



FON Hakaton – Blockchain Challenge 2024

Topic: NFT in Education

Team:
Achievables

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Introduction to *Achievables*

Why involve innovative technologies in traditional education?

- Recent graduate CVs all look identical and list no work experience
- It's hard to find a job after graduating
- There's a lack of student motivation throughout studies

Project Description



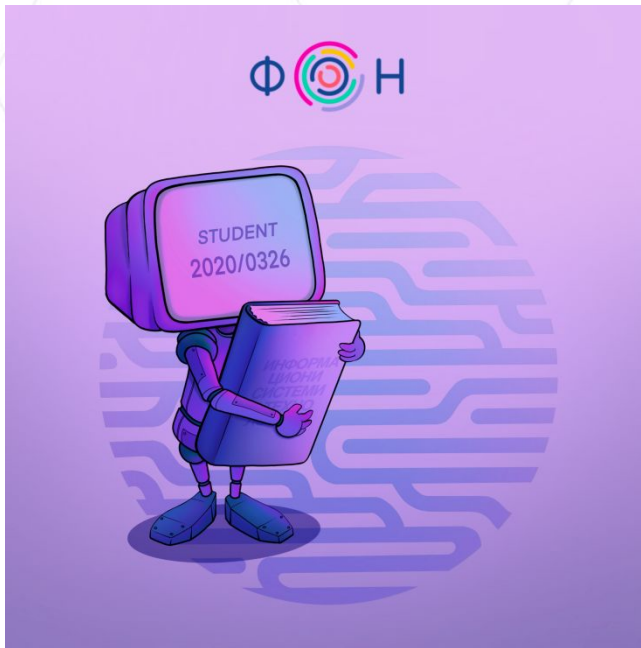
- Platform that uses blockchain technology to turn students' academic and extracurricular achievements into powerful portfolios
- University specific achievement badges that students collect in the form of NFTs
- Authenticated digital certificates as definite proof of student achievements
- Search function that companies can use when looking for young talent

Business Model Canvas - BMC

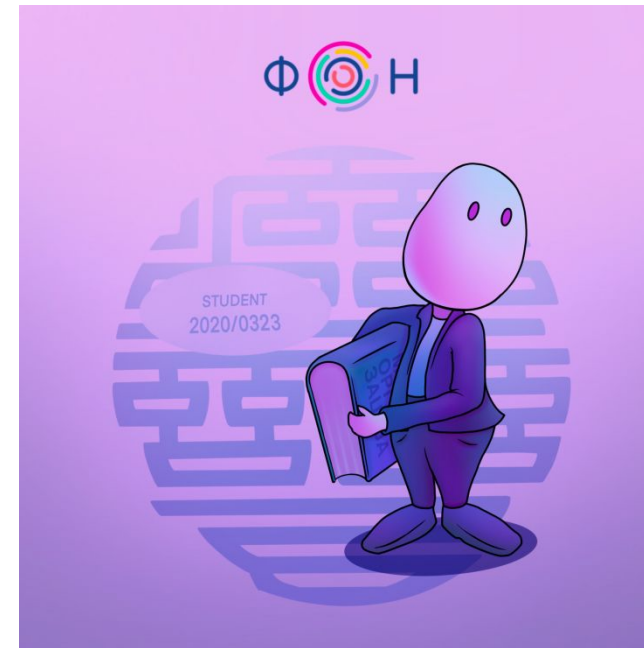
Partners - Universities (and other educational institutions) - Companies looking for new talent - Students - Designers	Key activities - Creating NFT collections for universities - Awarding students NFTs for achievements - Taking individual requests - Showcasing students' collections - Assisting companies in finding talent	Value propositions - Advanced portfolio building and customized learning pathways for students - Enhanced student engagement (gamification) - Ease at first job finding - Advanced talent search for employers - Advanced insights for universities - Promotion of blockchain literacy	Relationship with users - Community building - Intuitive platform - Effective communication - Personalization - Transparency - Value delivery	Customer segments - Universities and other educational institutions - Students - Employers - Companies providing educational services - Regulatory bodies and accreditation agencies - Investors and stakeholders
Cost structure - Technology development and maintenance, costs of blockchain integration, salaries for working employees, marketing and promotion costs, legal fees and office expenses			Revenue Streams - Revenue from partnerships with universities and hiring companies, investors	

