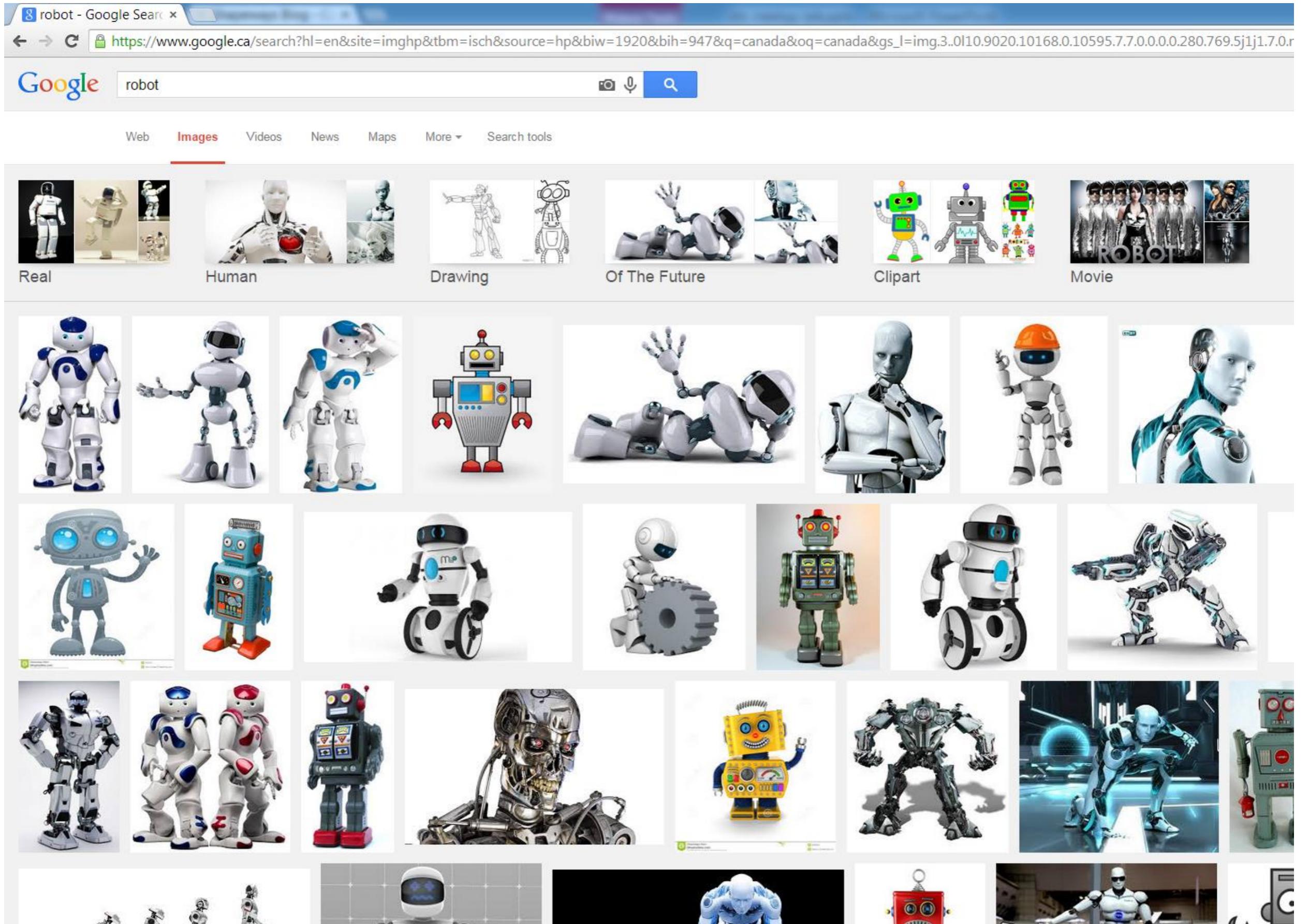


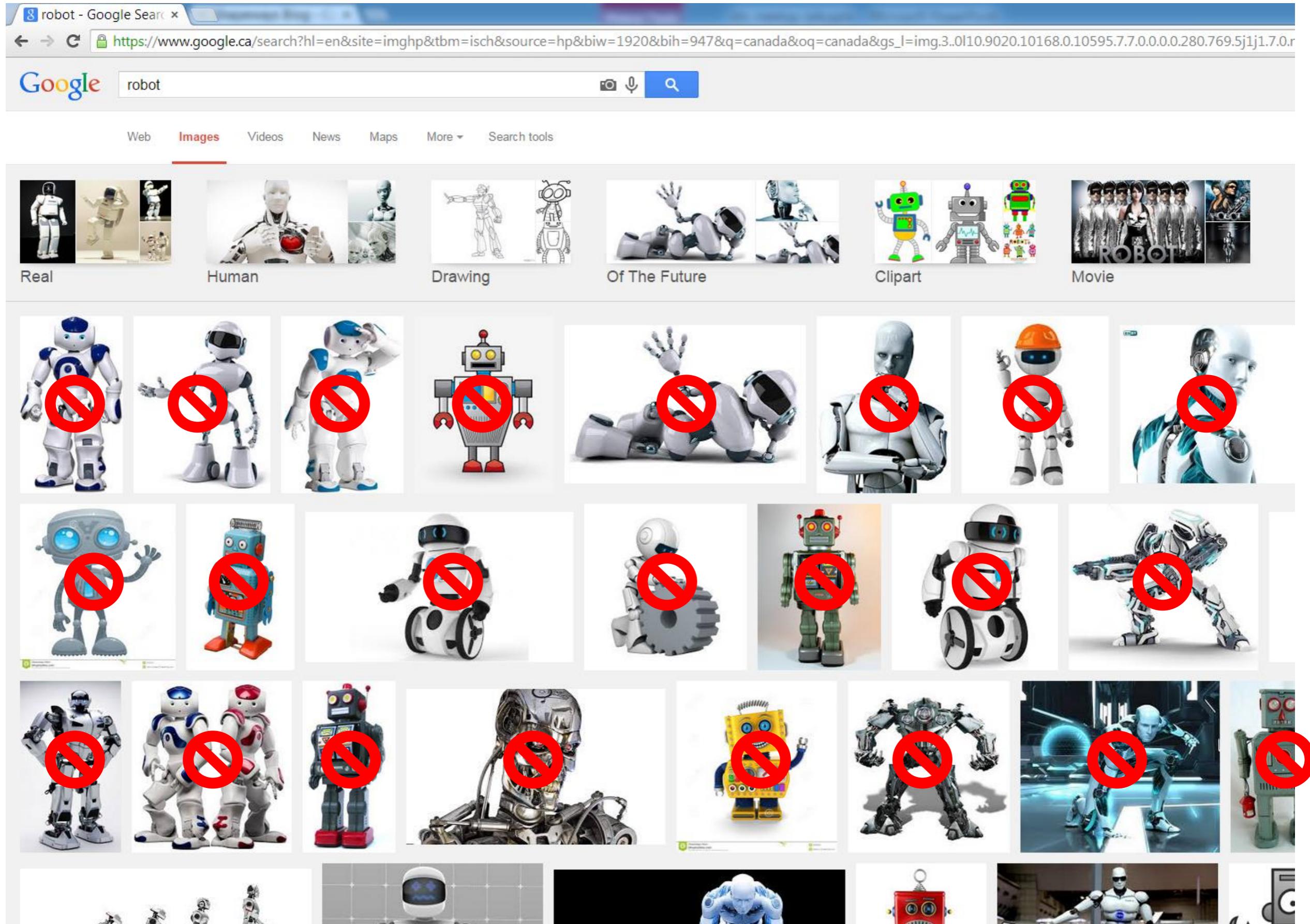


The Web & Intellectual Property

Trent McConaghy, CTO

trent@scribe.io





*Marcel Duchamp,
Fountain (1917)*





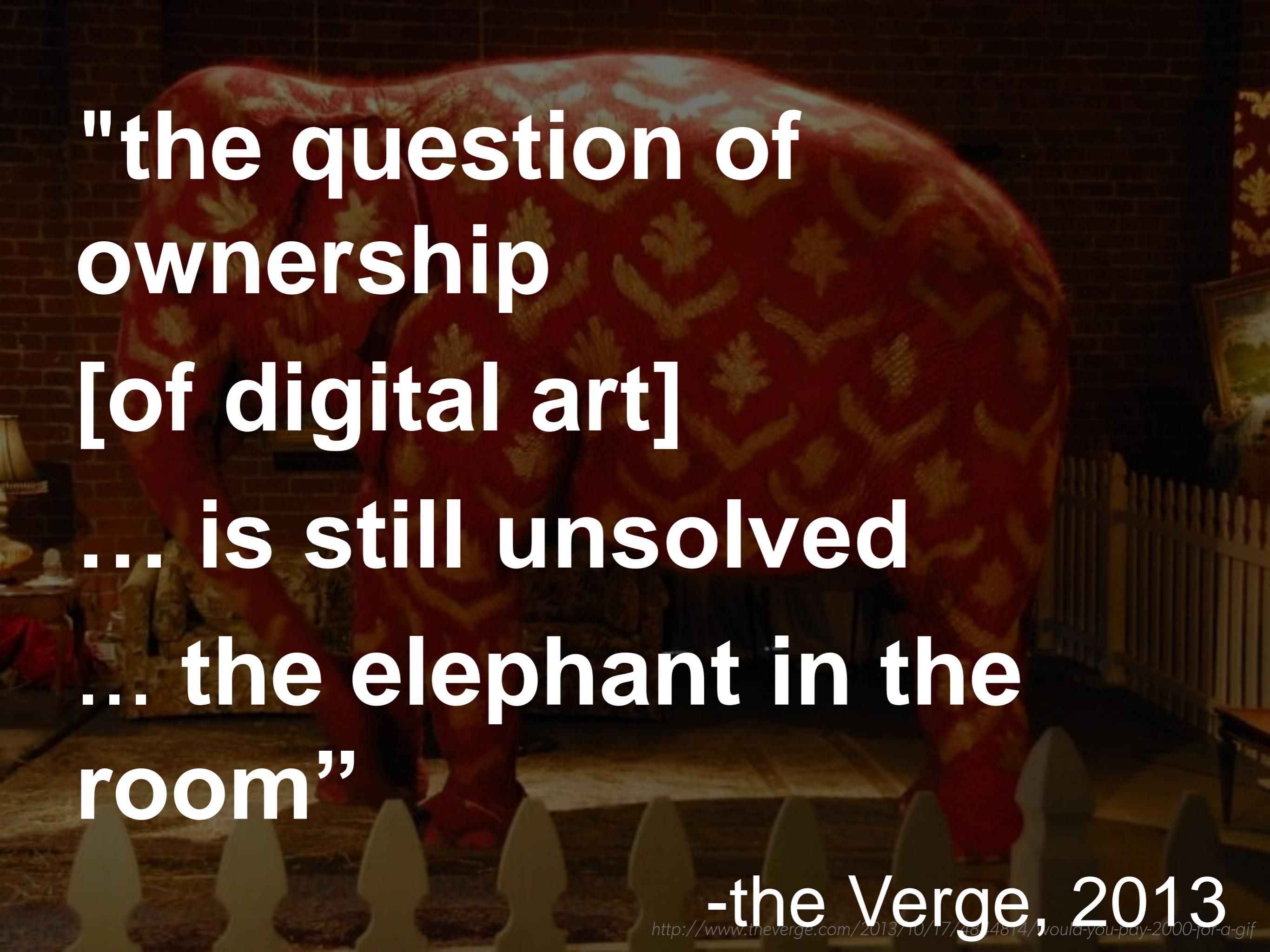
*Marcel Duchamp,
Fountain (1917)*

In art,
provenance is
everything



"I'm interested in
buying your art.
But how do I know
you own it?"

*(What's the
provenance of
