

Copyright, the Internet and the Blockchain

Trent McConaghy

Founder & CTO

ascribe 

Problems

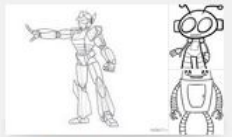
Web **Images** Videos News Maps More Search tools



Real



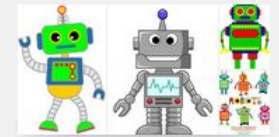
Human



Drawing



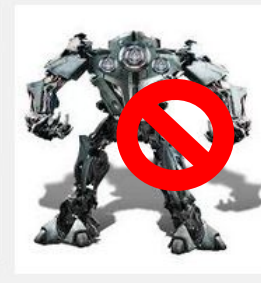
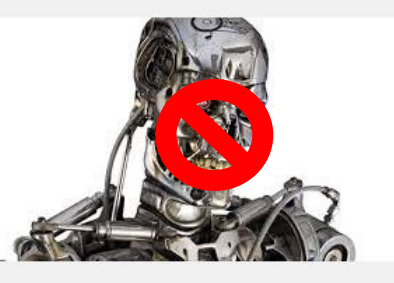
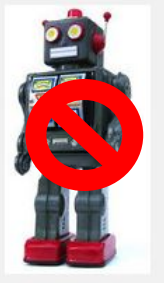
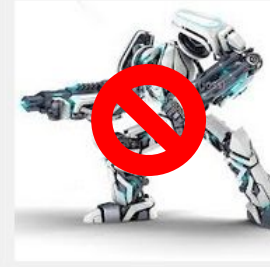
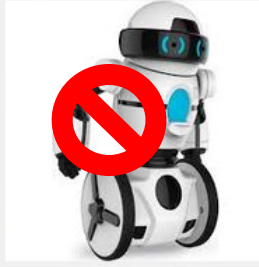
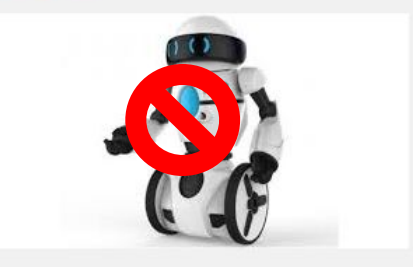
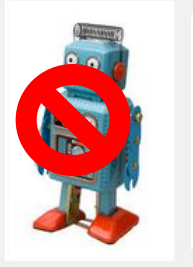
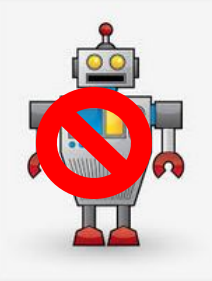
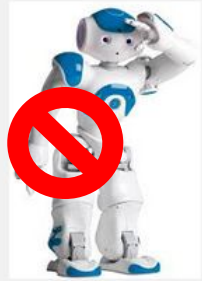
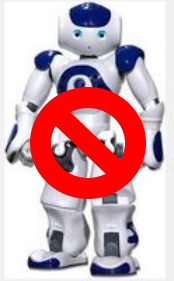
Of The Future



Clipart



Movie



**Fun with
rootkits**



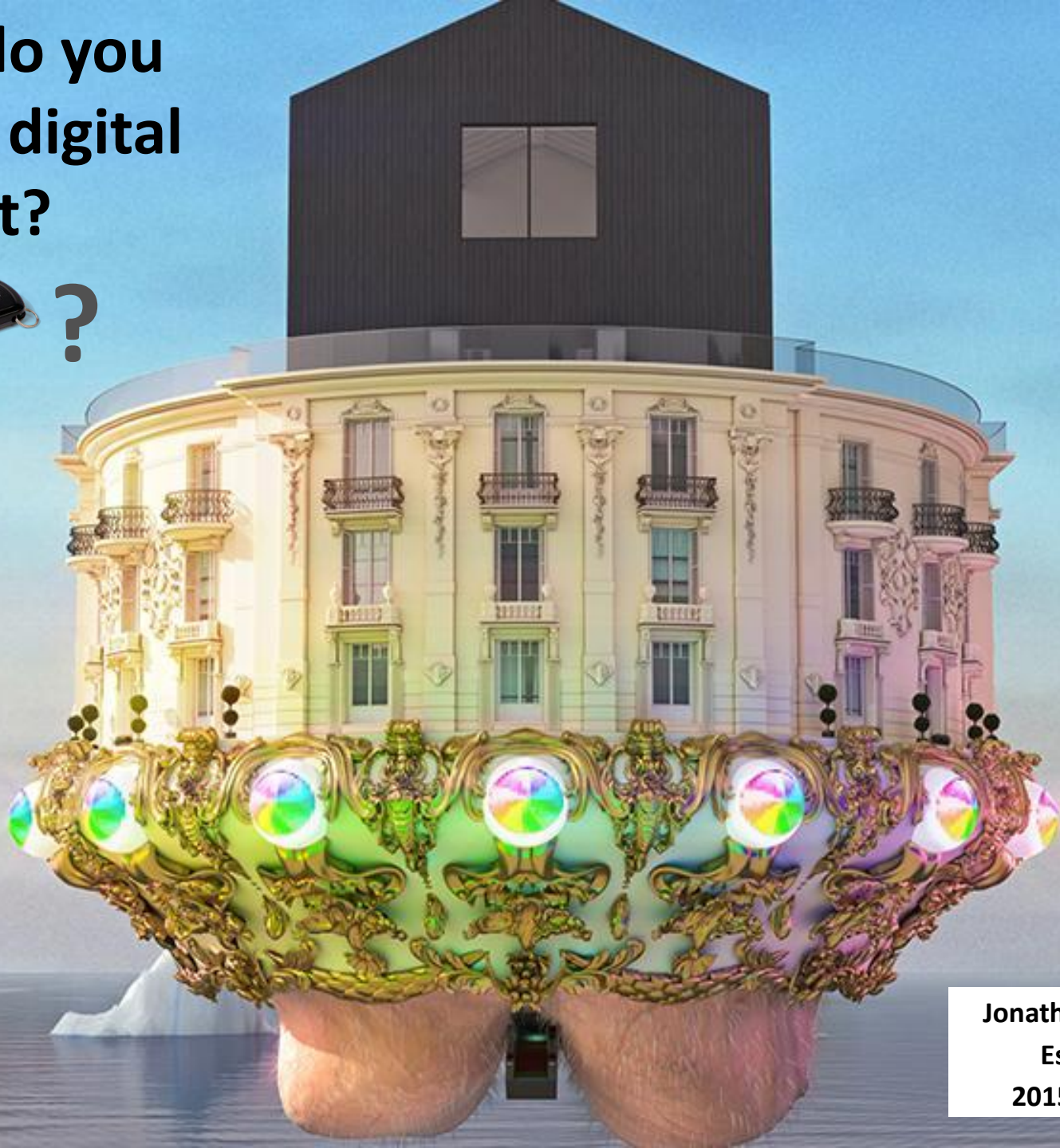
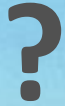




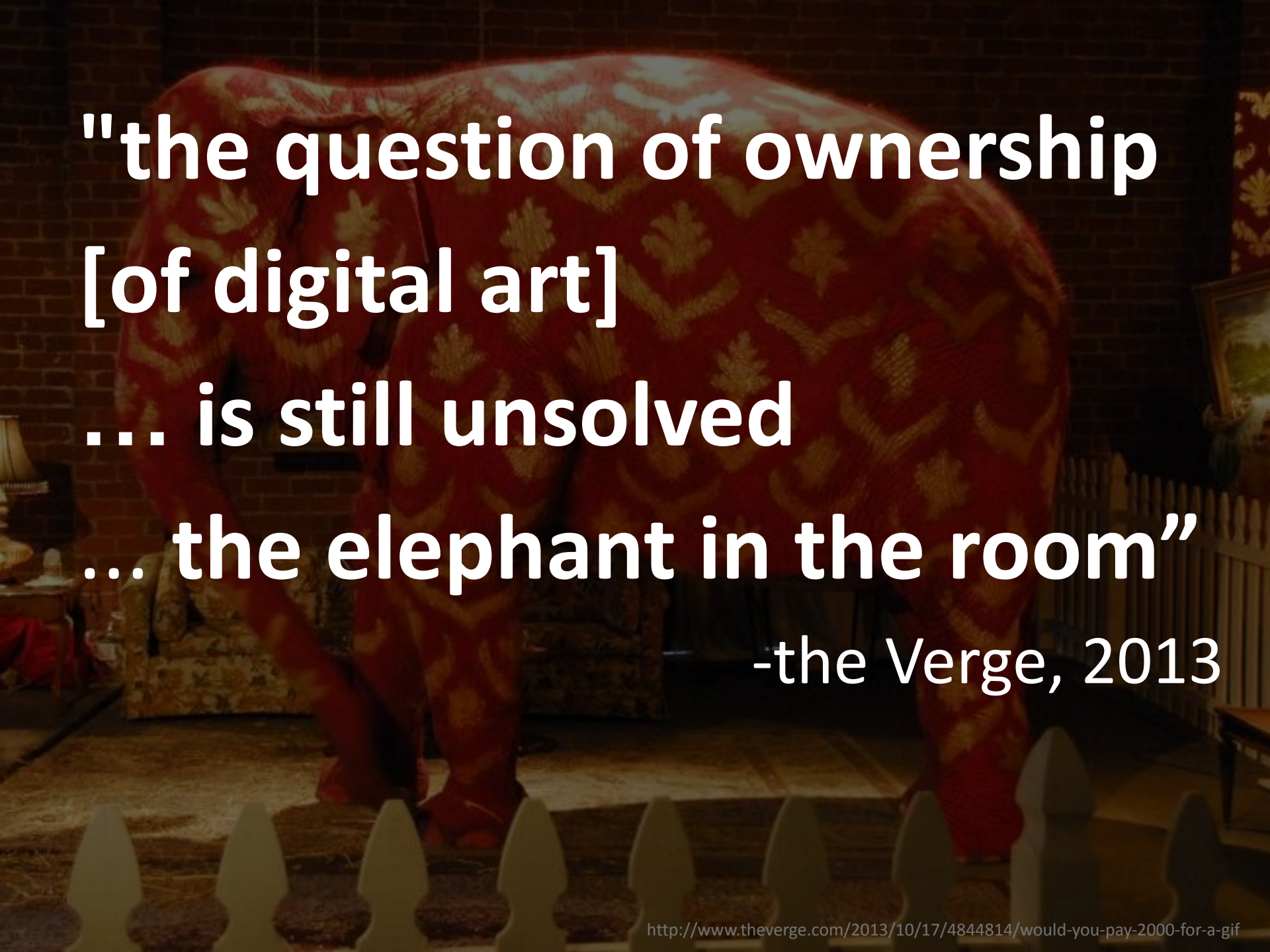
This video is not available in your country.

Sorry about that.

How do you
collect digital
art?



Jonathan Monaghan
Escape Pod
2015, 3 editions



**"the question of ownership
[of digital art]
... is still unsolved
... the elephant in the room"
-the Verge, 2013**

How do you share 3d-printing designs?

“my conclusion is that whatever you put on the internet you lose it. Maybe keep the rights, but lose the power over it.”

-user on Shapeways blog

RESTRICTED
AND DIFFICULT
RE-USE:

COPYRIGHT
ZONE
(FORTIFIED)

WORLD OF

CONVENTIONAL PAPER PUBLISHING

UNRESTRICTED RE-USE:

PUBLIC DOMAIN ZONE

(with much material
inferior and outdated)

PUBLIC-DOMAIN OCEAN →

Ownership on the Internet (and digital in general) is a mess

- **Creators** – hard to get compensated. Sharing = losing control.
- **Collectors / audience** – no secondary markets
- **Connectors** – distracted by legals

Where's my stuff?

- For almost every digital media vertical: digital art, photography, 3d, music, videos, ..

**Ownership on the Internet
(and digital in general) is a mess**

Why?

Some WWW history...

WORLD WIDE WEB

The WorldWideWeb (W3) is a wide-area hypermedia[1] information retrieval initiative aiming to give universal access to a large universe of documents.

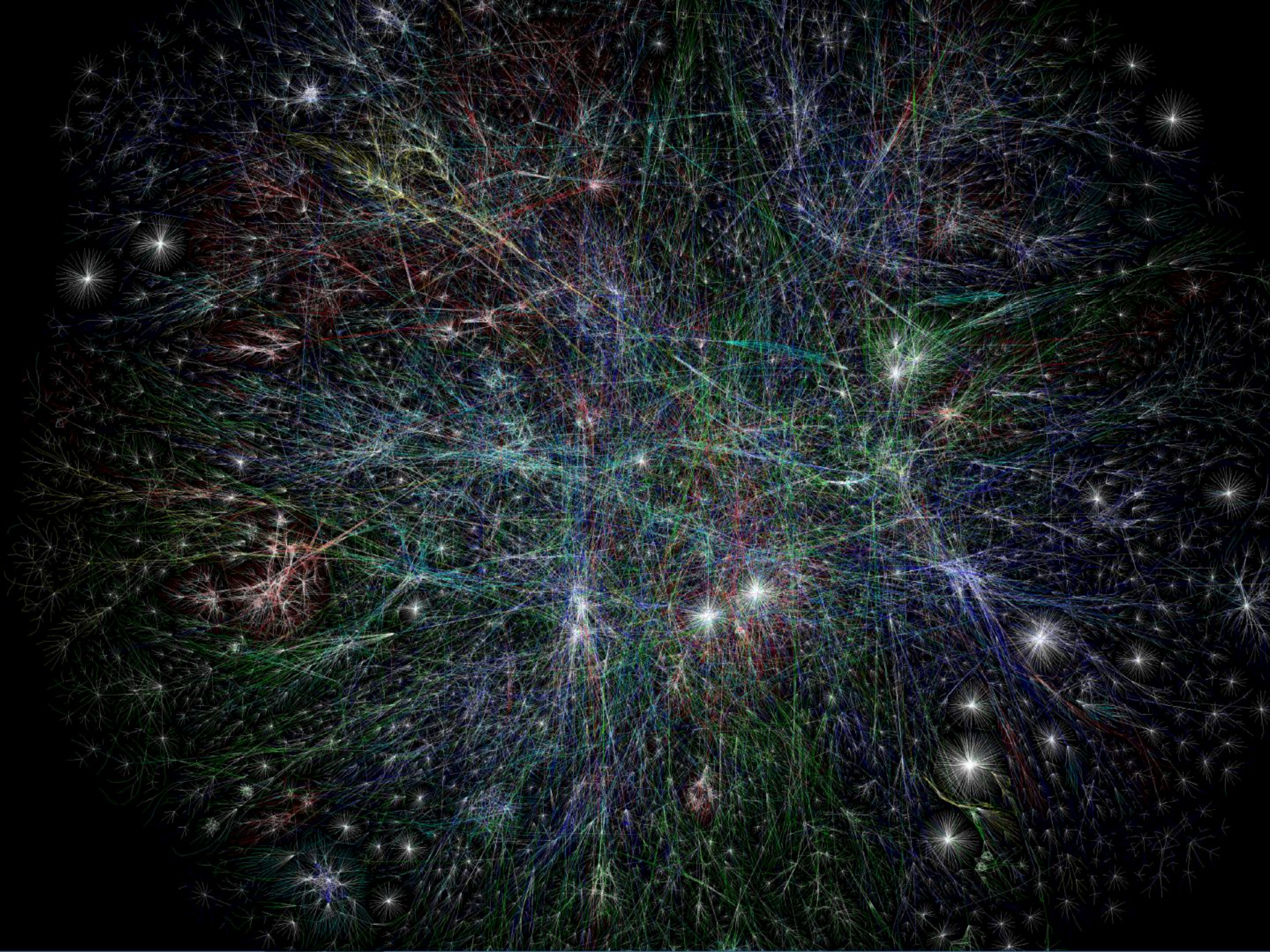
Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary[2] of the project, Mailing lists[3] , Policy[4] , November's W3 news[5] , Frequently Asked Questions[6] .

