AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

BLC301-R2

RE:INVENT 2021

Zero to hero: Building your first NFT on blockchain

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Agenda

Introduction to digital assets

What are non-fungible tokens?

NFT lifecycle

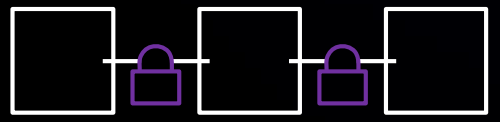
NFT platform, standards, and implementations

Wrap-up

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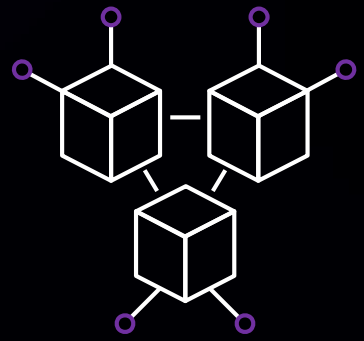
What is blockchain?

Ledgers



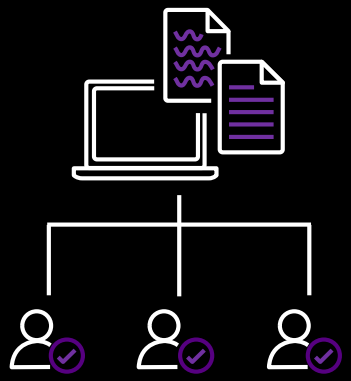
Immutable, append-only, cryptographically verifiable

Decentralization



Distributed trust and data replication

Consensus algorithms



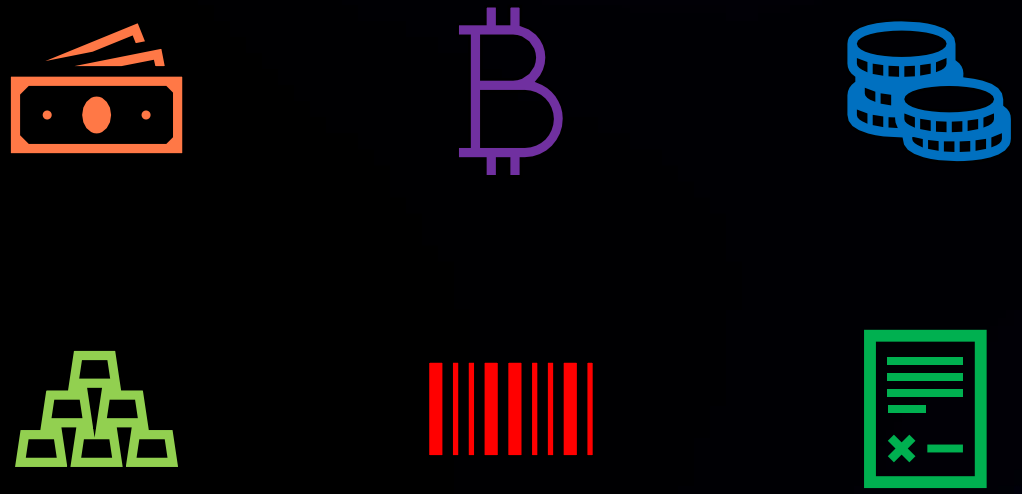
No intermediaries in decision process, support for smart contracts

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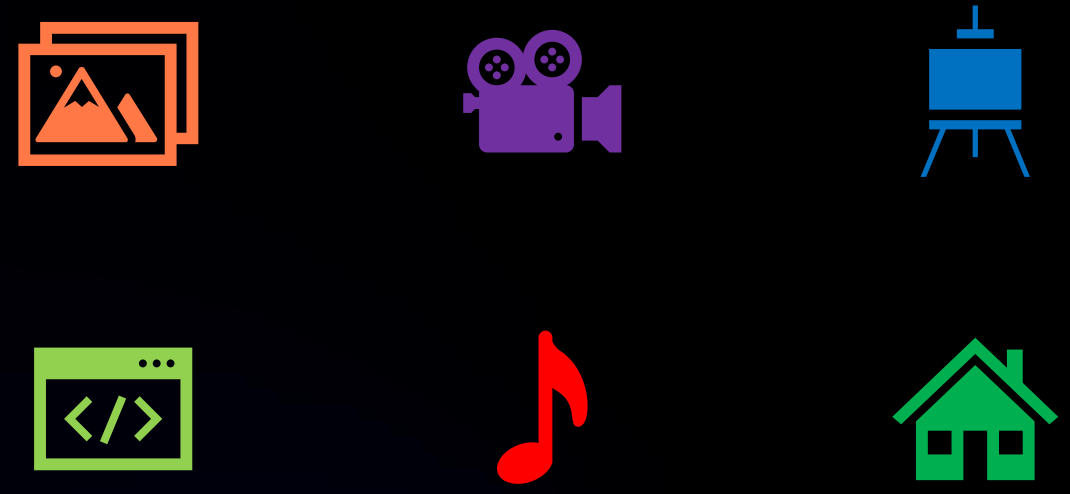
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Introduction to digital assets

