture Components



Tech and Services



Polygon

4

The NFT is added to the blockchain.

Limitations

1. Currently, the dealer is not able to avail any benefit on reselling of product by the customer.
2. The owner of NFT is being recognized by his/her metamask wallet and not by any trusted authentication method like Google authentication or other social logins.

Future Scope

- As an extension to the functionalities of our project, the seller can be given an option to select where to store their NFT. For instance, a choice can be given between Pinata, IPFS, etc.
- We are planning to use completely decentralized frontend for our product. So as to avoid single point of failure.
- NFTs can be generated for multiple products in a single go.