What's out there?[7]Pointers to the world's online information, subjects[8] , W3 servers[9], etc.

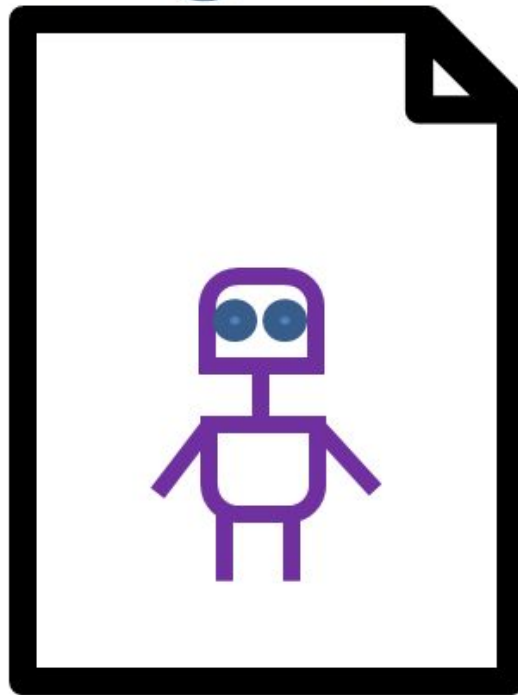
Help[10] on the browser you are using

Software Products[11] A list of W3 project components and their current state. (e.g. Line Mode[12] ,X11 Viola[13] , NeXTStep[14] , Servers[15] , Tools[16] , Mail robot[17] , Library[18])

Technical[19] Details of protocols, formats, program internals etc



**Create some art,
and put it on the net.**



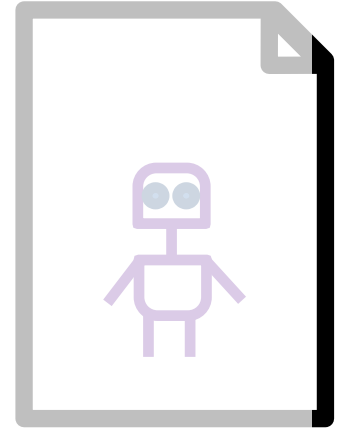
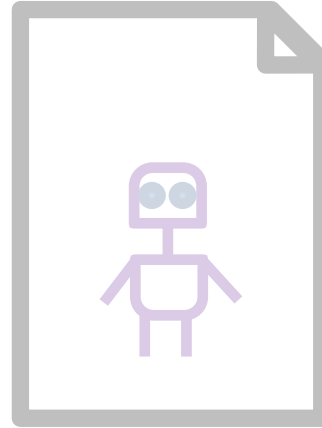
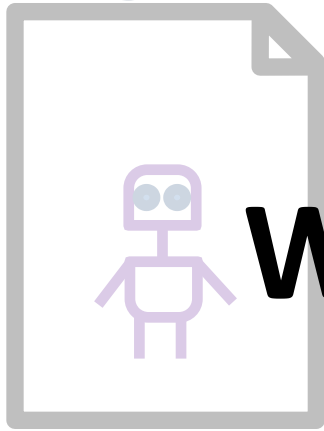
**Trent's
(obviously great)
work of art**

The WWW

Zero links:

Copy with **no attribution**

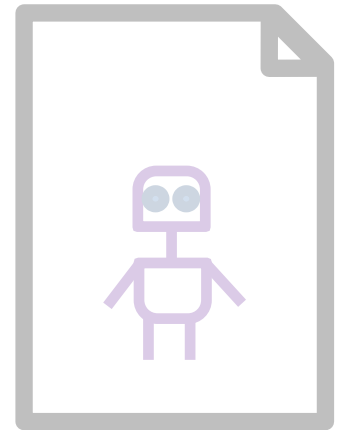
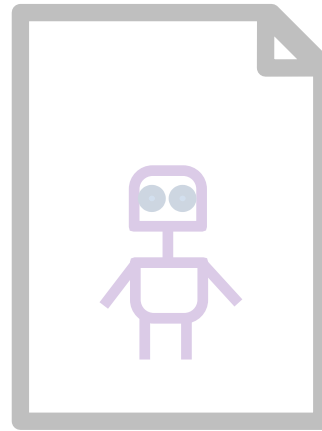
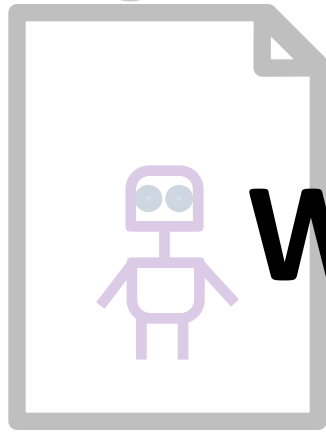
original



Where's my stuff?

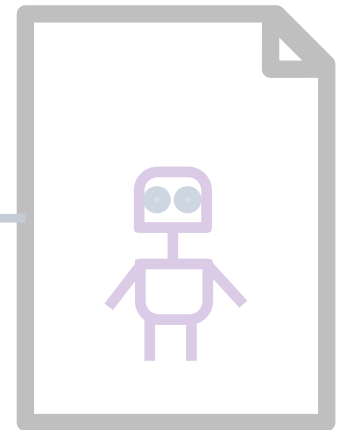
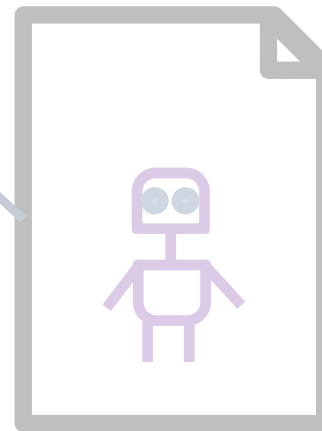
The WWW

original



Where's my stuff?

unidirectional link:
Attribution but **no ownership control**
or **mis-attribution**



“The current world wide web does basically *one* thing: simple, stupid, mindless hyperlinks.

But even that alone was enough to build a functional and useful internet for the world.

..the most fundamental building block of the web, the hyperlink, *barely works at all.*

..fraught with peril and pitfalls even under the best of conditions.”

-Jeff Atwood, Coding Horror Blog

**Does it need to be this way?
Some pre-WWW history...**

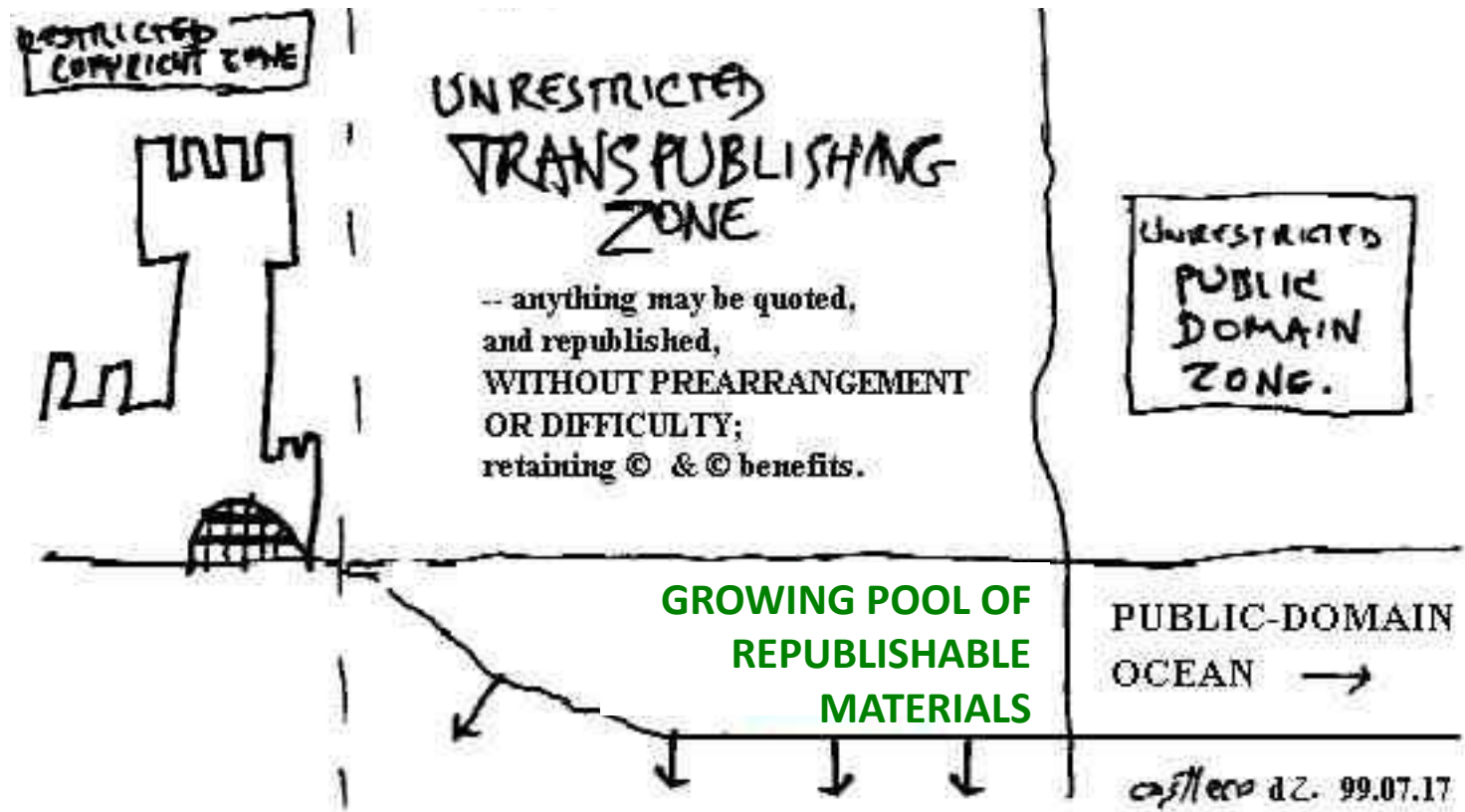
“[Consider] a unified .. service that would provide storage and publication services, and manage .. royalty payment on a .. fair basis that would facilitate unrestricted virtual republishing”

-Ted Nelson

-on a vision from *1965*

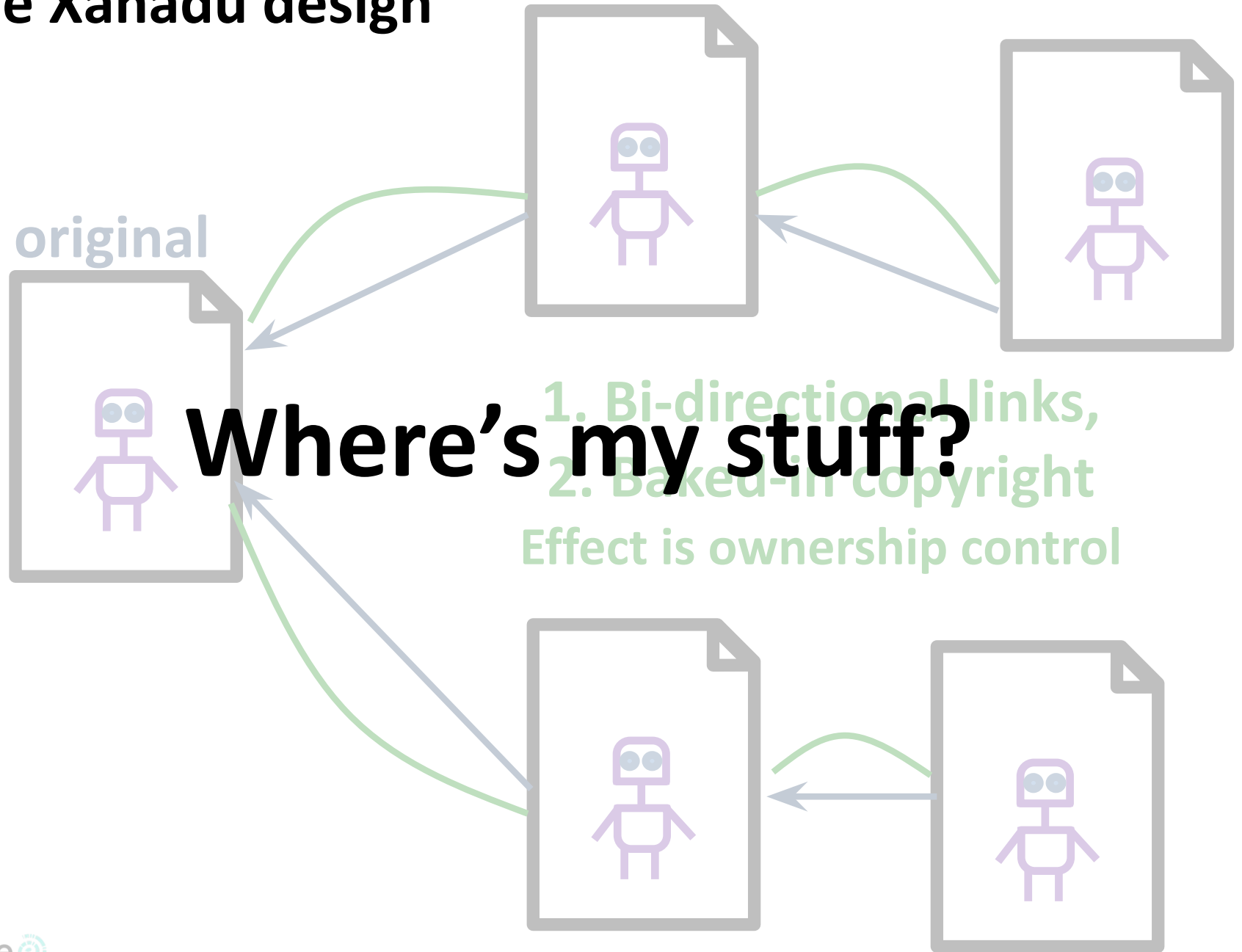
The Xanadu Vision (from 1965)

“The original hypertext project”



.. a **new middle realm**, one which renders copyright benign and flexible .. a **win-win system, as it is beneficial both to rights holders and to users**, in a way that other copyright systems are not beneficial to users.