NFT collections

- *Enrollment NFTs (a „welcome“ NFT for freshmen students)*



IT department



Management department

NFT collections

- *Formal education (NFTs that represent university subjects students excelled at)*



Highest grade in mandatory university subjects



and elective university subjects

NFT collections

- *Informal education (NFTs that represent achievements outside the standard curriculum)*



Awards



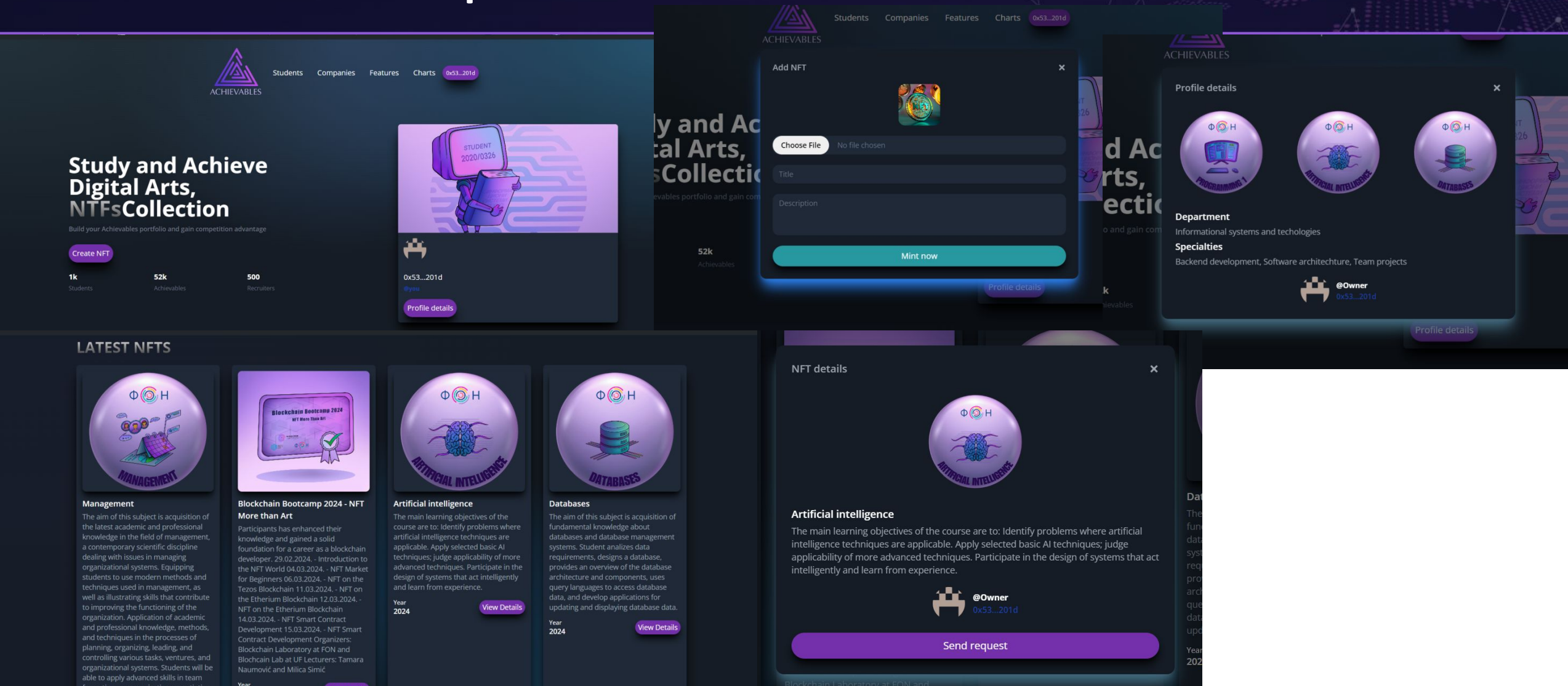
Extracurricular courses

NFT collections

- *Formal education (NFTs that represent a student's final thesis)*



NFT Marketplace



Smart Contract

```
function payToMint(string memory title, string memory description, string memory metadataURI, uint256 salesPrice) external payable {
    require(msg.value >= cost, "Ether too low for minting!");
    require(existingURIs[metadataURI] == 0, "This NFT is already minted!");
    require(msg.sender != owner(), "Sales not allowed!");

    uint256 royalty = (msg.value * royaltyFee) / 100;
    payTo(artist, royalty);
    payTo(owner(), (msg.value - royalty));

    supply++;

    minted.push(
        Transaction(
            supply,
            msg.sender,
            salesPrice,
            title,
            description,
            metadataURI,
            block.timestamp
        )
    );

    emit Sale(supply, msg.sender, msg.value, metadataURI, block.timestamp);

    _safeMint(msg.sender, supply);
    existingURIs[metadataURI] = 1;
    holderOf[supply] = msg.sender;
}
```

```
constructor (
    string memory _name,
    string memory _symbol,
    uint256 _royaltyFee,
    address _artist
) ERC721(_name, _symbol) {
    royaltyFee = _royaltyFee;
    artist = _artist;
}
```

```
contracts > * NFTMarketplace.sol
contract NFTMarketplace is ERC721Enumerable, Ownable {
    using Strings for uint256;

    mapping(string => uint8) existingURIs;
    mapping(uint256 => address) public holderOf;

    address public artist;
    uint256 public royaltyFee;
    uint256 public supply = 0;
    uint256 public totalTx = 0;