Fungible

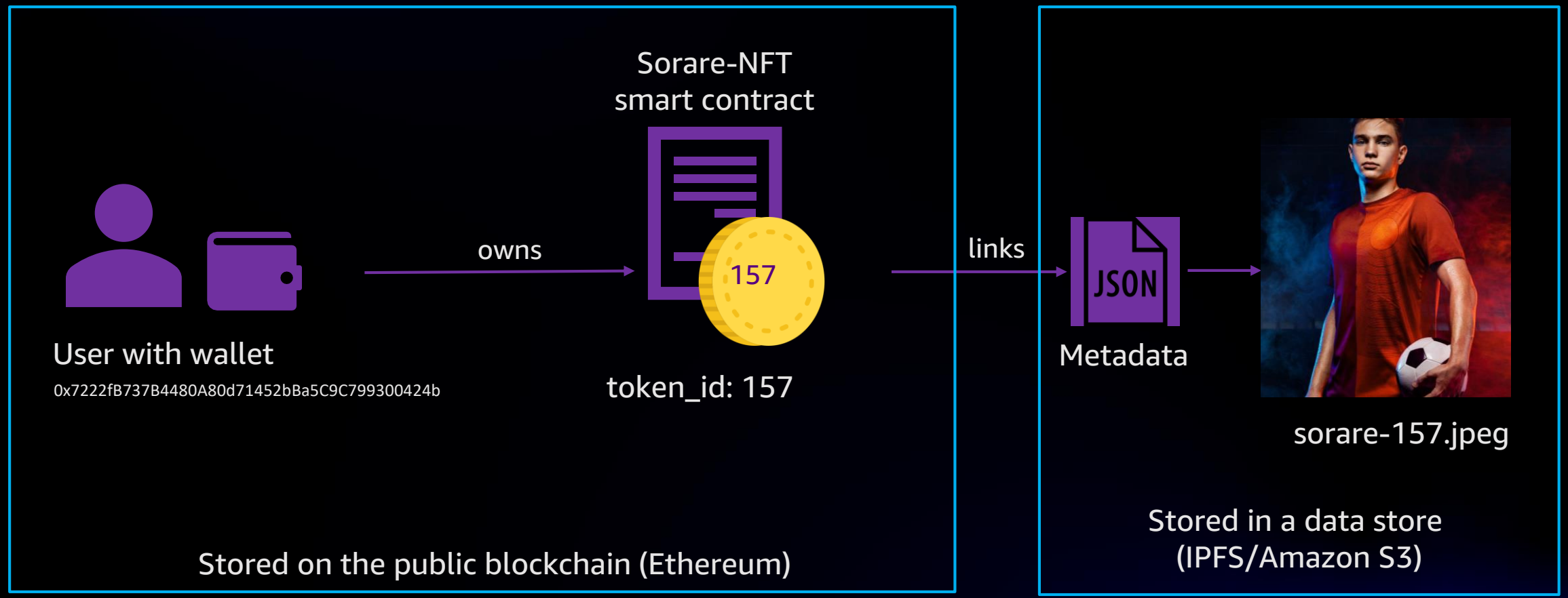


Non-fungible



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What are non-fungible tokens (NFT) ?