title?)*



"the question of
ownership
[of digital art]

... is still unsolved
... the elephant in the
room"

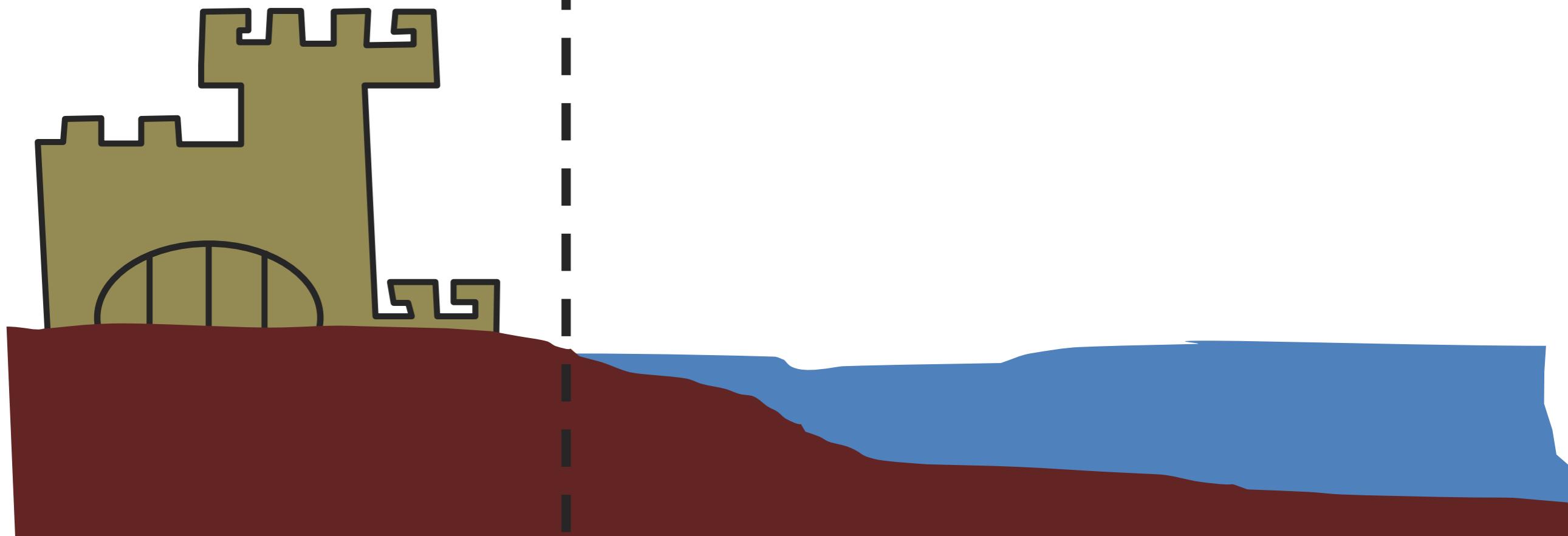
-the Verge, 2013

“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
[3d printing marketplace]*

Copyright Zone

Fortified: Restricted, difficult to reuse, difficult to share



Public Domain Ocean

Open: Unrestricted reuse, but much material is inferior or outdated

Ownership of digital property (especially on the internet) is a mess

Creators

*how to get paid?
Sharing = losing control.*

Collectors/ Audience

"not available here"

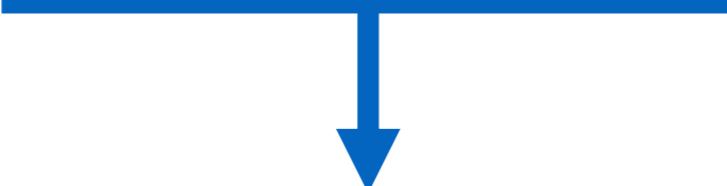
Connectors

*licensing painful &
tedious*

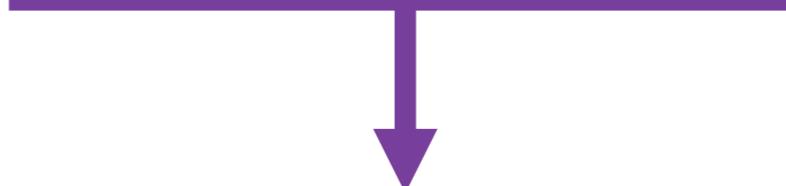
For almost every digital media vertical:
digital art, photography, 3d, music, videos...