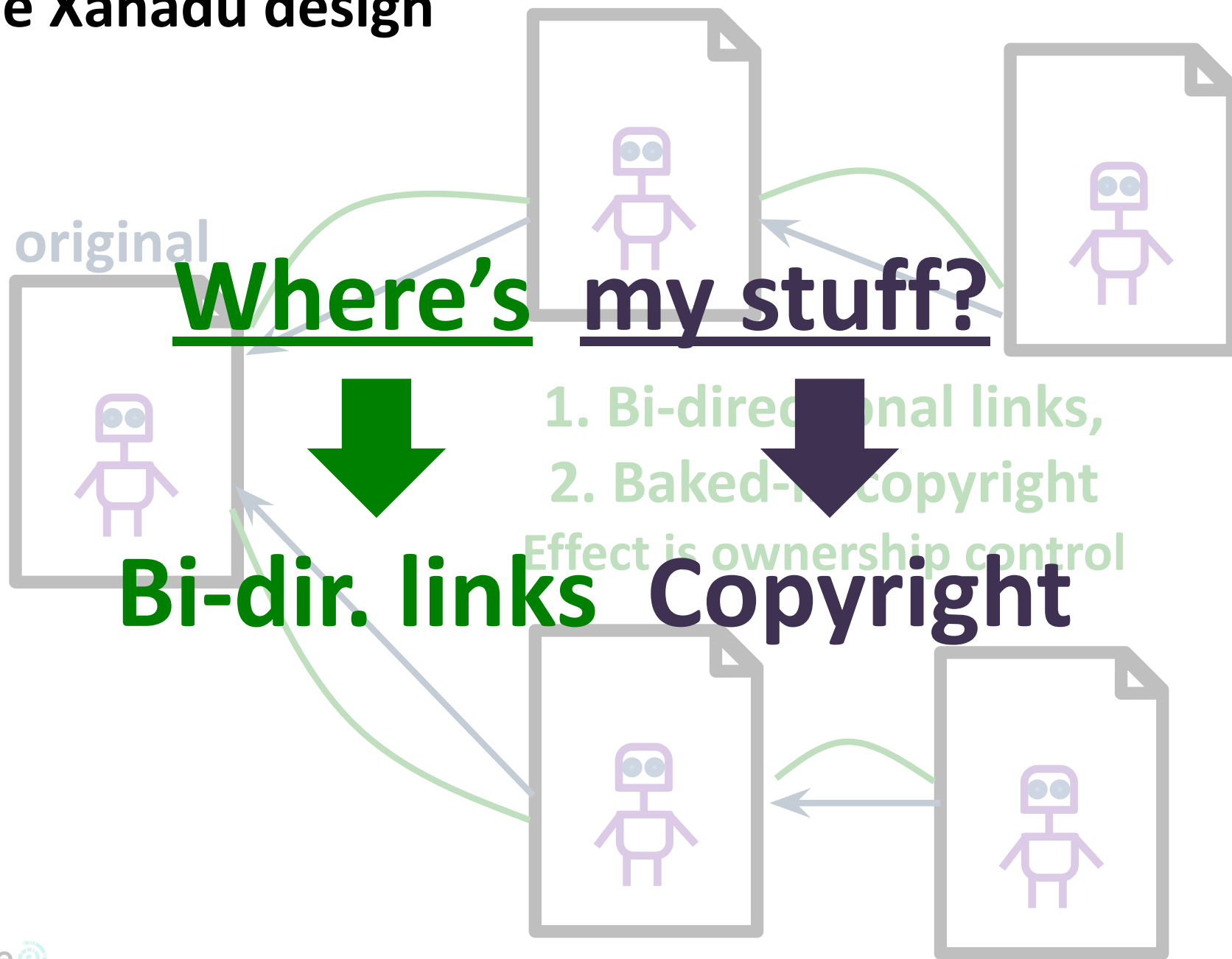
The Xanadu design



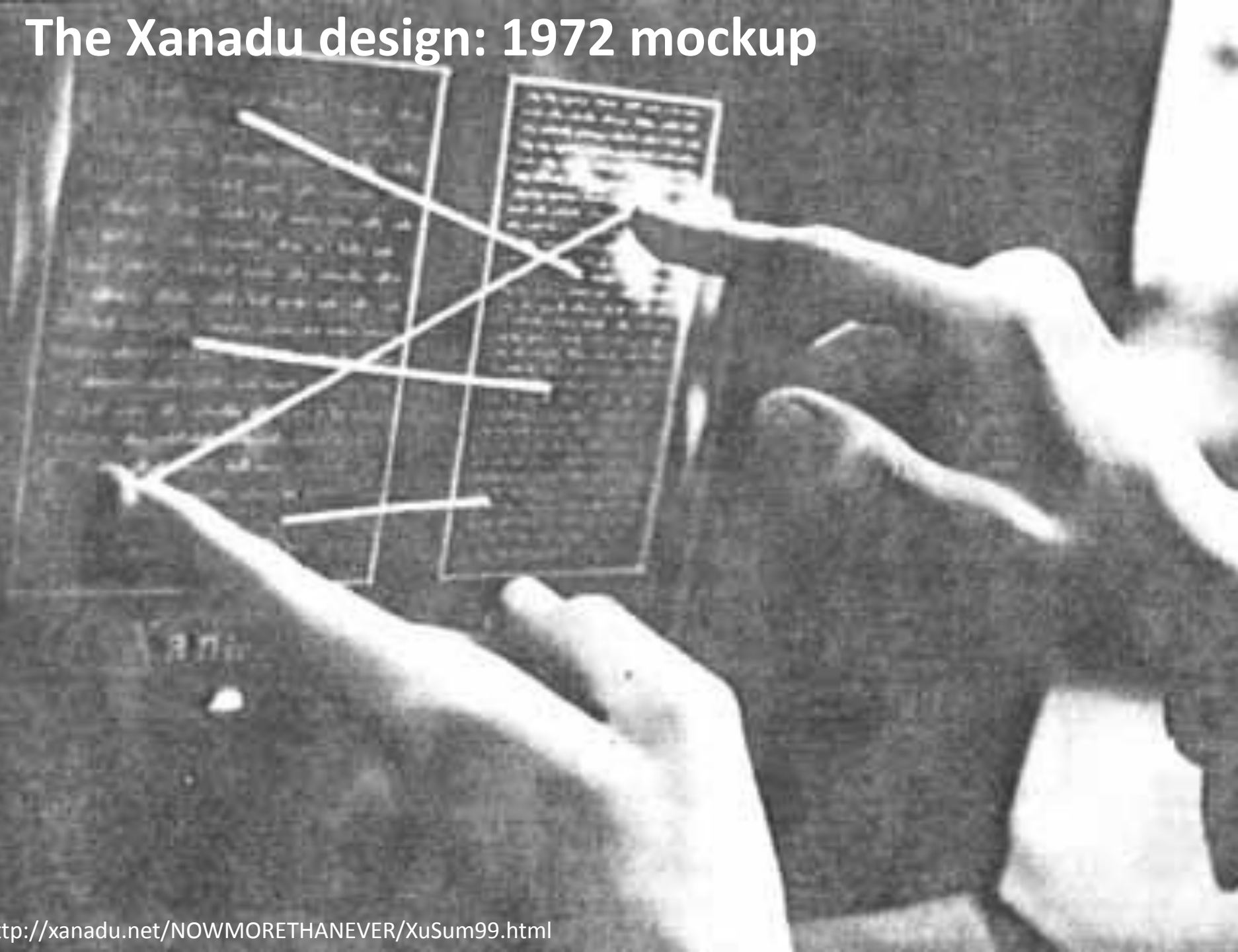
Where's my stuff?

- 1. Bi-directional links,
 - 2. Baked-in copyright
- Effect is ownership control

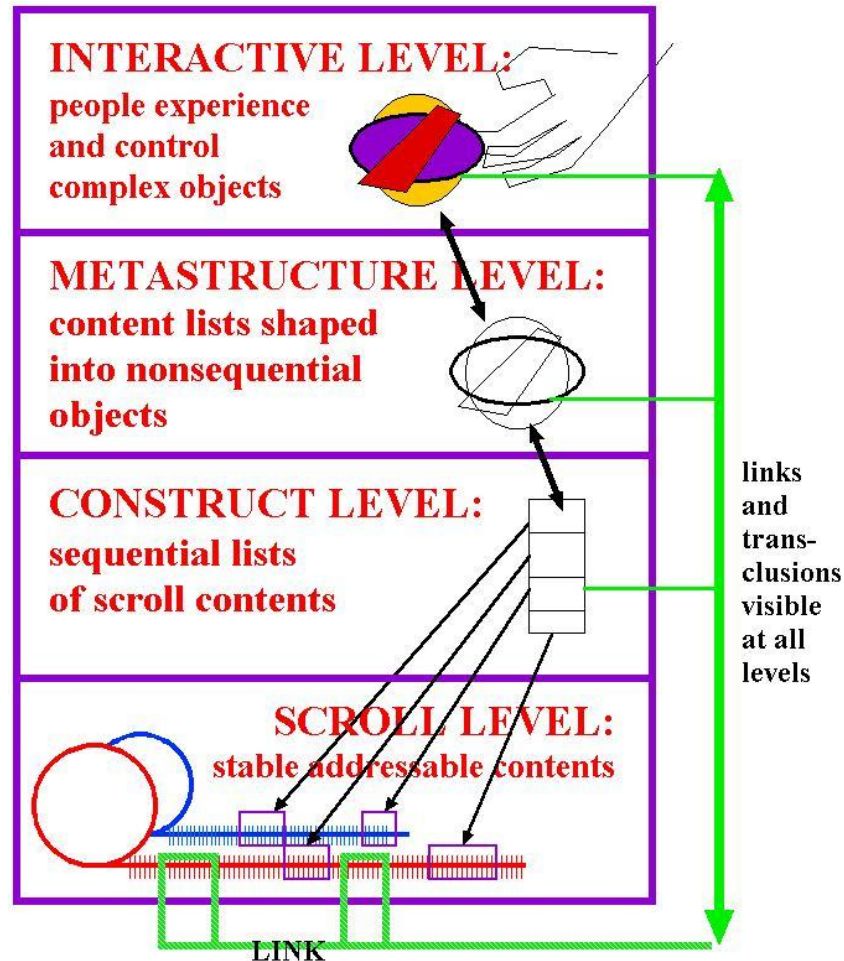
The Xanadu design



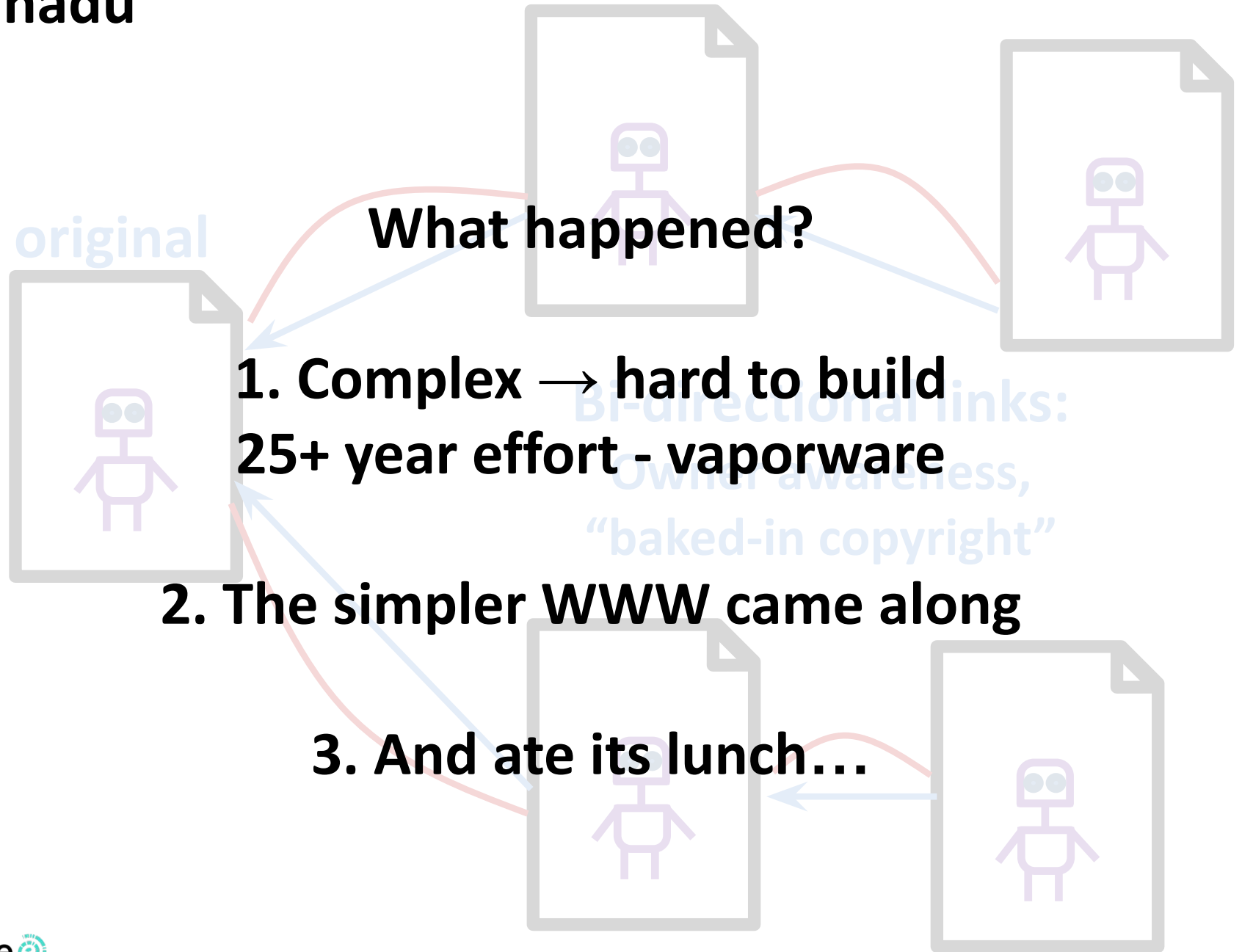
The Xanadu design: 1972 mockup



The Xanadu design was actually “a little” more complicated (1968)



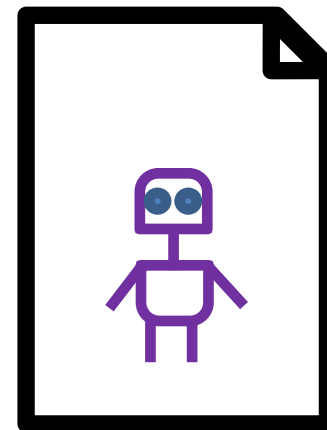
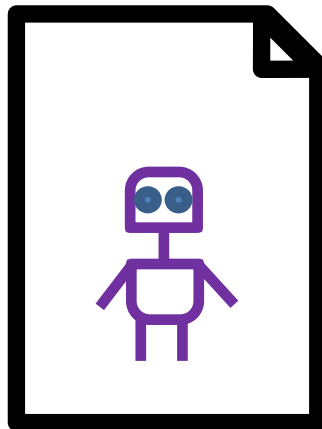
Xanadu



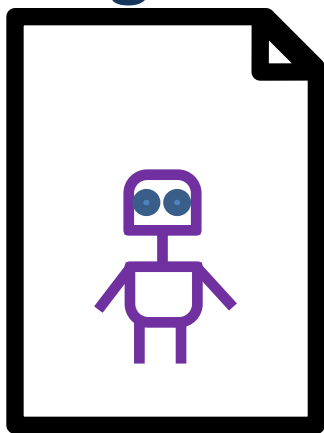
So now we have
the WWW,
warts and all

Zero links:

Copy with **no attribution**



original



Uni-directional link:

Attribution but **no ownership control**

or mis-attribution



“HTML is precisely what we were trying
to *prevent* -- ever-breaking links ... no rights
management.” –Ted Nelson