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NFT primary market



Promoter/creator

- Uploads image, defines metadata
- Creates the NFT





Buyer

- Looking for new NFTs
- Buys with crypto/fiat
- Pays a sales fee



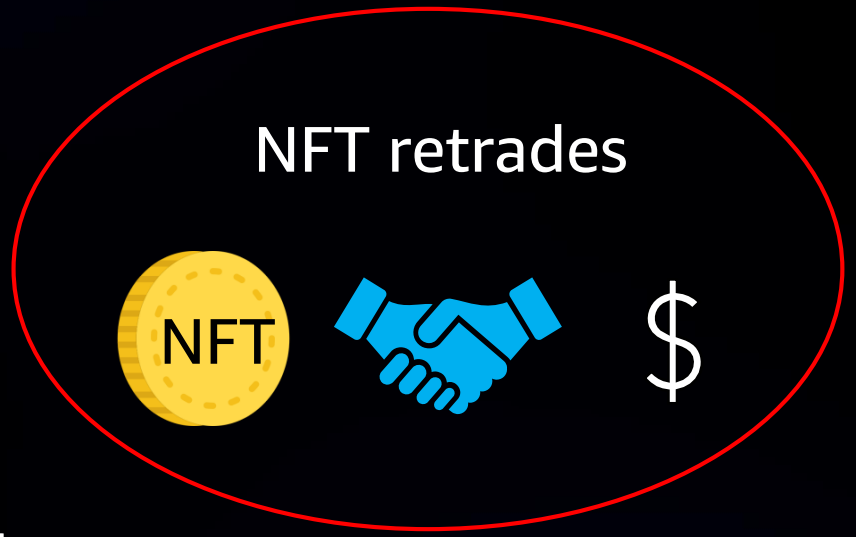
Platform operator

- Operates the shop
- Settles sales
- Receives sales fee (e.g., 5%)

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NFT marketplace



Buyer

- Looking for new NFTs
- Buys with crypto/fiat
- Pays sales fee

Platform operator

- Operates the marketplace
- Settles sales
- Receives sales fee (e.g., 5%)

Seller

- Lists their NFTs
- Offers them in fixed-price sales or auctions

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Standards: ERC-721 standard

ERC-721 defines

- Standard interface for a NFT collection
- Collection name/symbol

Functions

- Get owner of tokens
- Get balance of an address
- Transfers of ownership
- Approvals (e.g., for exchanges)
- Links token_id to the URI



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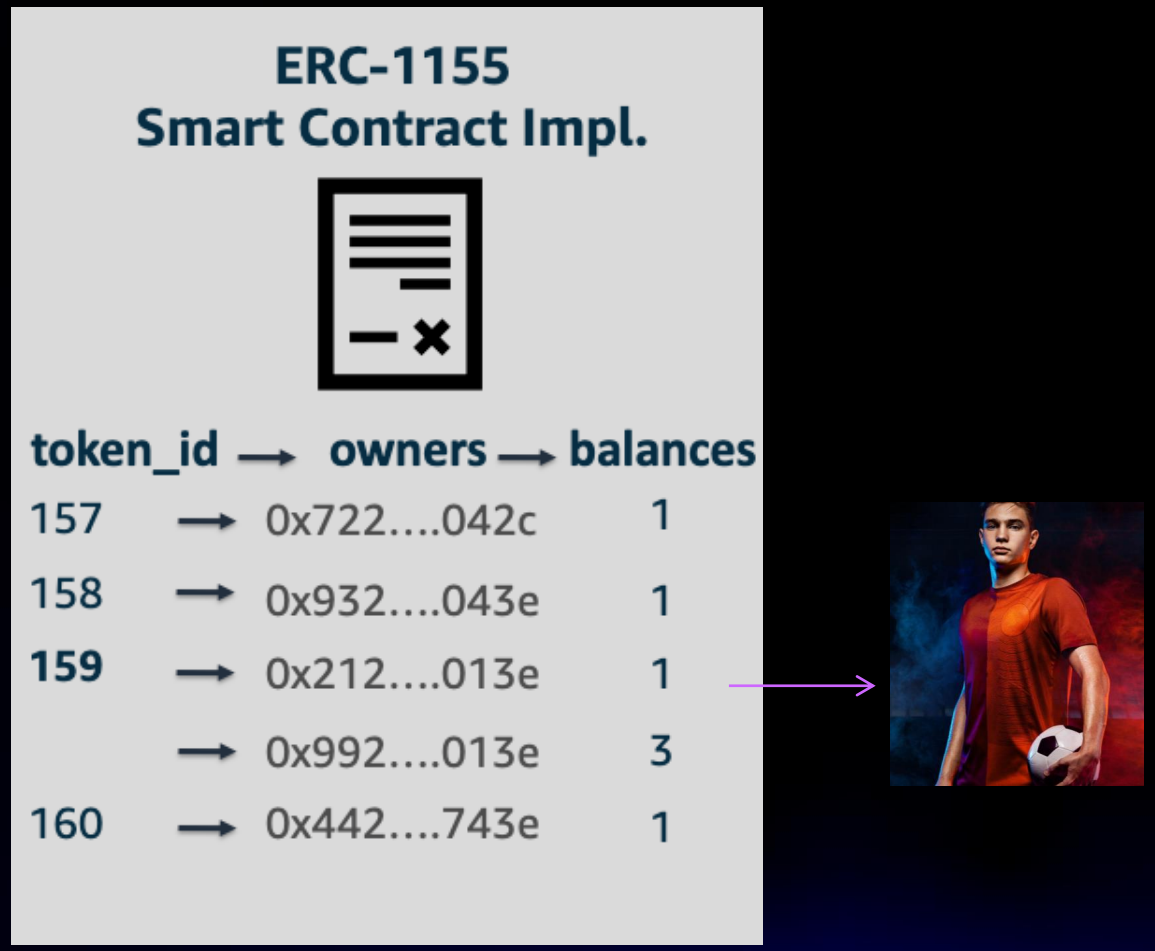
Standards: ERC-1155 standard