*Ownership of digital property
(especially on the internet) is a mess*

Where's my stuff?



NO VISIBILITY



PAINFUL LEGALS

*Ownership of digital property
(especially on the internet) 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] .

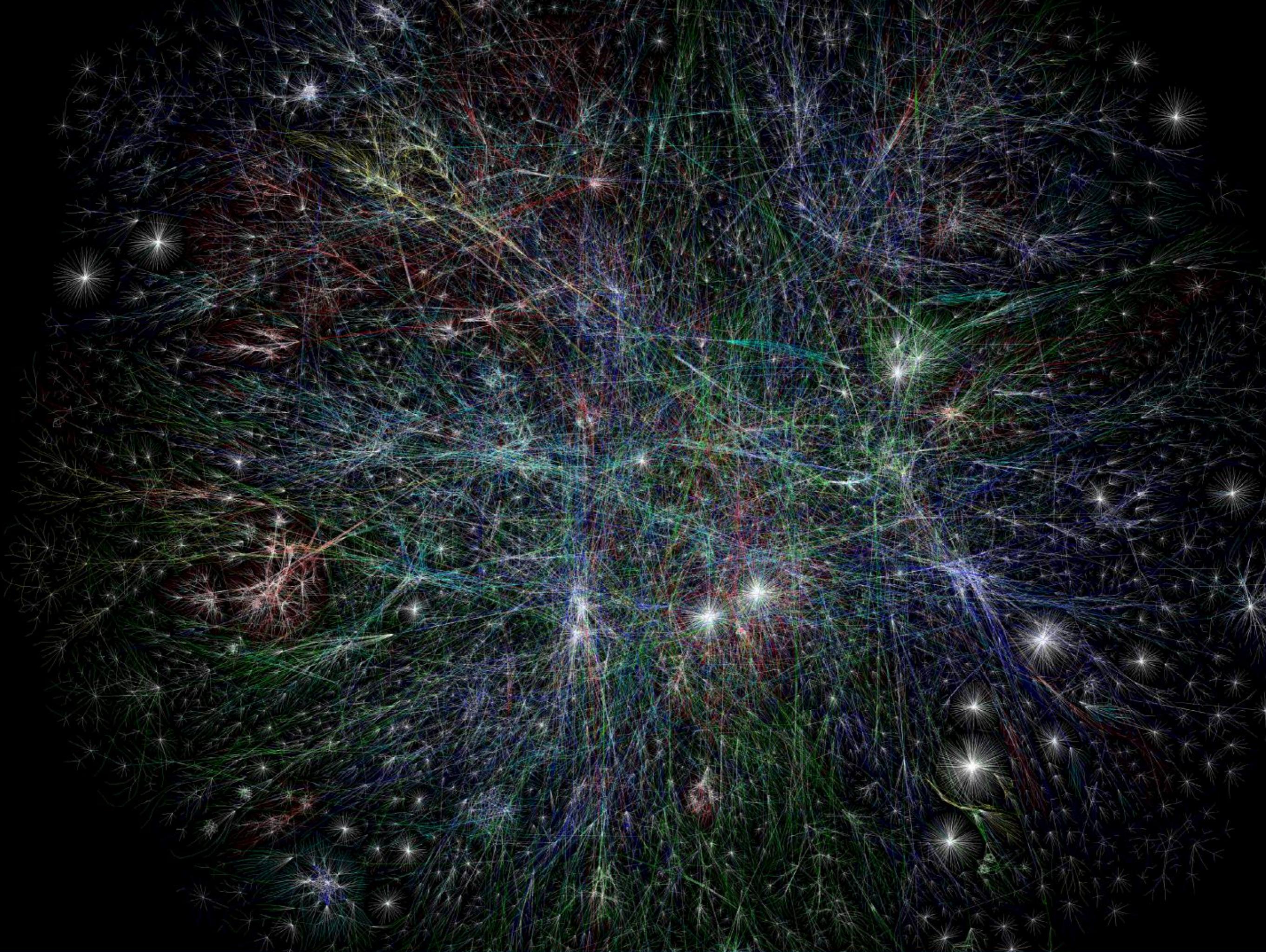
What's out there?[7]Pointers to the world's online information, subjects[8] , W3 servers[9], etc.