Summary so far

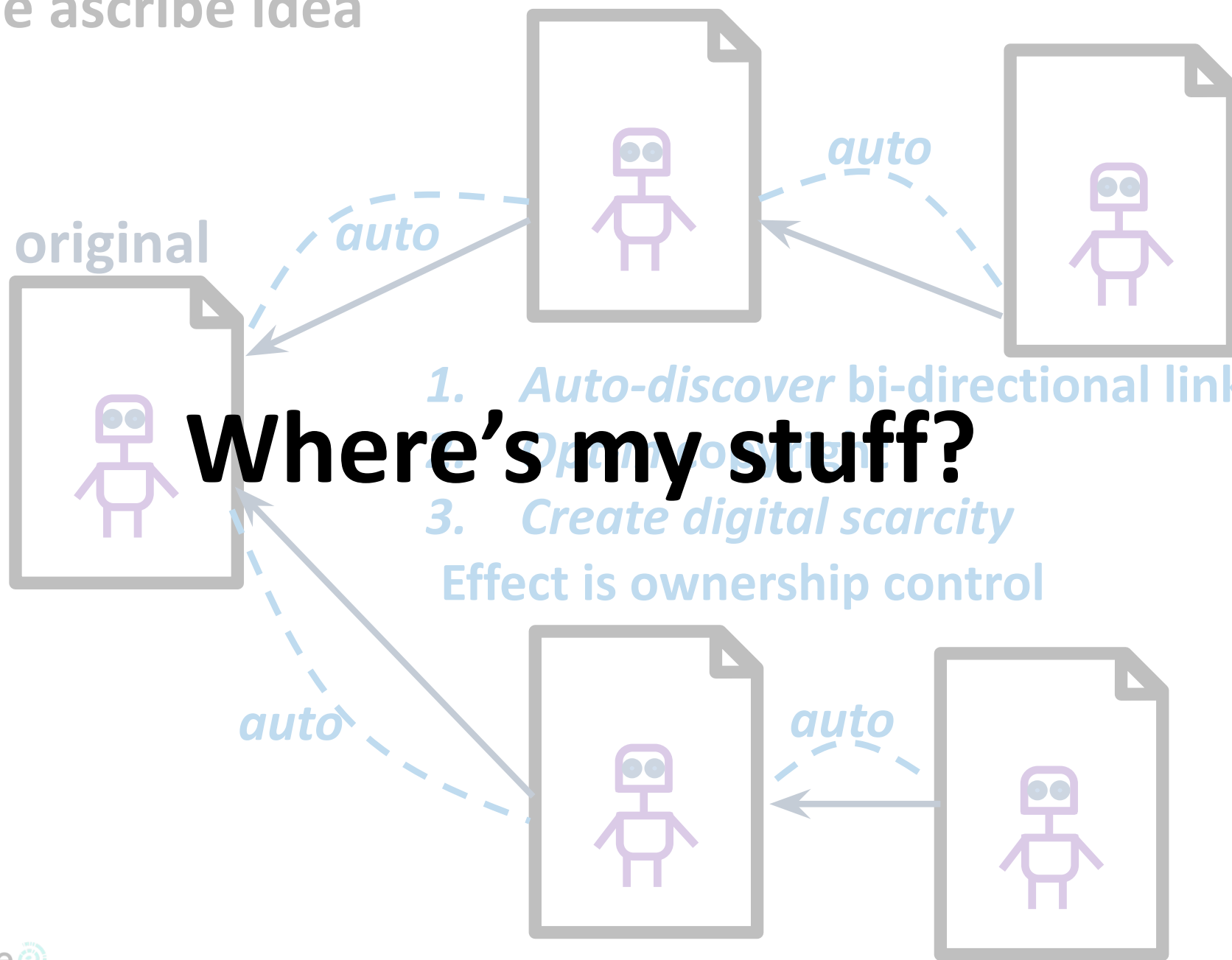
- Ownership on the Internet is a mess
- Despite being anticipated since the 60s
- And designed for
- But simplicity of www won out
- Leaving “where’s my stuff?” unsolved

A new Q:

**Can we *retrofit*
the Internet for ownership?**

(and realize the Xanadu aims
in the process)

The ascribe idea



Where's my stuff?

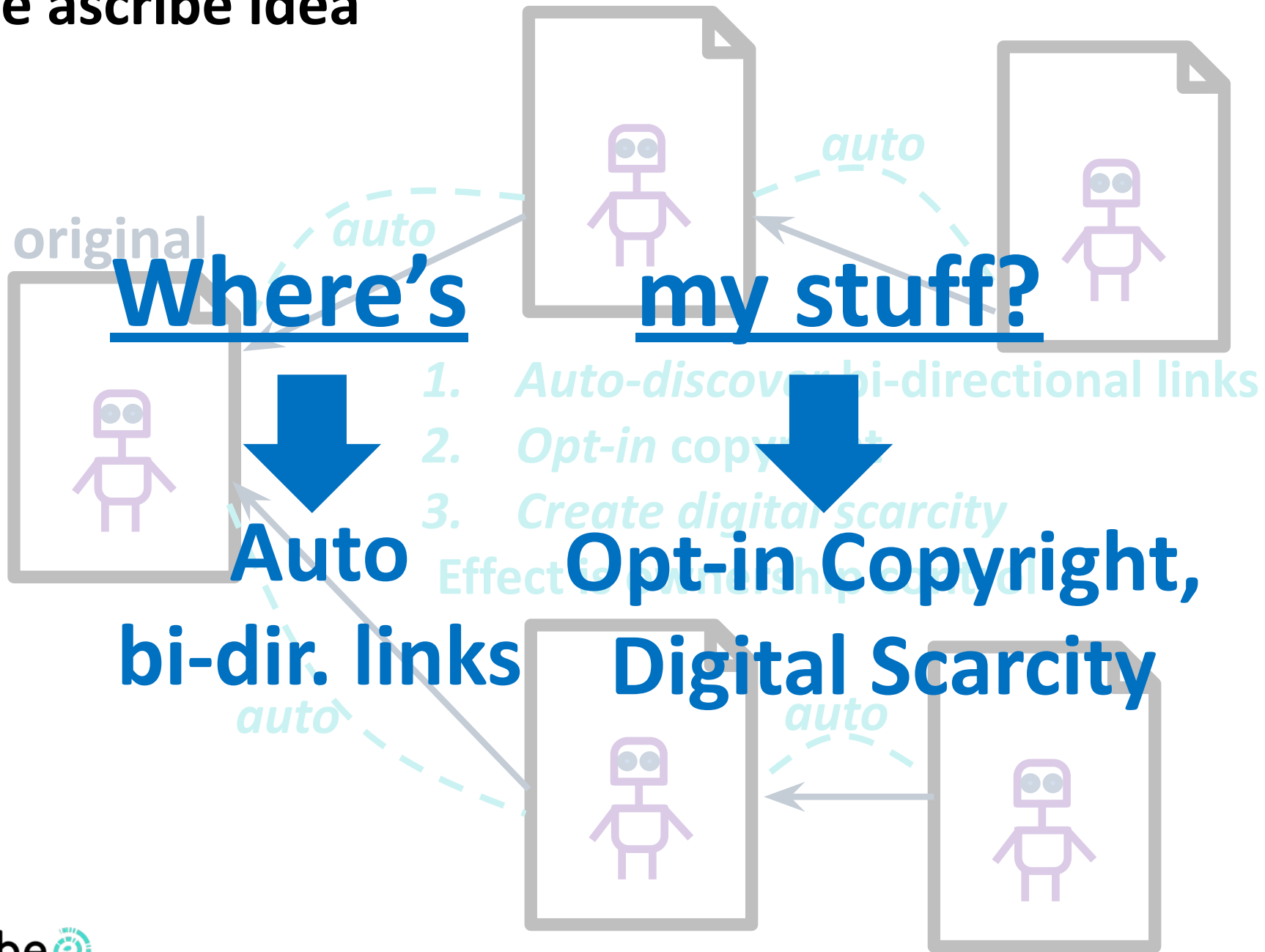
1. Auto-discover bi-directional links

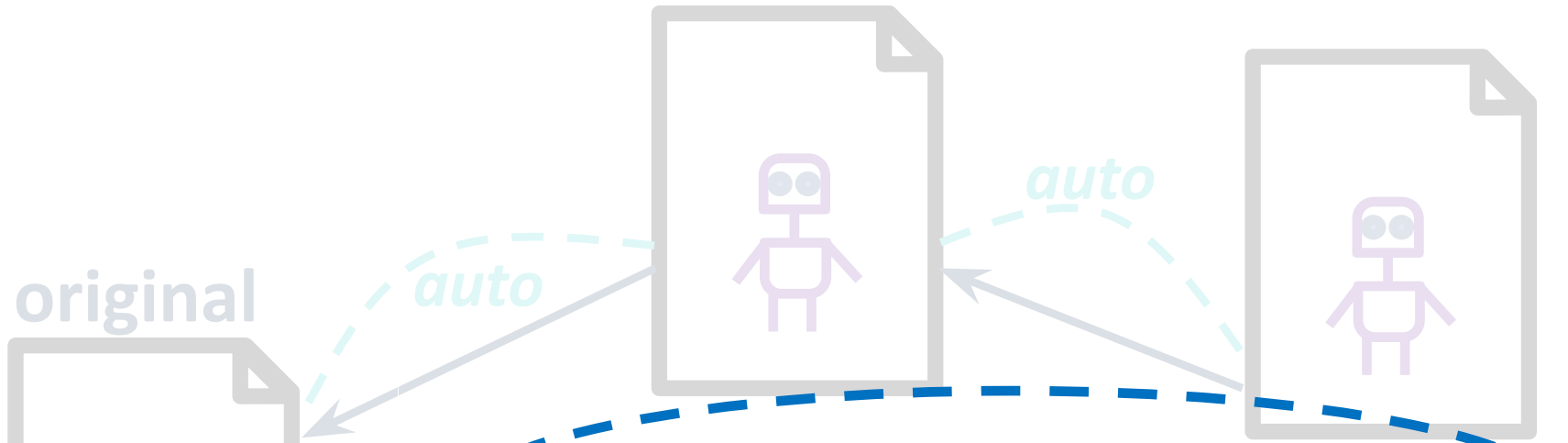
2. Optimize storage

3. Create digital scarcity

Effect is ownership control

The ascribe idea





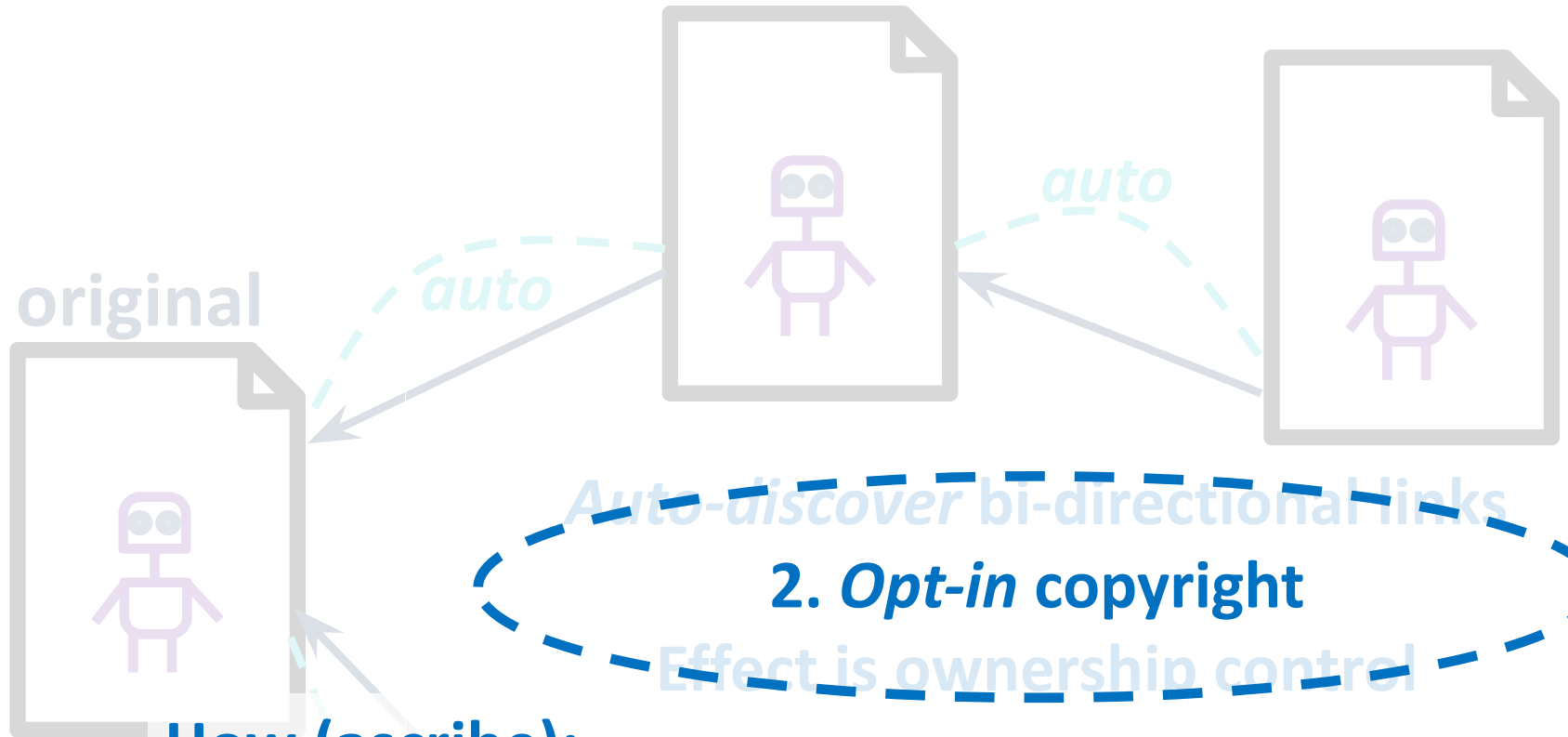
1. Auto-discover bi-directional links

opt-in copyright:

Effect is ownership control

How (ascribe):

- **Crawl the entire internet (220 Tb text)**
- **Similarity match against creator's content (40G+ images, 3d designs, ..)**
- **This is a machine learning problem (at Internet scale)**
- ***To know when someone's using your work***



How (ascribe):

- **Creator or owner chooses to use ascribe to register his work, or transfer ownership**
- **Terms of service: “I have the copyright rights”**

Ascribe terms of service - snippet

amounts (e.g. 1 cent) as a means to record transactions on the SPOOL / Bitcoin Blockchain.

ascribe is not a bank. It does not provide a means to store fiat currency in an account, to transfer fiat currency in or out of that account, or any other services one might expect from a bank.

Art Work Ownership

This document elaborates various aspects of Art Work Ownership in ascribe.

Secure Ownership Registration

To register an art work, you must be the rightful owner of the copyright in the art work.

When you register ownership of the copyright in an art work using ascribe, ascribe updates the SPOOL with a record of that ownership. Recall that the SPOOL is a Secure, Public, Online Ownership Ledger.

More specifically, recall that SPOOL sits on top of the Bitcoin Blockchain. ascribe associates a Bitcoin wallet with your account. When you register an art work, ascribe creates a new address inside that wallet. ascribe performs a transaction on the Bitcoin network to do this (detailed below). This new address becomes the ID of the art work. ascribe does not store the wallet's private keys. Rather, the private keys are computed from your account password. ascribe does not store your account password either.

The transaction on the Bitcoin network is recorded on the Bitcoin Blockchain. The transaction's input Bitcoin address is known to be part of ascribe. The transaction has the following outputs, in the following order:

- An ID signifying registration of the copyright in the art work (hereafter, "copyright ID"). This is a hash of the art work. A hash is an alphanumeric string that is generated by passing the art work through a special function (a "hashing function"). This hash is powerful information, because it can be identified with the art work through the hash function.
- All licences pertaining to the art work (hereafter, "licence ID"). One ID is generated for each licence pertaining to the art work. All licence IDs can be traced back to the original copyright ID.
- A Bitcoin address for change, i.e. where all the change from the transaction goes back to. The need to specify a change address, rather than just passing the correct amount to start with, is a quirk in how Bitcoin works.

