Writing Smart Contracts
05 NFTs

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Supported by the Algorand Foundation

Starting point

Rival and non-rival goods

- Rival
  - ▸ Only one can have it (any physical object)
  - ▸ Less valuable if used by many people (tragedy of the commons)
- Nonrival
  - ▸ Everybody can use it (knowledge)
  - ▸ Equally valuable if used by many people

Unique digital goods

- Digital data can be copied with out loss in quality
- What is the "original"?
  - ▸ Polaroid instead of digital photography
- NFT = create digital uniqueness

Structure of an NFT

- NFT = strucutred entry on the blockchain
- Minimum: link to digital data
- Better: hash of digital data
- Algorand
  - ASA with Image hash
  - Metadata as note
  - Properties to distinguish elements of a collection

```
{
  "standard": "arc69",
  "description": "My first NFT.",
  "external_url": "https://gateway.pinata.cloud/ipfs/xxx...",
  "mime_type": "image/jpeg",
  "properties": {
    "Level": "1",
    "Vibes": "High"
  }
}
```

NFT storage

IPFS = Interplanetary file system

- Open standard
- Peer to peer
- Hash of content = file name

Pinata = IPFS service provider

- API
  - ► Upload
  - ► Limited file serving
- Freemium

NFT controversy

- Valued digital art (Beeple) on *insecure* on "best effort" servers

NFT Examples

Algorand art

- `https://www.nftexplorer.app`

- `https://dartroom.xyz`

Other NFT applications

- Impact NFTs
- Carbon NFTs
- Ticket NFTs