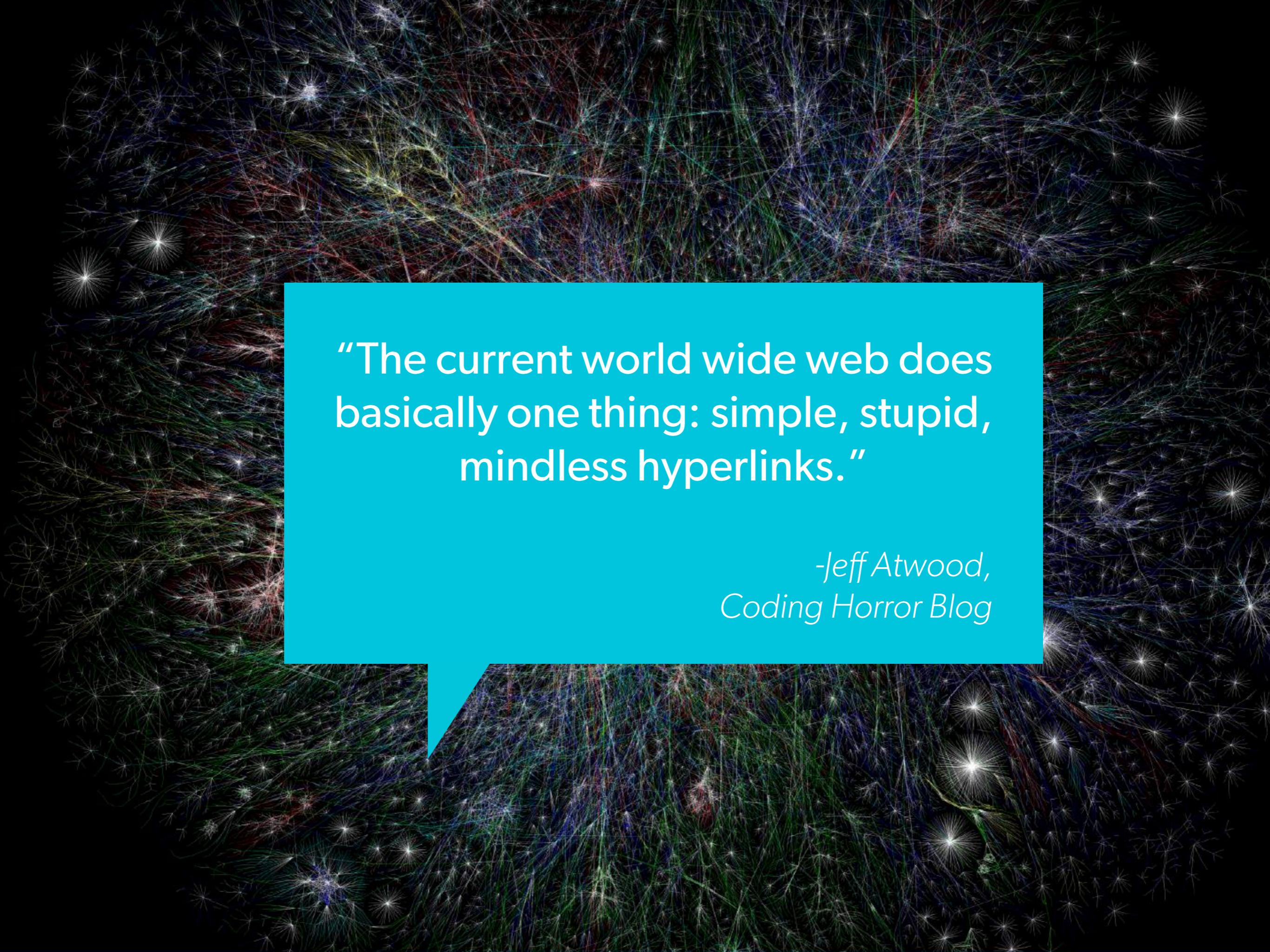
Help[10] on the browser you are using

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





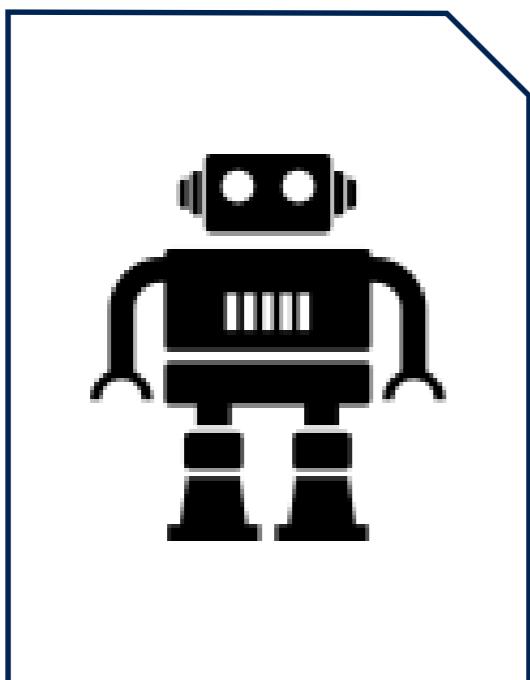


"The current world wide web does basically one thing: simple, stupid, mindless hyperlinks."

-Jeff Atwood,
Coding Horror Blog

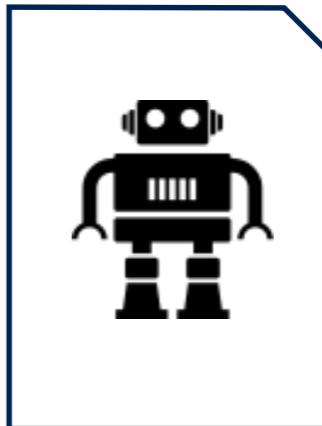
The WWW

Zero links: Copy with *no attribution*

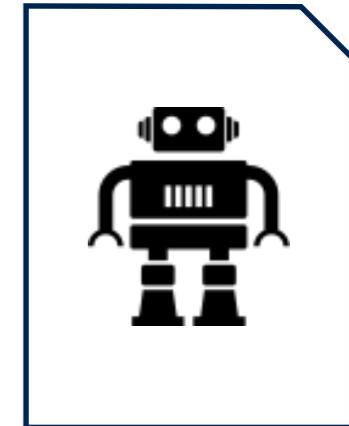
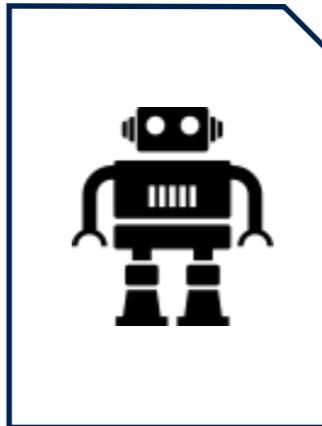