Secure Licence Transfer

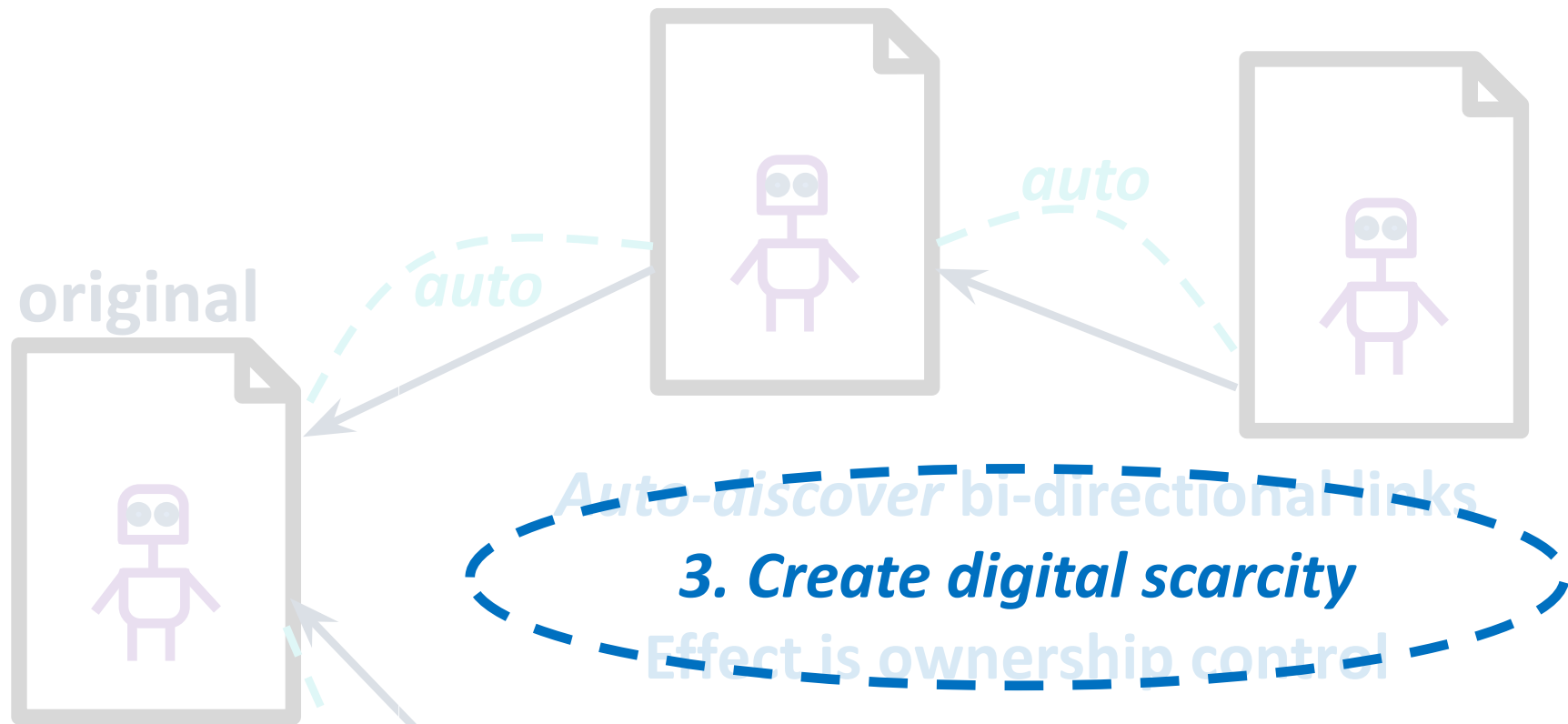
When you transfer the licence pertaining to an art work, ascribe updates the SPOOL with a record of that transfer. Because the SPOOL uses the Bitcoin Blockchain, the security of the licence transfer inherits all the world-class security attributes of Bitcoin.

More specifically, during a sale from a seller to a buyer, the following steps occur "under the hood".

- (1) Money is transferred from the buyer (e.g. from a credit card) to the seller (e.g. the seller's bank account). In addition, service fees may be transferred from the buyer to ascribe and third party service providers (such as the payment processor). The ascribe Pricing Terms document has more information.
- (2) The SPOOL ownership is updated, using the Bitcoin Blockchain, as follows. The buyer gets a new Bitcoin wallet address, and a new private key associated with that wallet. Then, a tiny amount of Bitcoin is sent from the seller's wallet address associated with that art work, to the buyer's new wallet address. This transfer uses the Bitcoin protocol and network to do this. This action, **by definition**, transfers the licence to the buyer. ascribe securely stores the private key associated with the buyer's new wallet address.

Licence

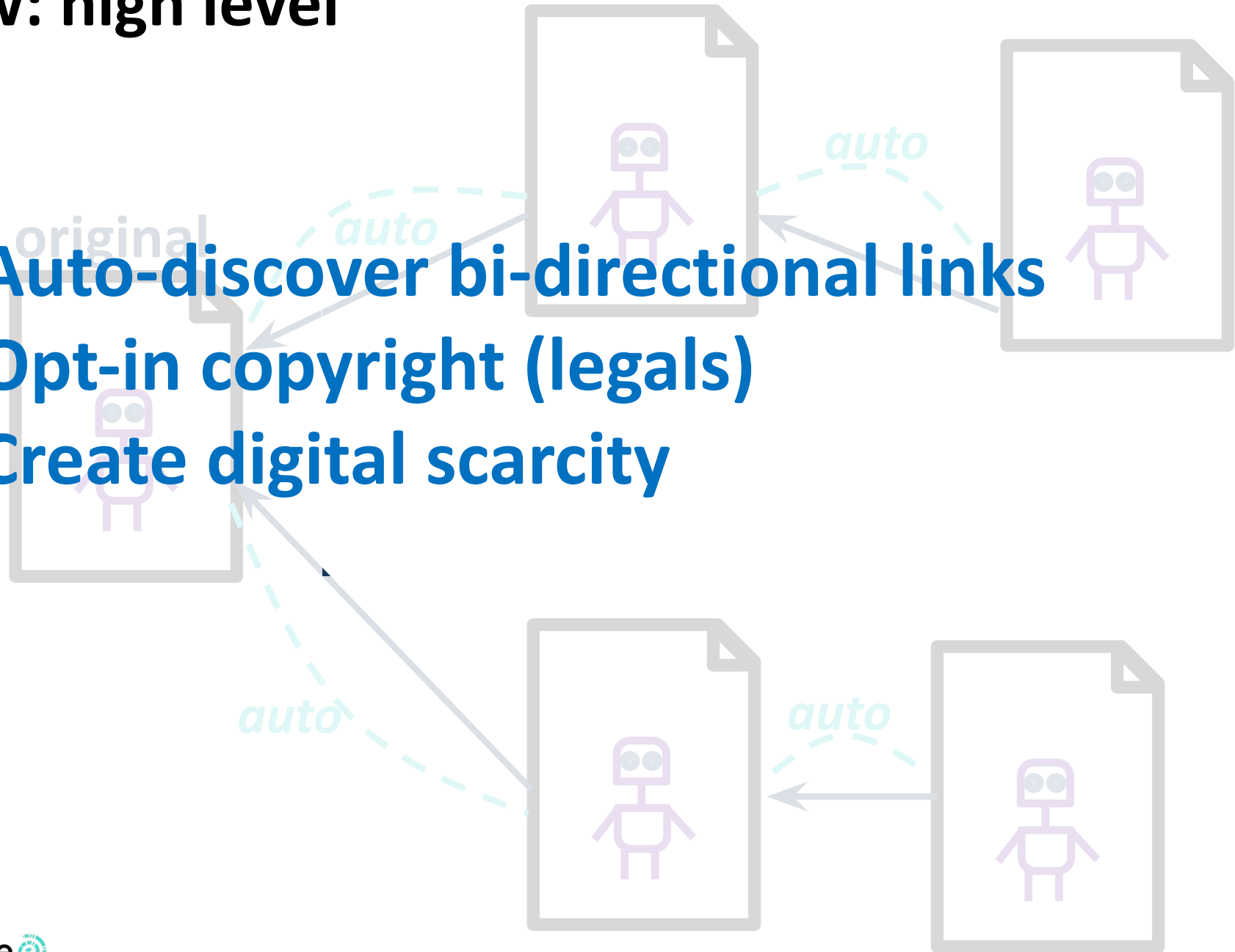
The buyer of the licence pertaining to the art work grants the buyer the right to make copies of the work for personal or commercial use. Commercial use includes, but is not exclusive to, private or public display of the work by the buyer or a third-party acting on behalf of the buyer. The buyer is allowed to transfer the licence to a third-party, for valuable consideration or otherwise, if the transfer is made through ascribe. The right of the author to be identified as the author of the art work and the right of the author to object to derogatory treatment of the work (hereafter, "moral rights" of the author) are not affected by the transfer of licence, initially and on subsequent transfers. The buyer is allowed to



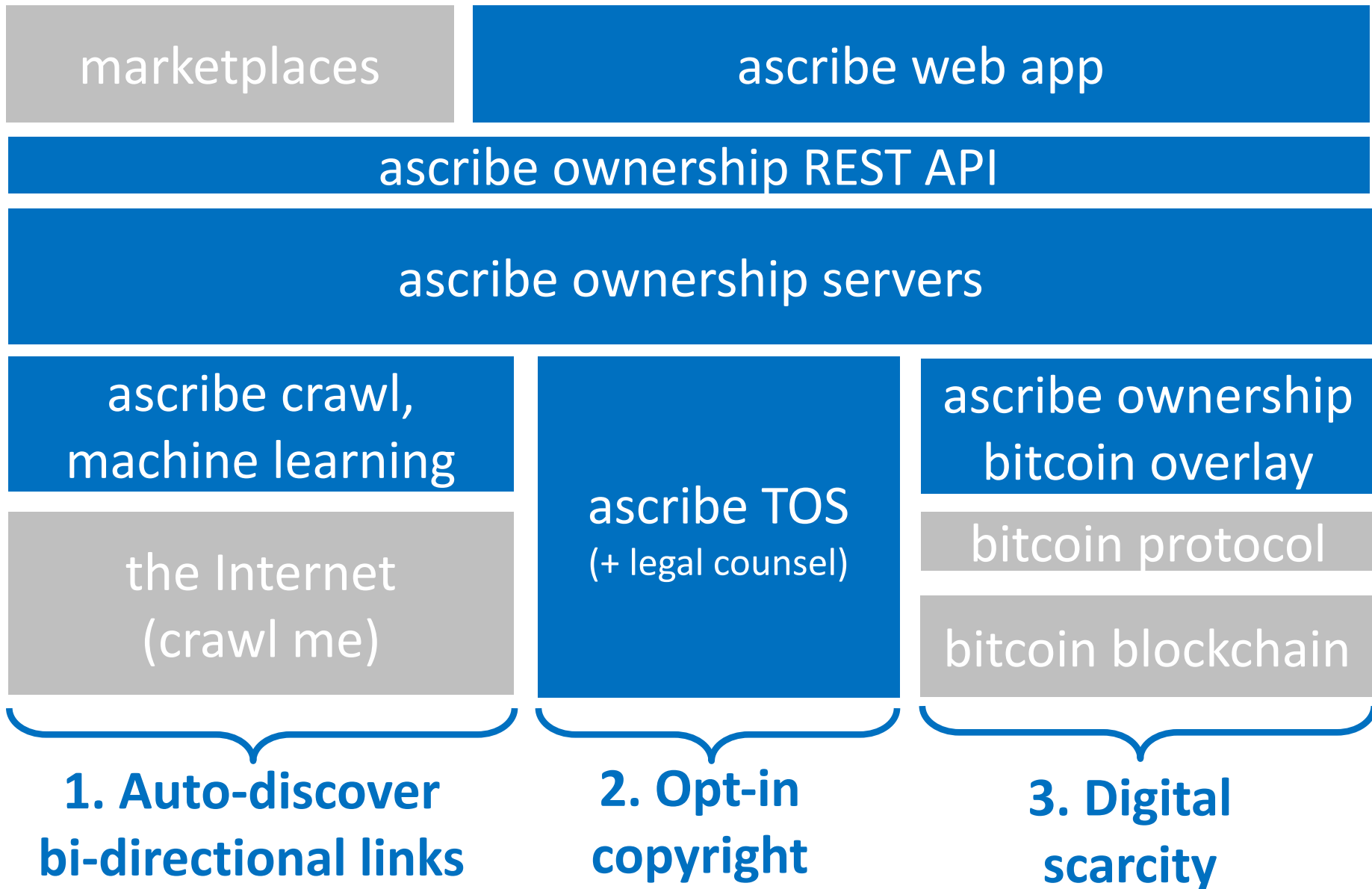
- Via a trusted ledger: bitcoin blockchain
- Use a special protocol for ownership:
 - For unique editions, consignment, loans, etc.
- Time-stamp = evidence for a court of law, in case of ownership dispute (thank you Silk Road)

How: high level

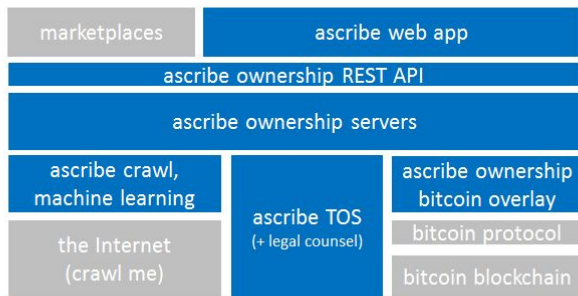
- 1. Auto-discover bi-directional links
- 2. Opt-in copyright (legals)
- 3. Create digital scarcity



How: full ascribe tech stack



Interfaces on the ascribe stack



WEB

For individual creators (artists, graphic designers, photographers, writers, ..) who want to register, consign, and archive their work directly.

And for individual galleries.

And for collectors.

btc.png 15.1kB

DELETE

Step one: lock down title

Artist's Name

Artwork Title

Year Created

Number of Editions

This input is final and cannot be edited later.
Additional details can be added after registration.

REGISTER CANCEL

Interfaces on the ascribe stack

For marketplaces of digital goods (art, photography, 3d, ..) to answer “where’s my stuff” for their users, and themselves

REST

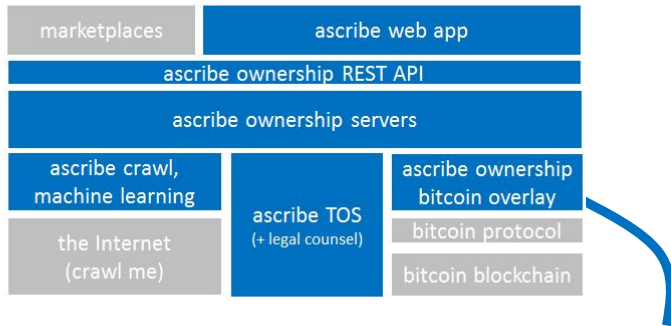
```
Format (mandatory optional)
POST https://www.ascribe.io/3d/api/0.1/pieces

Headers:
  Authorisation: Bearer <token id>

Body:
  user_email=<email of a Makx user>
  &file_url=<points to a url where the f
  &asc-hash-md5=<hash of the file, e.g.
  &asc-sig-foo=<a digital fingerprint us
  &asc-sig-bar=<a digital fingerprint us
  &asc-sig-...=<a digital fingerprint us
  &title=<title for the piece>
  &artist_name=<name of artist for the p

Example:
POST
https://www.ascribe.io/3d/api/0.1/pieces \
?user_email=user32%40makx.com \
&file_url=https%3A%2F%2Fmakx.s3.amazonaws.co
&asc-hash-md5=BECA1234809CFE4789729837C \
&asc-sig-bar=37829473fjio3r0934hknfsdliu3840
```