ERC-1155 defines

- Standard interface for a non-fungible token
- Standard interface for a fungible token
- Collection name/symbol

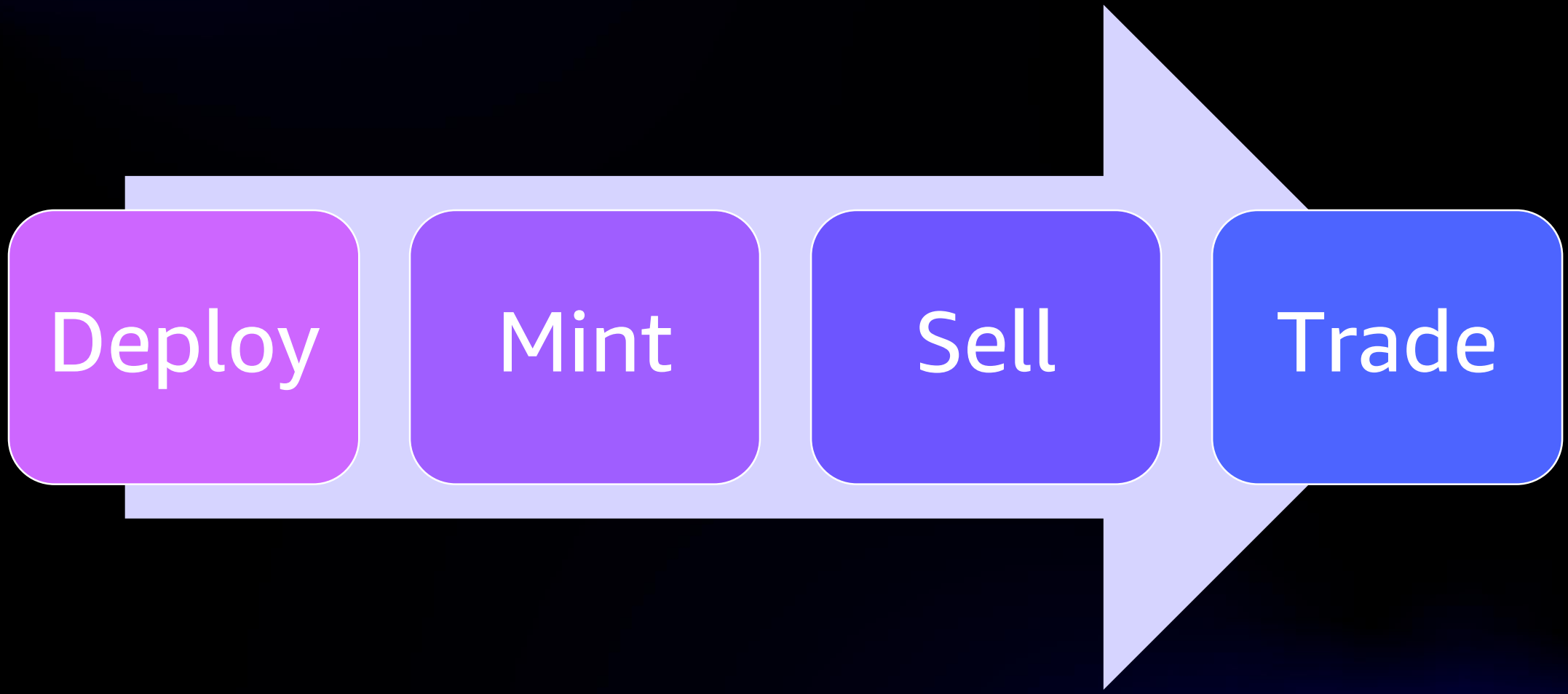
Functions

- Transfers, batch transfers of ownership
- Approvals (e.g., for exchanges)
- Links token_id to the URI



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NFT lifecycle

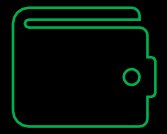


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NFT application components



Buy an NFT



Personal wallet



Create, mint, and list a new NFT

Buyer user interface

Creator user interface

NFT API

NFT assets

NFT storage

Blockchain event synchronizer

Amazon Managed Blockchain

Transaction manager and admin wallet

Ethereum contracts and wallets

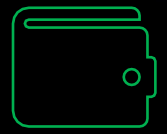
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User interfaces