Original

*Uni-directional links:
Attribution but
no ownership control*



*or missing
attribution*



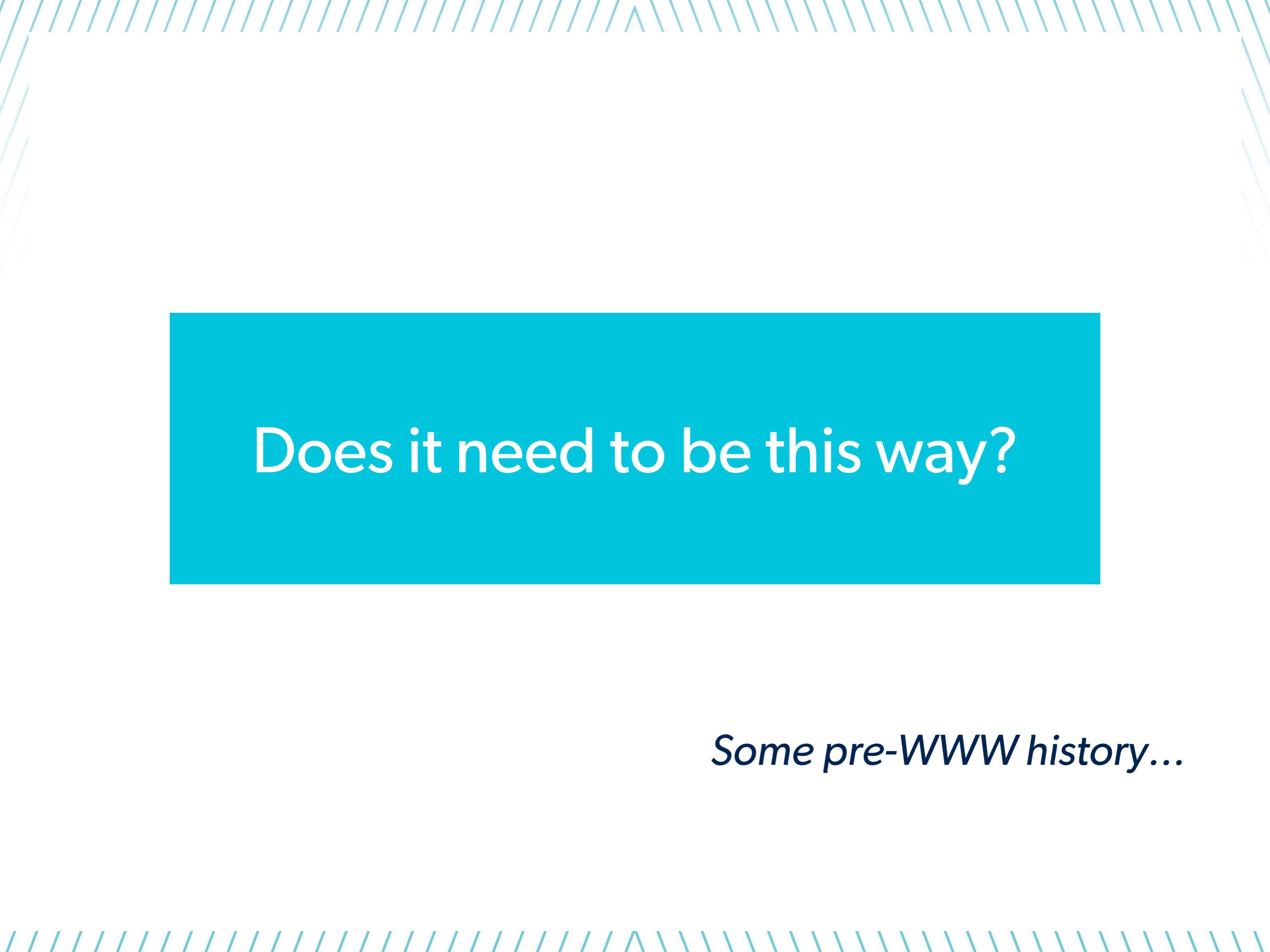
Where's my stuff?



NO VISIBILITY



PAINFUL LEGALS



Does it need to be this way?