Interfaces on the ascribe stack



BITCOIN OVERLAY (SPOOL*)

```
REGISTER:
- MAPPING: 1-to-many
- SPOOL: piece_hash -> edition(s)
- BTC:
TX = [(1jtt... : 20000+num_editions)] -> [(piece_hash:10000),
(OP_RETURN=SPOOLREGISTER:0), (fee:10000)]
> balance of piece_hash = 10000 satoshi
> balance of edition(s) = 1 satoshi

TRANSFER:
- MAPPING: 1-to-1
- SPOOL: edition -> transfered_edition [transfered_edition is
- BTC:
* first transfer
> balance of edition = 1 satoshi
TX = [(1jtt...:29999)] -> [(edition_hash:19999), (OP_RETURN
TX = [(edition_hash:20000)] ->transfered_edition_hash [(trans
(OP_RETURN=SPOOLTRANSFER:0), (fee:1000)]
> balance of edition = 0 satoshi
> balance of transfered_edition = 10000 satoshi

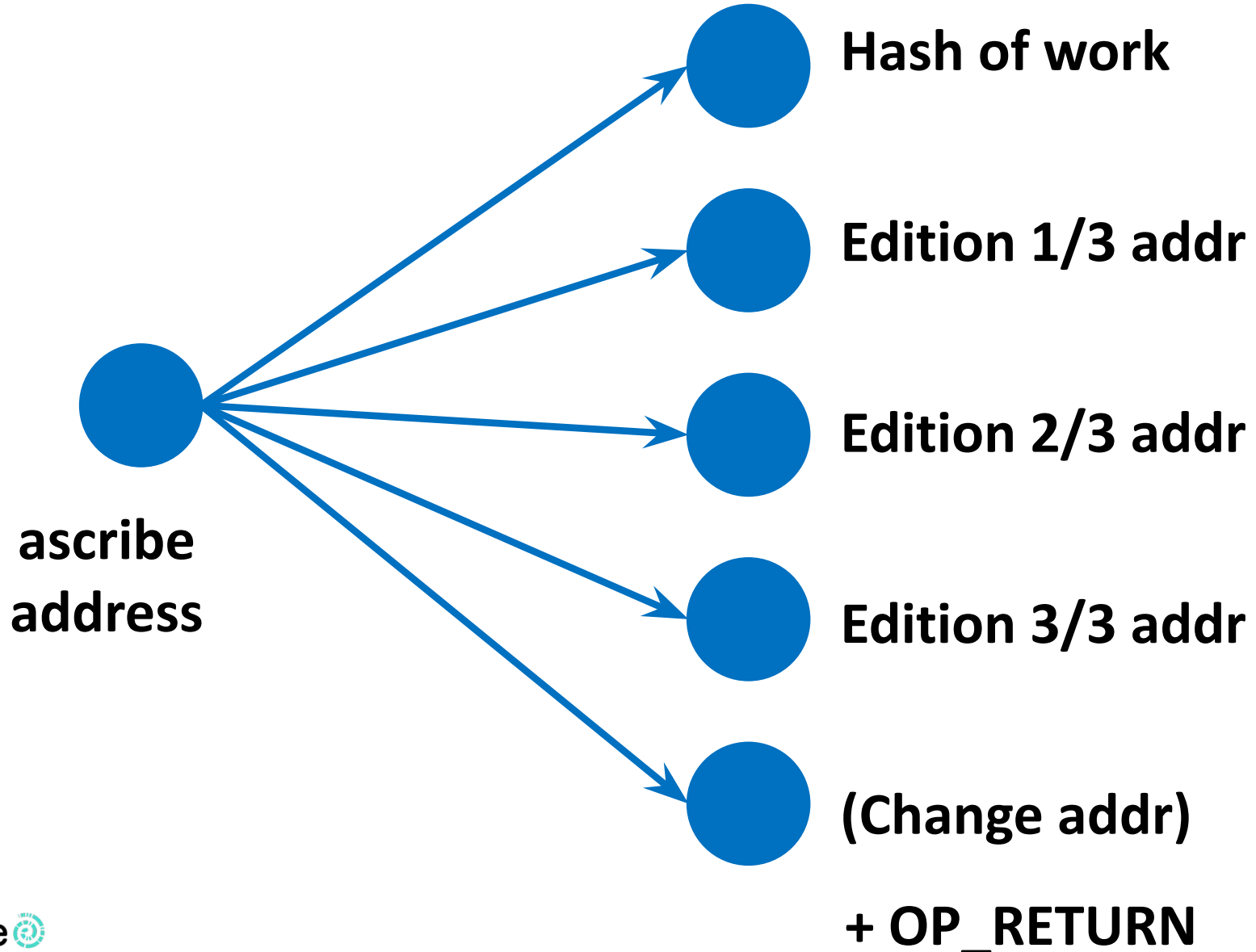
* next transfers
> balance of transfered_edition = 10000 satoshi
TX = [(1jtt...:20000)] -> [(10000), (OP_RETURN=SPOOLRE
```

For adventurous
BTC hackers 😊

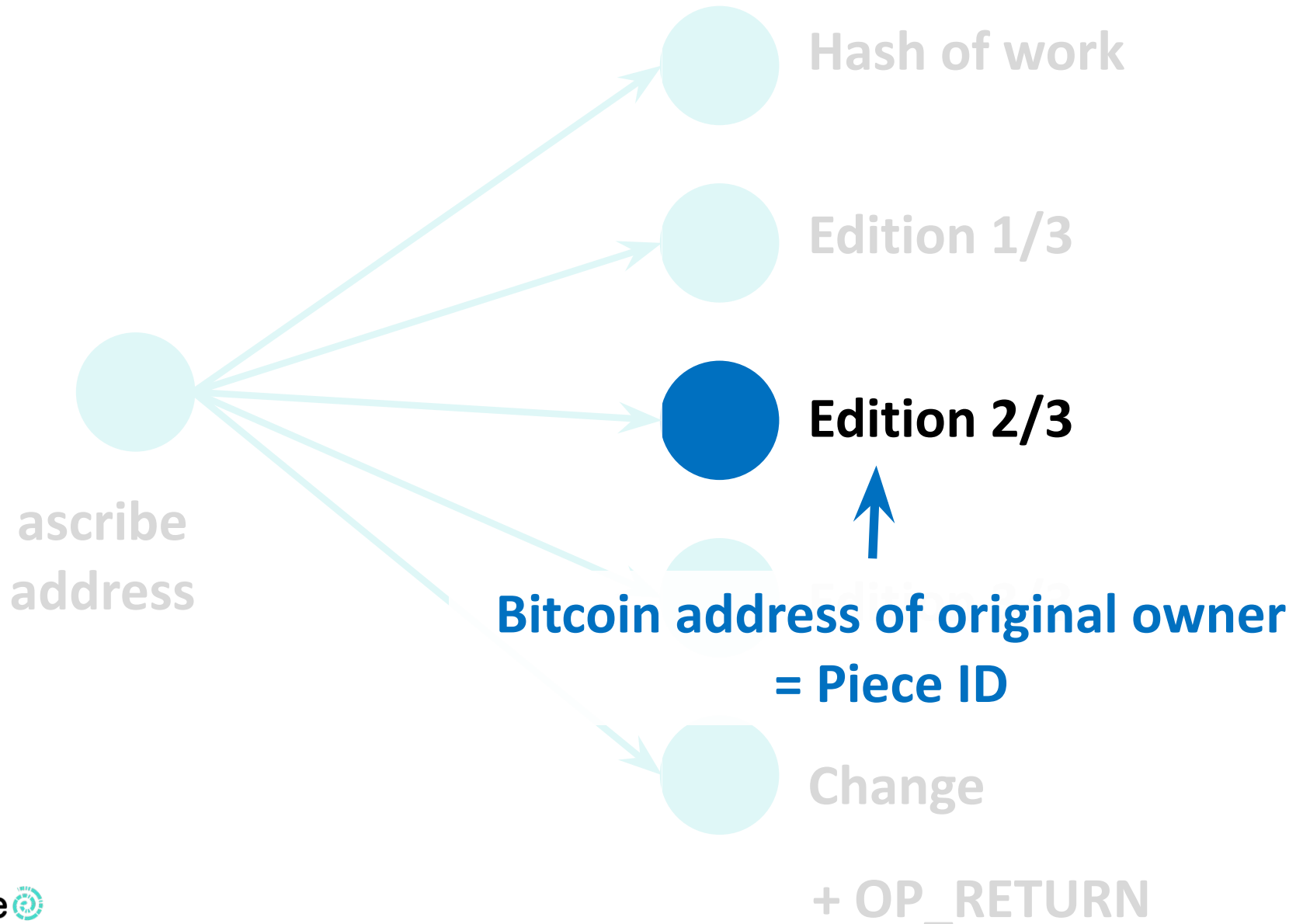
*SPOOL = Secure Public
Online Ownership Ledger