    uint256 public cost = 0.01 ether;

    event Sale(
        uint256 id,
        address indexed owner,
        uint256 cost,
        string metadataURI,
        uint256 timestamp
    );

    struct Transaction {
        uint256 id;
        address owner;
        uint256 cost;
        string title;
        string description;
        string metadataURI;
        uint256 timestamp;
    }

    Transaction[] transactions;
    Transaction[] minted;
}
```



Realization of the transaction

0xe16f111f684...

Pay To Mint

5578337

1 hr ago

0x53F32C4D...5a32a201d

OUT

0xC8d74Ef...58b07187e

0.01 ETH

0.01952095

MetaMask

Sepolia test network

Deployment

→

0xC8d7.....

http://localhost:3000

0xC8d7...7187e : PAY TO MINT

0.01 SepoliaETH

DETAILS

HEX

Estimated fee

0.04325492

0.04325492 SepoliaETH

Advanced -15 sec

Max fee: 0.05796566 SepoliaETH

Total

0.05325492

0.05325492 SepoliaETH

Amount + gas fee

0.06796566 SepoliaETH

Max amount:

0.06796566 SepoliaETH

Reject

Confirm

Processing...

Uploaded, approve transaction now...

Transaction Hash:

0xe16f111f68485d36f3941570c05a78a69b69060a5a258d30ce07ee0e0e7f609e

Status:

Success

Block:

5578337 422 Block Confirmations

Timestamp:

1 hr ago (Mar-28-2024 12:50:24 PM +UTC)

Transaction Action:

Call Pay To Mint Function by 0x53F32C4D...5a32a201d on 0xC8d74Ef...58b07187e

From:

0x53F32C4Dee7be2216f0A1d1bc5272855a32a201d

Interacted With (To):

0xC8d74Ef4429D0fdA30DE1A8FF50D525Bb07187e

Transfer 0.001 ETH From 0xC8d74Ef...58b07187e To 0x90F8bf6A...44Ea8c9C1

Transfer 0.009 ETH From 0xC8d74Ef...58b07187e To 0x90F8bf6A...44Ea8c9C1

ERC-721 Tokens Transferred:

ERC-721 Token ID [8] NFT Marketpl...(FD)

From 0x00000000...00000000 To 0x53F32C4D...5a32a201d

Value:

0.01 ETH (\$0.00)

Transaction Fee:

0.019520951367092256 ETH (\$0.00)

Gas Price:

29.505536352 Gwei (0.000000029505536352 ETH)

Conclusion

Scroll through Achievables' addition to the Student's Index and Grade Transcript documents:





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