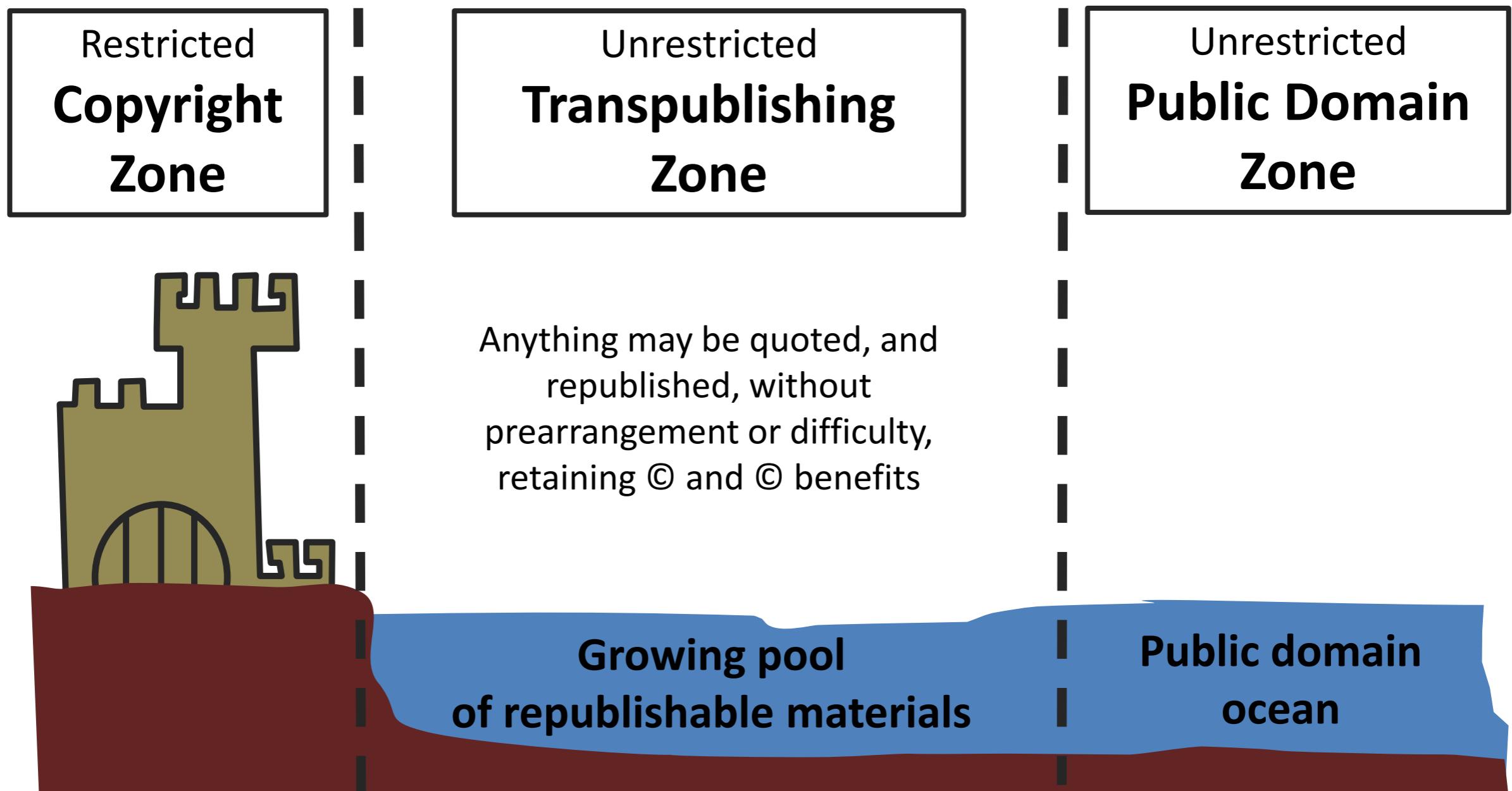
Some pre-WWW history...

“[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

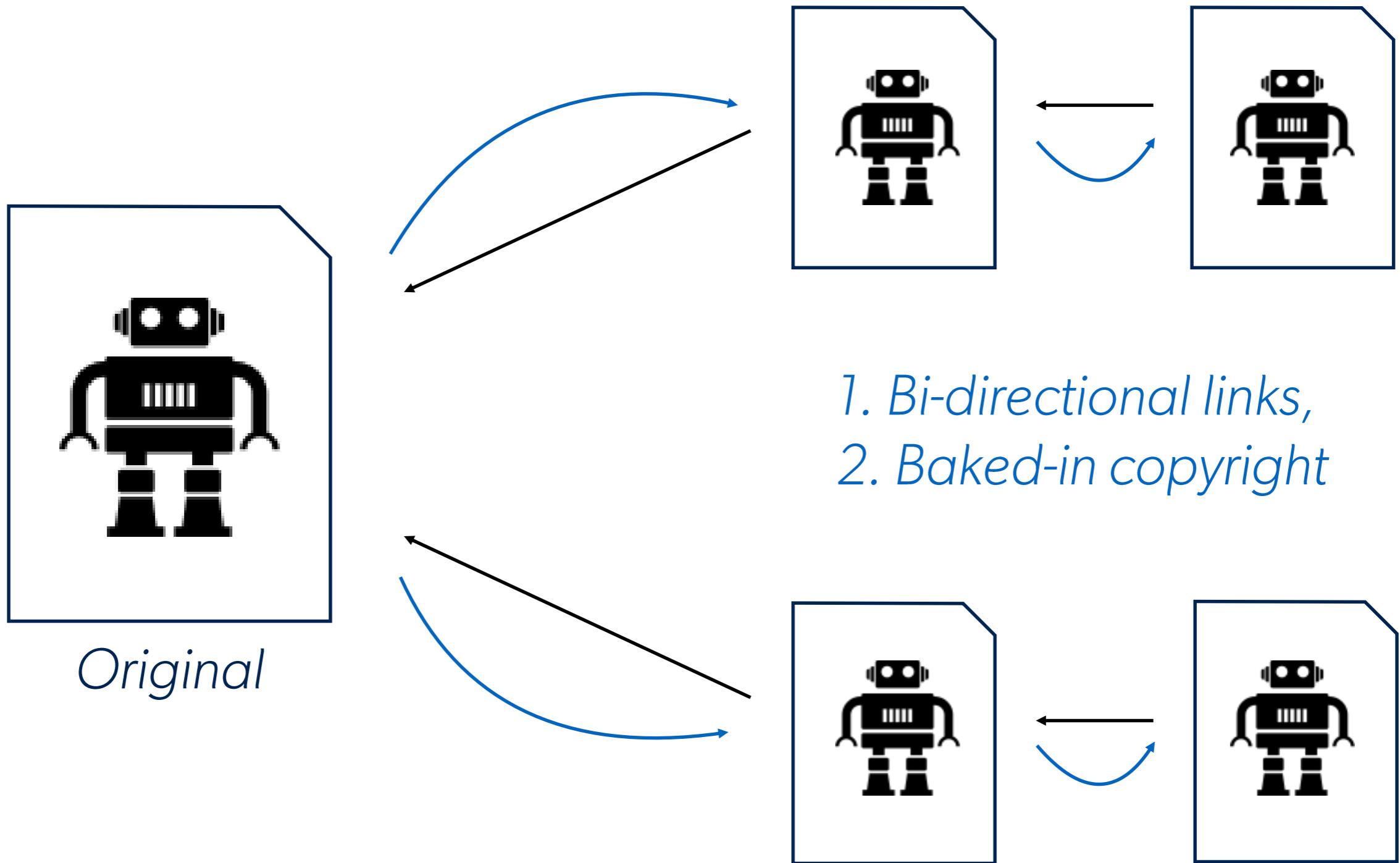
The Xanadu Vision (from 1965)