Bitcoin overlay (SPOOL): register tx

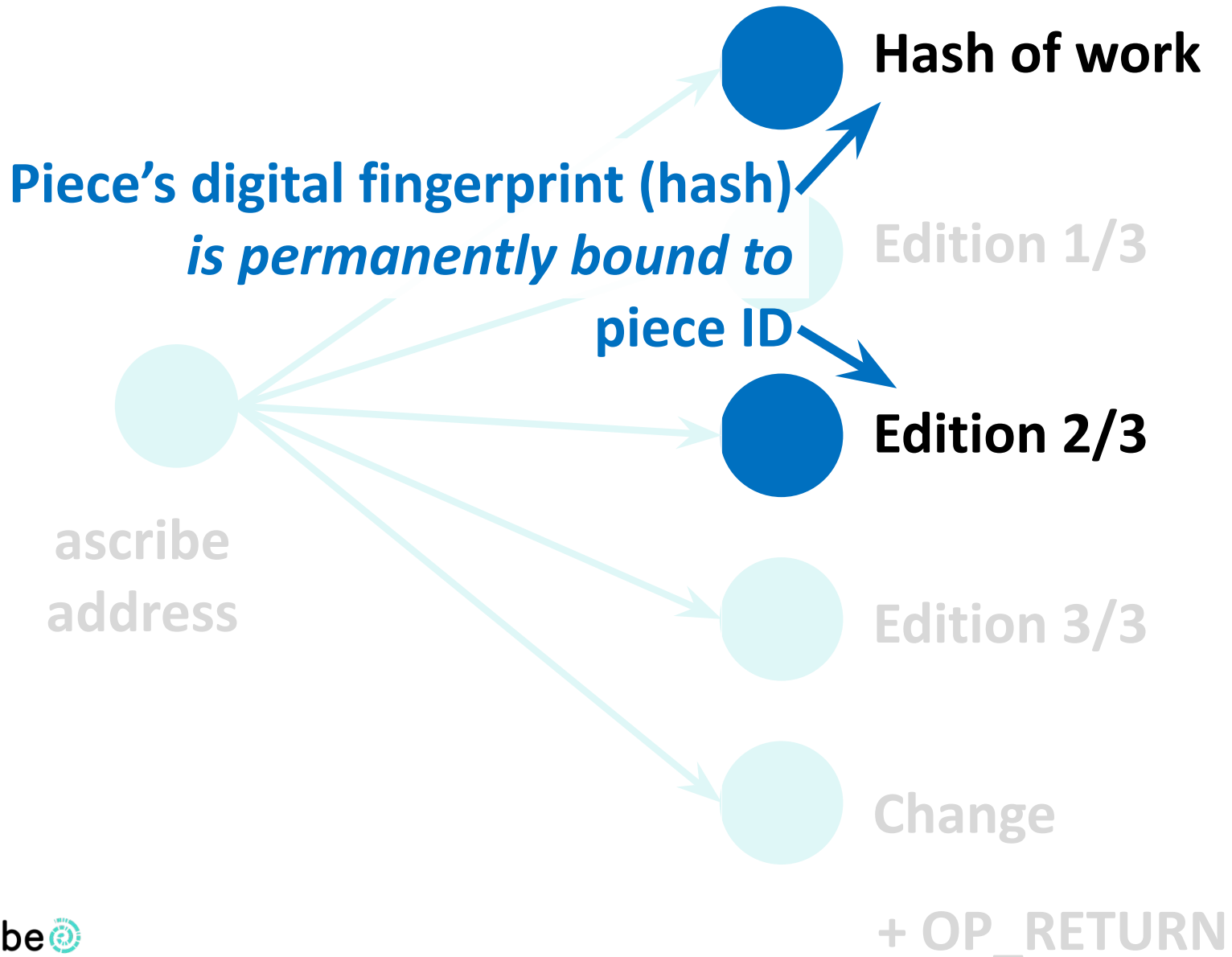
Example on 3 editions



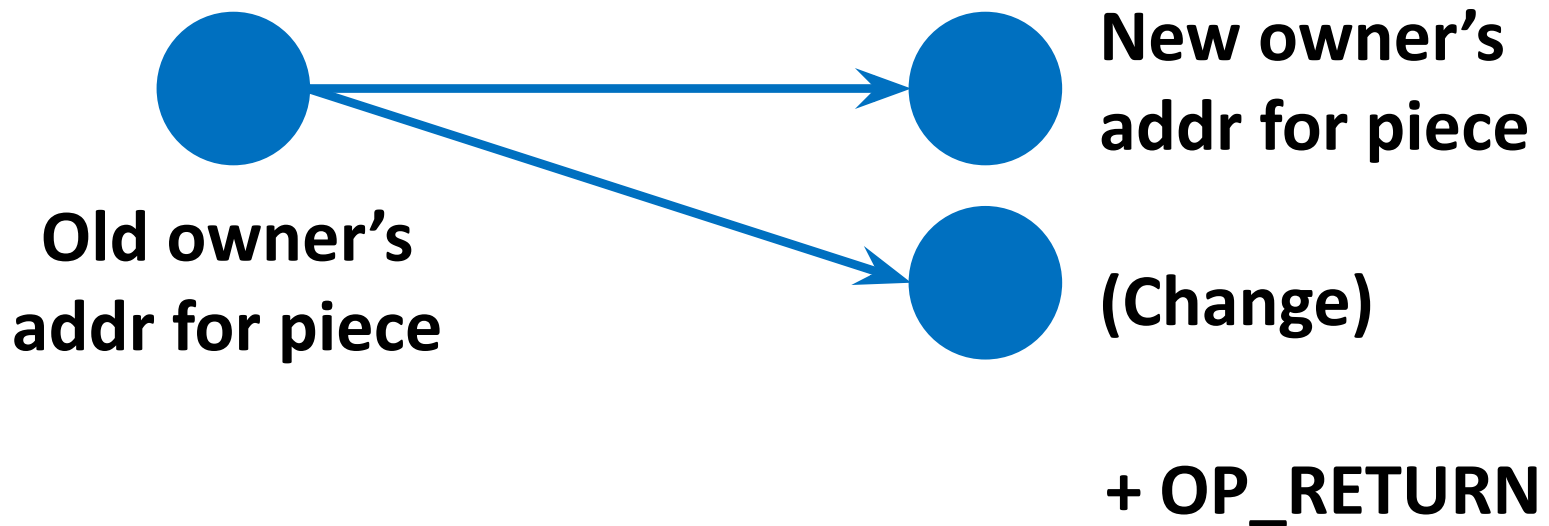
Bitcoin overlay (SPOOL): register tx



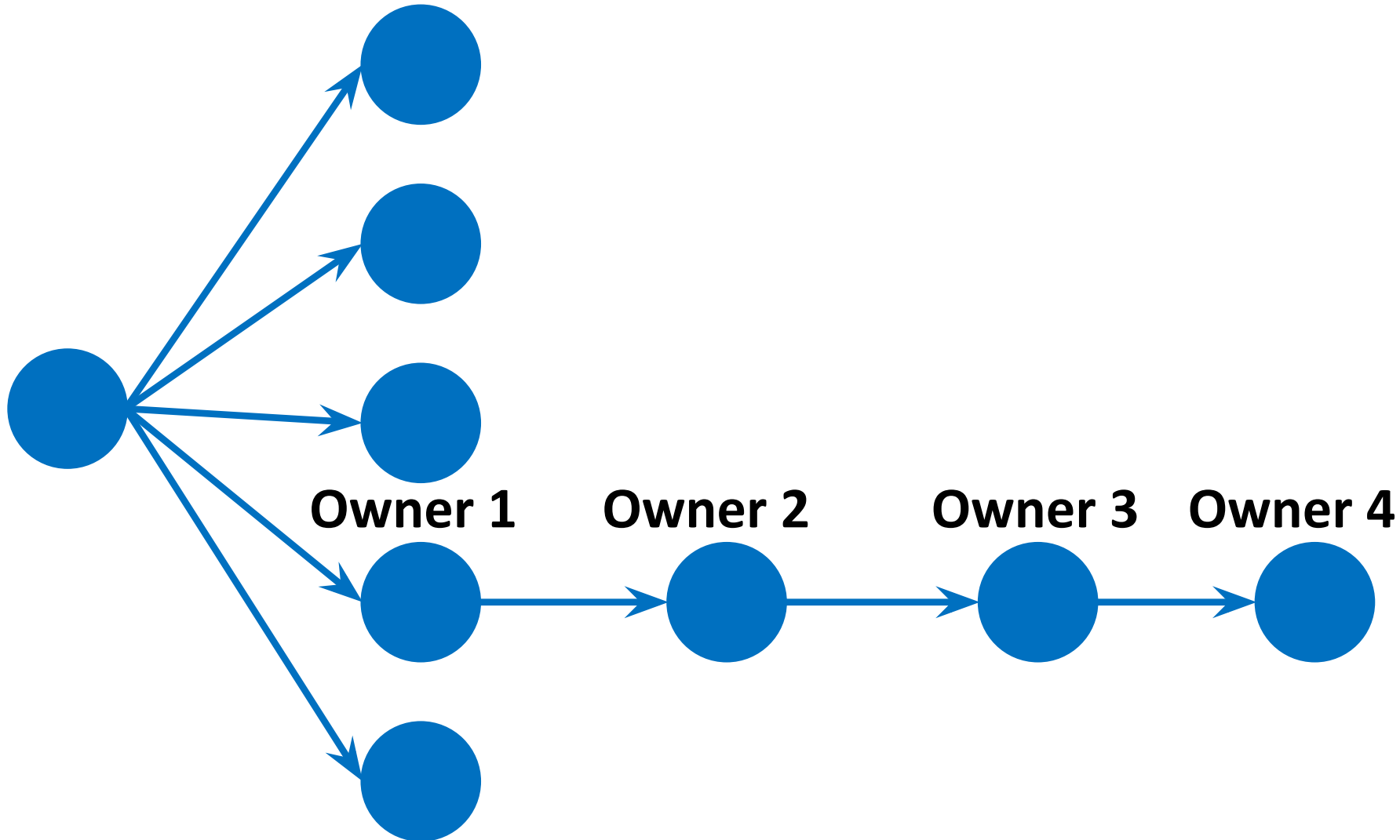
Bitcoin overlay (SPOOL): register tx



Bitcoin overlay (SPOOL): transfer ownership tx



Bitcoin overlay (SPOOL): Provenance emerges naturally



Bitcoin overlay (SPOOL): specification

SPOOL = Secure Public Online Ownership Ledger

Features: unique editions, consignment, transfer, ..

REGISTER:

- MAPPING: 1-to-many

- SPOOL: piece_hash -> edition(s)

- BTC:

TX = [(1jtt... : 20000+num_editions)] -> [(piece_hash:10000), (edition1_hash:1), ..., (editionx_hash:1), (OP_RETURN=SPOOLREGISTER:0), (fee:10000)]

> balance of piece_hash = 10000 satoshi

> balance of edition(s) = 1 satoshi

github.com/ascribe/spool

TRANSFER:

- MAPPING: 1-to-1

- SPOOL: edition -> transfered_edition [transfered_edition is on a HD wallet owned by the transferee]

- BTC:

* first transfer

> balance of edition = 1 satoshi

TX = [(1jtt...:29999)] -> [(edition_hash:19999), (OP_RETURN=SPOOLREPLENISH:0), (fee:10000)]

TX = [(edition_hash:20000)] -> transfered_edition_hash [(transfered_edition_hash:10000), (OP_RETURN=SPOOLTRANSFER:0), (fee:1000)]

> balance of edition = 0 satoshi

> balance of transfered_edition = 10000 satoshi

* next transfers

> balance of transfered_edition = 10000 satoshi

TX = [(1jtt...:20000)] -> [(10000), (OP_RETURN=SPOOLREPLENISH:0), (fee:10000)]

TX = [(transfered_edition_hash:20000)] -> [(transfered_edition_next_hash:10000), (OP_RETURN=SPOOLTRANSFER:0), (fee:1000)]

> balance of transfered_edition = 0 satoshi

> balance of transfered_edition_next = 10000 satoshi

CONSIGN:

- MAPPING: 1-to many

- SPOOL: edition -> consigned_edition(s) [consigned_editionx is on a HD wallet owned by consignee x]

ascribe & the bitcoin stack

USER
FACING

Webapp & Marketplaces

DIGITAL ART

3D PRINTING

STOCK
PHOTOS

MUSIC

PUBLISHING

...

OWNERSHIP PROTOCOL

OWNERSHIP ENGINE

- Auto-discover links (web crawl, ML)
- Copyright (TOS/legal)
- Digital scarcity (via ledger, using notary -> smart property)

ascribe 

NOTARY PROTOCOL ↓ HASH OF PROPERTY ↑ CERTIFICATE OF AUTHENTICITY

NOTARY ENGINE

- Proof of Existence & Transfer

factom

Proof of Existence

MONEGRAPH_
ARTCOA

SMART CONTRACTS ↓ SCRIPT ↑ (EXECUTES)

SMART CONTRACTS ENGINE

- Ethereum, Codius, Counterparty, Eris



SMART PROPERTY
PROTOCOL

- Counterparty
- Open Assets
- NXT, OT, ..



BITCOIN PROTOCOL

↓ TRANSACTION ↑ (UPDATED LEDGER)

LEDGER INFRASTRUCTURE

- Write once, read forever, delete never
- Decentralized control



BITCOIN 1.0

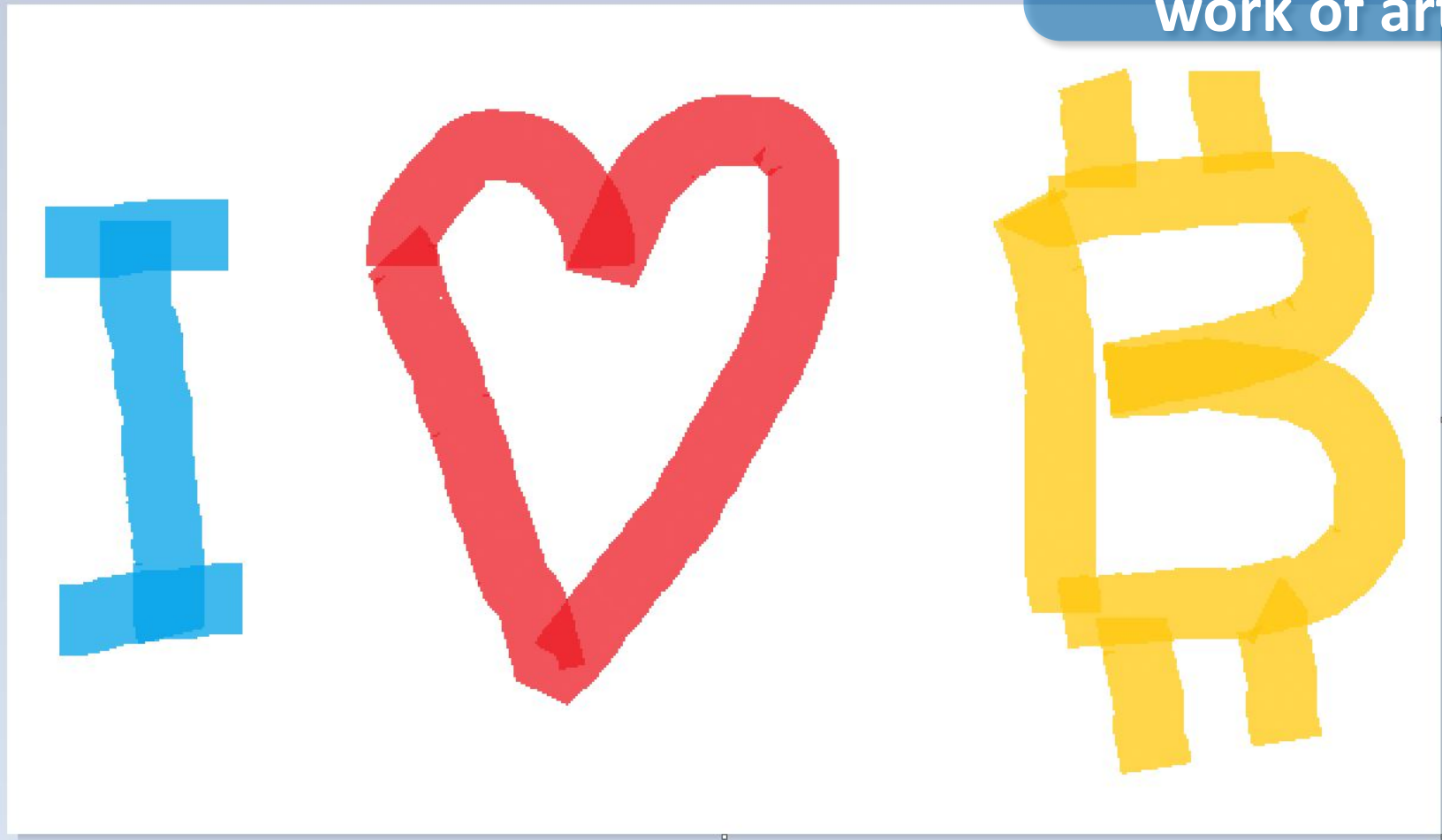
How ascribe tech helps ownership

- **Creators** – Can claim & protect ownership. Cryptographic Certificate of Authenticity (CCOA). Can share without losing control.
- **Collectors / audience** – digital provenance enables secondary markets.
- **Connectors** – mitigate friction on legal side
- For digital art, 3d, photography, ..

Demo



Trent's
(obviously great)
work of art #2



ascribe 

Transparent, indisputable digital authentication.

Creators can now claim ownership of their work using cryptographic Certificates of Authenticity. ascribe is a secure, transparent ledger that tracks the chain of ownership and verifies the title of digital property. This ledger is decentralized and openly accessible while preserving privacy.

Register your work today.

enter

Use ascribe to submit to the 2015 Berlin Art Prize, [learn more](#).

Signup

Sign up to claim and transfer digital art ✕

iheartbtc@mailinator.com

.....

.....

Your password must be at least 10 characters. This password is securing your digital property like a bank account. Store it in a safe place!

I agree to the Terms of Service

Promocode (Optional)

JOIN US

CLOSE

Creators
Authenticity. ascribe is a secure, transparent ledger that tracks the chain of ownership and verifies the title of digital property. This ledger is decentralized and openly accessible while preserving privacy.

Register your work today.

sign up

Use ascribe to submit to the 2015 Berlin Art Prize, [learn more](#).

Welcome to ascribe!

Click or drop artwork

Step one: lock down title

Artist's Name

Artwork Title

Year Created



Number of Editions

[About / Impressum](#)


Welcome to ascribe!



Step one: lock down title

Trent McConaghy|

Bitcoin Love

2015 

3

This input is final and cannot be edited later.
 Additional details can be added after registration.

REGISTER **CANCEL**

Welcome to ascribe!



btc.png 15.1kB

DELETE

Step one: look down title



Trent McConaghy

Bitcoin Love

2015

3

This input is final and cannot be edited later.
Additional details can be added after registration.

REGISTER CANCEL

CONSIGN

TRANSFER



Piece detail



Trent McConaghy

BITCOIN LOVE

2015, edition: 1/3

ID: 16XcLp6mEuujWng6w6LqPNprRYbj9eUcT4

Status: Can Transfer/Consign

Owner: ihartbtc@mailinator.com

Certificate of Authenticity

CREATE

Personal Note Show/Hide

Provenance/Ownership History Show/Hide

Consignment Show/Hide

Further Details Show/Hide

+ Add Display instructions

+ Add Technology details


+ Add Artist contact info

+ Add Optional data files

SPOOL Details Show/Hide

Delete Actions Show/Hide

All works =archive =wallet

ascribe 

iheartbtc@mailinator.com 

+ ARTWORK



Artist

▼ Title

Edition

Action



Trent McConaghy

Bitcoin Love

ID: 16XcLp6mEuujWng6w6LqPNprRYbj9eU...

2015, 1/3

Can Transfer/Consign



Trent McConaghy

Bitcoin Love

ID: 16fv1VhXK2gVE1hpgxpBfzdDxEEnCa7M...

2015, 2/3

Can Transfer/Consign



Trent McConaghy

Bitcoin Love

ID: 1LPjuoXom5B5E6DQkj7Pux4QLBiWZXi...

2015, 3/3

Can Transfer/Consign

[About / Impressum](#)

CONSIGN

TRANSFER



Transfer ownership

Transfer artwork ✕

Transferee email

Hi,

I transfer ownership of "Bitcoin Love" to you.

Truly yours,
iheartbtc@mailinator.com

Make sure that display instructions and technology details are correct.
They cannot be edited after the transfer.

Password

TRANSFER

CREATE

Show/Hide

+ Add Technology details

+ Add Artist contact info

+ Add Optional data files

SPOOL Details Show/Hide

Artwork ID: 16XcLp6mEuujWng6w6LqPNprRYbj9eUcT4 [Blockchain] [Raw]

Hash of artwork, title, etc: 13ewcT3FxfmiNAaNcpMyiRqkr3TK9nYq61 [Blockchain] [Raw]

Owned by SPOOL address: 16XcLp6mEuujWng6w6LqPNprRYbj9eUcT4 [Blockchain] [Raw]

Interesting aside:

While this is a *bitcoin* app,
you don't have to know bitcoin at all.
Though if you do, you can cross-check...

Further Details [Show/Hide](#)

+ Add Display instructions

+ Add Technology details

+ Add Artist contact info

+ Add Optional data files

SPOOL Details [Show/Hide](#)

Artwork ID: 16XcLp6mEuujWng6w6LqPNprRYbj9eUcT4 [\[Blockchain\]](#) [\[Raw\]](#)

Hash of artwork, title, etc: 13ewcT3FxfmiNAaNcpMyiRqkr3TK9nYq61 [\[Blockchain\]](#) [\[Raw\]](#)

Owned by SPOOL address: 16XcLp6mEuujWng6w6LqPNprRYbj9eUcT4 [\[Blockchain\]](#) [\[Raw\]](#)

Easily cross-ref
blockchain 1/2

Easily cross-ref blockchain 2/2

https://blockchain.info/tx/c451dd9f6984c9870d925ca88067114dbc0bc4d8c843f96503b94eafd4a5fad4



Home Charts Stats Markets API Wallet



Transaction View information about a bitcoin transaction

c451dd9f6984c9870d925ca88067114dbc0bc4d8c843f96503b94eafd4a5fad4

1JttRRdtAi6cDNM23Uq4BEU61R8kJeANJs



13ewcT3FxfmiNAaNcpMyiRqkr3TK9nYq61
16XcLp6mEuujWng6w6LqPNprRYbj9eUcT4
16fv1VhXK2gVE1hpgxpBfzdDxEEnCa7MpYn
1LPjuoXom5B5E6DQkj7Pux4QLBiWZXiC7N
1JttRRdtAi6cDNM23Uq4BEU61R8kJeANJs

Unable to decode output address

0.0001 BTC
0.000006 BTC
0.000006 BTC
0.000006 BTC
0.000182 BTC
0 BTC

7 Confirmations 0.0003 BTC

| Summary | |
|--------------------|--|
| Size | 359 (bytes) |
| Received Time | 2015-03-22 13:50:30 |
| Included In Blocks | 348695 (2015-03-22 13:50:30 + 0 minutes) |
| Confirmations | 7 Confirmations |
| Relayed by IP | 144.76.13.207 (whois) |
| Visualize | View Tree Chart |

| Inputs and Outputs | |
|--------------------------|---|
| Total Input | 0.0004 BTC |
| Total Output | 0.0003 BTC |
| Fees | 0.0001 BTC |
| Estimated BTC Transacted | 0 BTC |
| Scripts | Show scripts & coinbase |

ascribe status

For sale as we
speak, at
bitforms gallery
in NYC



Jonathan Monaghan
Escape Pod
2015, 3 editions

Berlin Art Prize tech

Until April 15, 2015 for all of Berlin artists who live in the city

platform

YOU ARE

Berlin Art
Prize

DEADLINE
01.04.2015

On 13
awards
with a

APPLY NOW!