Buy an NFT



Personal wallet



Create, mint, and list a new NFT

Buyer user interface



Amazon CloudFront



Amazon S3 (web apps)

Creator user interface



Amazon CloudFront



Amazon S3 (web apps)

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Ethereum contracts and wallets

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APIs

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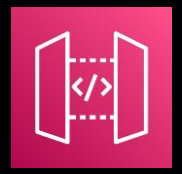


Amazon CloudFront

NFT API



Amazon Cognito



Amazon API Gateway

NFT storage

Blockchain event synchronizer

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Transaction manager and admin wallet

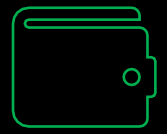
Ethereum contracts and wallets

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Asset storage



Buy an NFT



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Amazon CloudFront



Amazon S3 (web apps)

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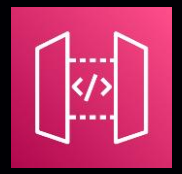


Amazon CloudFront

NFT API



Amazon Cognito



Amazon API Gateway

NFT storage



Amazon S3 NFT assets



AWS Lambda create NFT

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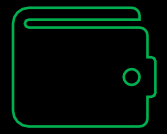
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Blockchain event synchronizer



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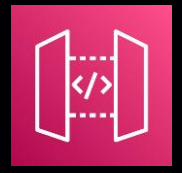


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Blockchain event synchronizer



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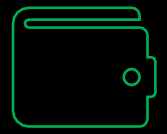
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Amazon Managed Blockchain



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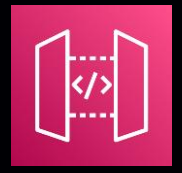


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AWS Lambda proxy



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Transaction manager and admin wallet

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Buyer user interface



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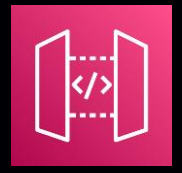
Creator user interface



Amazon CloudFront



Amazon S3 (web apps)



Amazon API Gateway

Amazon Managed Blockchain



AWS Lambda proxy



Amazon Managed Blockchain

NFT assets



Amazon CloudFront

NFT storage



Amazon S3 NFT assets



AWS Lambda create NFT

Transaction manager and admin wallet



AWS Lambda transaction signer



AWS KMS Ethereum private key (admin)

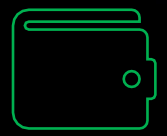
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Ethereum contracts and wallets



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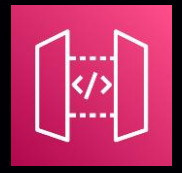
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AWS Lambda proxy



Amazon Managed Blockchain

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AWS Lambda transaction signer



AWS KMS Ethereum private key (admin)

Ethereum



Smart contract owner wallet



ERC-721 smart contract

Company wallet



Other smart contracts (marketplace)



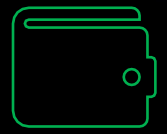
Royalty fee recipients wallet

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NFT application components



Buy an NFT



Personal wallet



Create, mint, and list a new NFT

Buyer user interface



Amazon CloudFront



Amazon S3 (web apps)

NFT API



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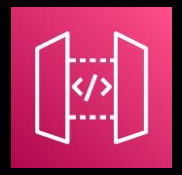
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Amazon S3 (web apps)



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Smart contract owner wallet



ERC-721 smart contract

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Royalty fee recipients wallet

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NFT discovery workshop

2 blockchain architects
3 half-days
Remote setup

Outcomes

An assessment and solution concept of customer's 1 use case for NFTs

Scope for proposed solution aligned to business use case and objectives

Road map proposal, including skills gap assessment and recommendations

Key Activities

Discover customer's one NFT use case and assess suitability

Develop the customer journey map on behalf of artists, musicians, players, fans, and customers of your NFT

Learn about NFT technology in depth: about NFT token standards, NFT lifecycle, NFT platforms, Layer2 options, and so on

Evaluate the typical risks and concerns when entering the NFT space, and make the right choices for your use case in terms of business benefits, costs, and end user experience

Provide documented assessment of customer's use case, road map proposal, and next steps for implementation, including skills gap assessment and recommendations

Share best practices and design patterns of architecture, including installation and provisioning of AWS blockchain services

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Check out the new blog post on how to develop a full-stack serverless NFT application with Amazon Managed Blockchain

https://aws.amazon.com/blogs/database/part-1-develop-a-full-stack-serverless-nft-application-with-amazon-managed-blockchain/

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Thank you!

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