Other ascribe users

Digital artists

Photographers

Other creatives

3d design
marketplaces

Art marketplaces

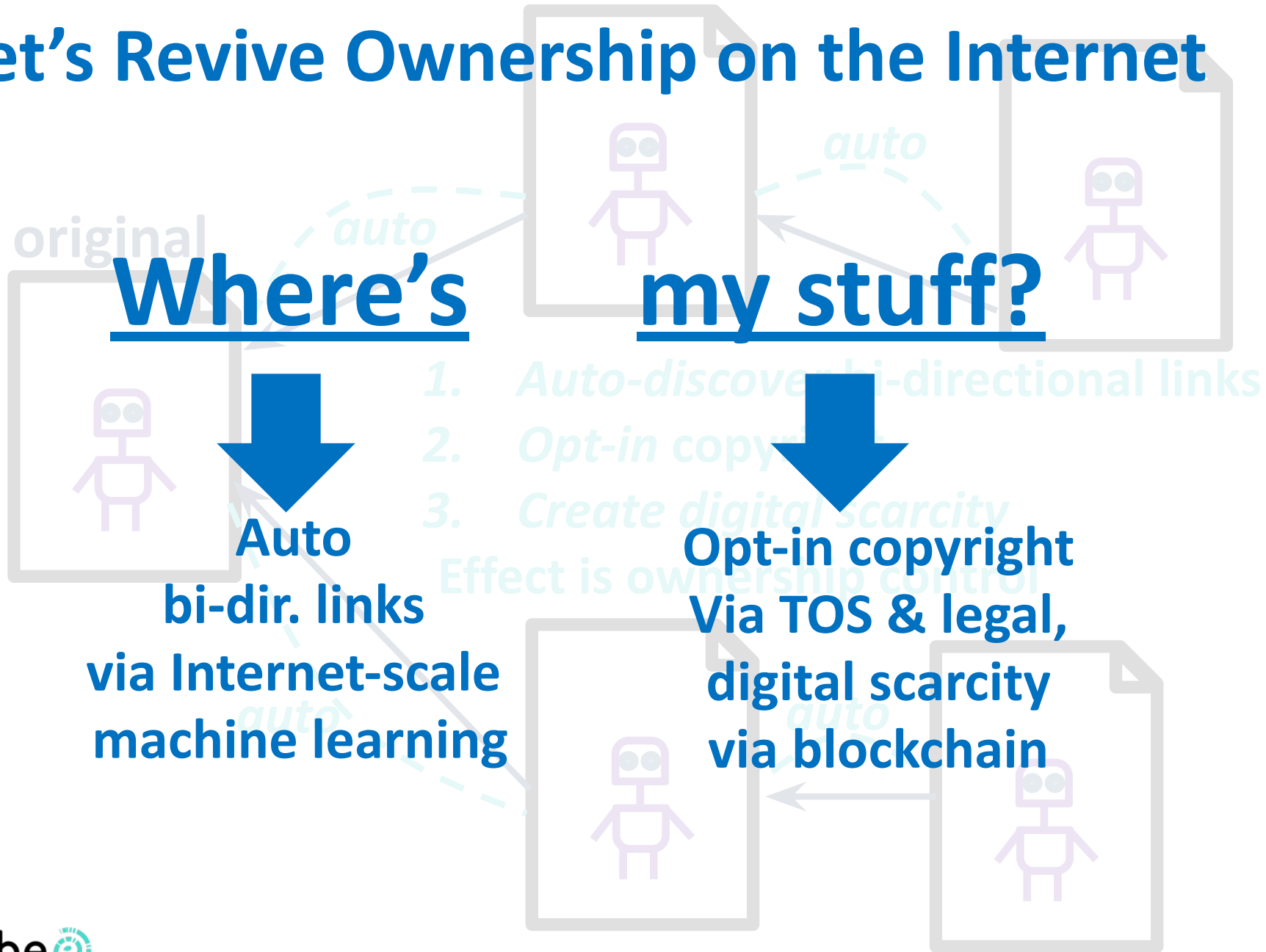
Photography
marketplaces

tech status / near term roadmap

- Webapp – alpha – Mar 2014
- Webapp – beta – Sep 2014
- Tracking/ML – 20M images – Dec 2014
- **REST API – alpha – Feb 2015**
- **Webapp – v1 – now**
- **Tracking/ML – Internet scale alpha – now**
- REST API + tracking/ML – v1 – May 2015
- Webapp + tracking/ML – June 2015

Conclusion:

Let's Revive Ownership on the Internet



Extras

ascribe team

- Bruce – banking, org building
- Greg – copyright / legal
- Masha – art
- Jaz – art
- Trent – large scale ML, btc
- Dimi – large scale ML, btc
- Ryan – large scale ML
- Tim – large scale ML, full stack
- Alberto – full stack
- Rodolphe – distributed protocols
- Andreas – big data, distributed protocols
- Sarah – btc

More info on common crawl

- Common Crawl makes a copy of the Web and gives it away for free with no additional IP restrictions
- Petabytes of data
 - raw data
 - plain text
 - meta data
- 1MB cutoff for all pages. So, images are out. But TinEye uses their data for reverse image search.
- Example research : dirt cheap Web scale parallel text from the Common Crawl
- 3G Web pages, Monthly releases
- 220 TB uncompressed, 60 TB compressed. Free to download from AWS. (ie don't download and just use AWS)
- They do crawling with nutch. (largest public user). Avoids link farms, spider traps, but is skewed towards dot com.
- Files are simply gzipped. Wrappers exist for many languages, including python.
- Derived datasets include : hyperlink graph (at Web data Commons), n gram counts, global vectors for word representation.
- One project points to all links, and reports link type (eg if an img link)
- To generate full hyperlink graph would cost about 30 USD on AWS. Using AWS spot instances. Results in about 10 GB of data.
- flashgraph
- Python starter kit with mrjob
- They treat possible IP issues as legal gray area. You have data, not content. Did legal studies with uc Berkeley. "If common crawl gets sued but sets case law, that's success".
- About 2k USD per crawl. They've highly optimized to minimize cost. (eg use AWS spot instances)
- Slides: <http://slides.com/smerity/experiments-in-web-scale-data#/>

User flow



user uploads
original work



ascribe verifies
authenticity
via ML-based
prior art
screening

ascribe
registers a hash
of the file on
the blockchain
& issues crypto
Certificate of
Authenticity



marketplace
places original
work for sale

buyers of
digital property
can verify
authenticity



owner can
transfer
ownership,
consign, loan,
and license
original work

Problems of Any Digital Asset

It's the Physics, Silly!



**COPIED
perfectly**



**STORED
for free**



**SHARED
with anyone**



CREATOR
wants compensation & security



MARKET
wants original inventory



BUYER
want authenticity & provenance



Solution

A PERMANENT, PUBLIC OWNERSHIP REGISTRY



 COPIED
perfectly

 STORED
for free

 SHARED
with anyone

BTC transactions from late 2013 app screenshot

Somebody consign... x Keidom x

37.139.11.99:81/registerart

KEIDOM My Art Register Art Transfer Ownership Transactions thegallerist1@mailinator.com

Register Artwork

Please register artwork you own here

Files

Artwork File

Thumbnail File

About the Artwork

Artist

Title

Editions

Date of Creation

New custom field

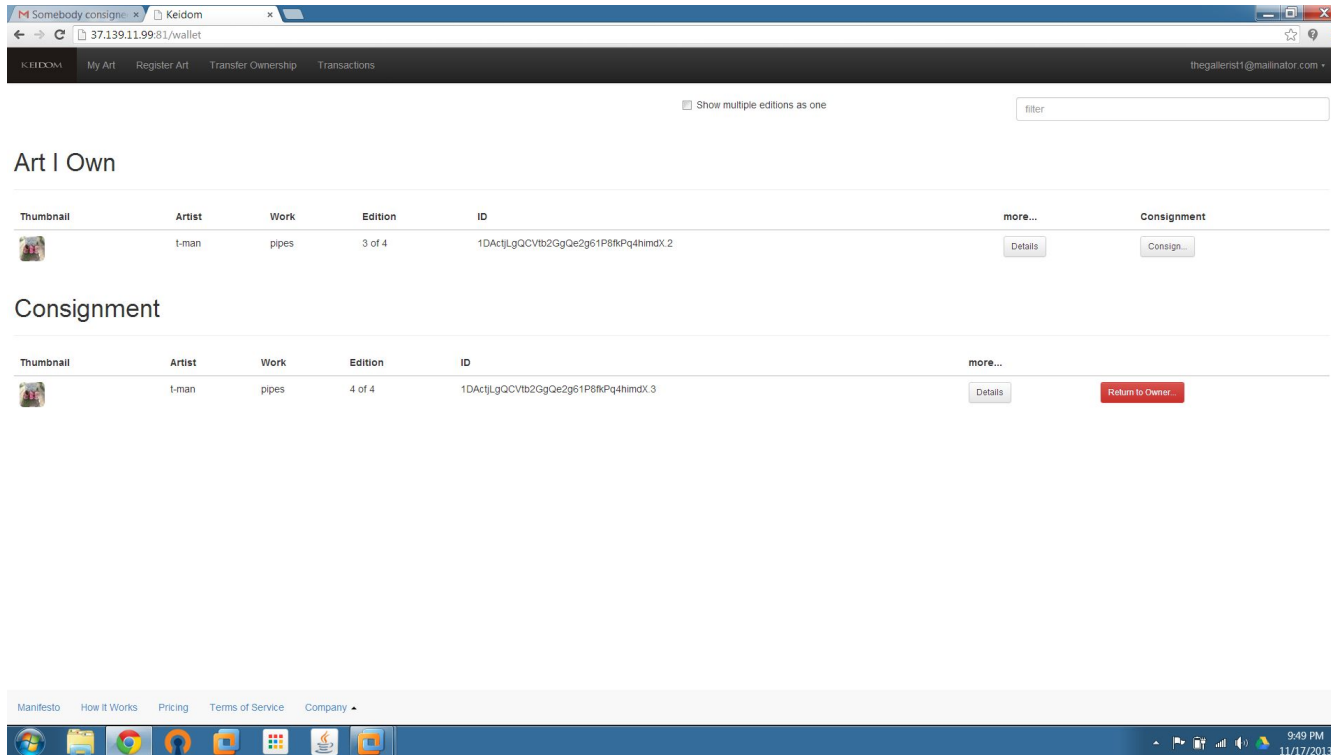
I agree with the Keidom terms of service.

The artwork information will be hashed, and inserted onto the SPOOL.

Manifesto How It Works Pricing Terms of Service Company

9:50 PM 11/17/2013

BTC transactions from late 2013 app screenshot



BTC transactions from late 2013 on blockchain

The screenshot shows a web browser displaying a Bitcoin transaction page on blockchain.info. The URL is <https://blockchain.info/tx/13b5828c281bb2c8a9448bd3cbebd9a592ba4a6b55ec4aad79b4625cb85e4c>. The page title is "Transaction" and it provides information about a specific Bitcoin transaction.

Transaction ID: 13b5828c281bb2c8a9448bd3cbebd9a592ba4a6b55ec4aad79b4625cb85e4c

Inputs: 1DAc1LgQCv1b2GgOe2g61P8fPq4HmDX, 15egQU6ZmYyID1CRWgws4W492JF1Kq1N1

Outputs: 19aRPXFzJGj9E4w6dUA2YcUFJ7F1UDnh (0.0001 BTC), 15egQU6ZmYyID1CRWgws4W492JF1Kq1N1 (0.00024155 BTC)

Summary:

| | |
|--------------------|--|
| Size | 436 (bytes) |
| Received Time | 2013-11-18 05:49:02 |
| Included In Blocks | 270249 (2013-11-18 05:50:46 + 2 minutes) |
| Confirmations | 78453 Confirmations |
| Relayed by IP | Blockchain.info |
| Visualize | View Tree Chart |

Inputs and Outputs:

| | |
|--------------------------|-------------------------|
| Total Input | 0.00044155 BTC |
| Total Output | 0.00034155 BTC |
| Fees | 0.0001 BTC |
| Estimated BTC Transacted | 0.0001 BTC |
| Scripts | Show scripts & coinbase |

Network Propagation (Click to view):

The map shows the West African region, including countries like Liberia, Côte d'Ivoire, Ghana, Accra, Lagos, Cameroon, Equatorial Guinea, Gabon, Congo, and Brazzville. A red pin is located in the Gulf of Guinea area, indicating the network propagation location.

Advertisement:

PIA privateInternetaccess™
WE ACCEPT BITCOIN!
Anonymous VPN
Starting At \$3.33/Mo.
REGISTER TODAY!

At the bottom of the browser window, there is a navigation bar with links: "About Us & Contact - Privacy Policy - Terms of Service - Ok (1780 Nodes Connected) - Advanced: Enable - Bitcoin". The Windows taskbar at the bottom shows the time as 3:50 PM on 3/22/2015.

Frequently Asked Questions (FAQ)

FAQ

Q: Why do I need a stamp of ownership on my work ?

A: ascribe gives you an irrefutable claim to ownership of your original work that helps to give galleries and collectors the confidence that they are buying authentic work. By registering with ascribe, you start the chain of ownership (provenance) that will stay with the work as it is transferred from one collector to the next.

Q: What does "ownership" mean for digital work?

A: It's about copyright. Owning a digital work basically means having copyright rights related to the work.

Q: How does registering on ascribe actually help "stamp" ownership?

A (short): It gives evidence towards your claim of copyright, which is especially useful if there is a dispute over ownership. It's the same effect as putting your art work onto a DVD and mailing it to yourself. But it's more secure than that, not to mention more convenient.

A (long):

- By law, a creator automatically gets copyright rights for the work as soon as they create it. But if there's a dispute over who created it, then evidence is key to resolving the dispute; the challenge is how do you establish that evidence? And if you sell the work, what happens then?
- ascribe allows you to "etch evidence into stone" that you had the file at a specific point in time. This evidence is used in two key places: registering the work, and transferring ownership. ascribe's terms of service reconciles the legals: you are claiming copyright rights on it.
- Three things are required to "stamp" ownership: identification of the creator, a unique identifier for the work, and an undisputable time stamp. ascribe ensures that all three requirements are met. ascribe "hashes" the file, that is, we create a short string that looks random but is actually unique to the file. ascribe time-stamps that hash by putting it on the Bitcoin blockchain. Think of the blockchain as a database that anyone can add to, anyone can read, but once it's written it cannot be deleted.

Q: Is the file changed somehow, like an invisible watermark or something?

A: The file is untouched. Hashing and time stamping gives you the protection.

Q: Who can register a work?

A: The current owner. This may be the creator of the work or the collector who currently owns the work.

Q: Can I have more than one edition for my work? Are those editions unique?

A: Yes. Each edition is unique, that is, edition 3/10 is different than edition 7/10. Each has its own owner, its own provenance, and so on. ascribe technology and legals makes it all easy for you.

Q: How can I sell a piece of work?

A: Simply register the work on ascribe. When you have a collector and they've paid you, go to ascribe to transfer the ownership of the work or edition. The provenance of the work is updated with the new owner.

Q: Does a consignee have to be a gallery or can it be anyone?

A: A consignee can be anyone that you trust to sell your work.

Q: How is the file stored?

A: The files registered on ascribe are in our secure and private cloud. This means that ascribe also functions as an archival tool for the artist / gallery / collector.

Q: When I register a work, who can see that I've registered it?

A: Only you. But then you can share a unique link to the work to individuals privately or via your favorite social network - Twitter, Facebook, tumblr, vimeo, or MyCatSpace (why not?). Anyone with the link can view your work.