“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.” –Ted Nelson

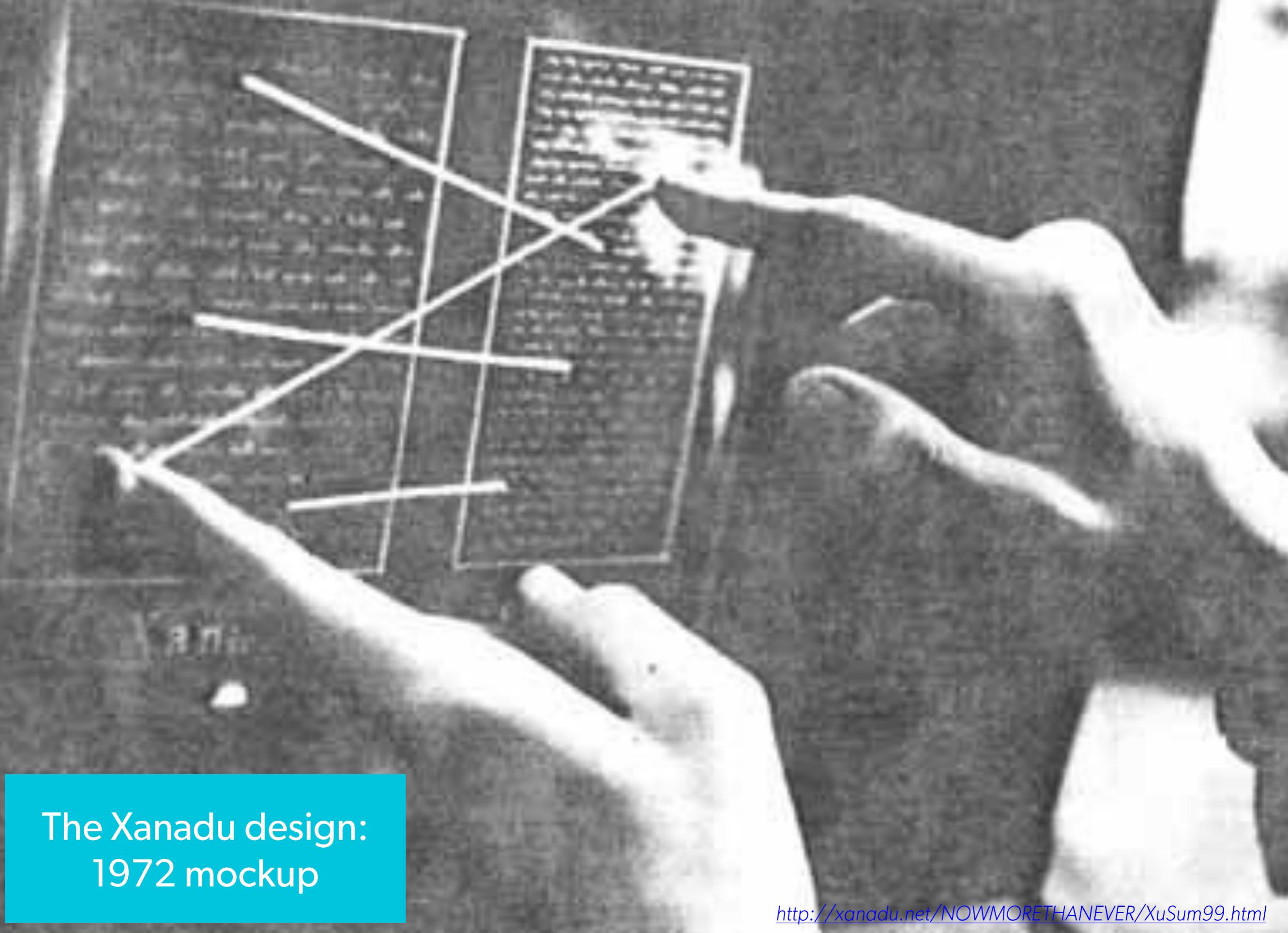
The Xanadu design



Where's my stuff?

Visibility via
bi-dir. links

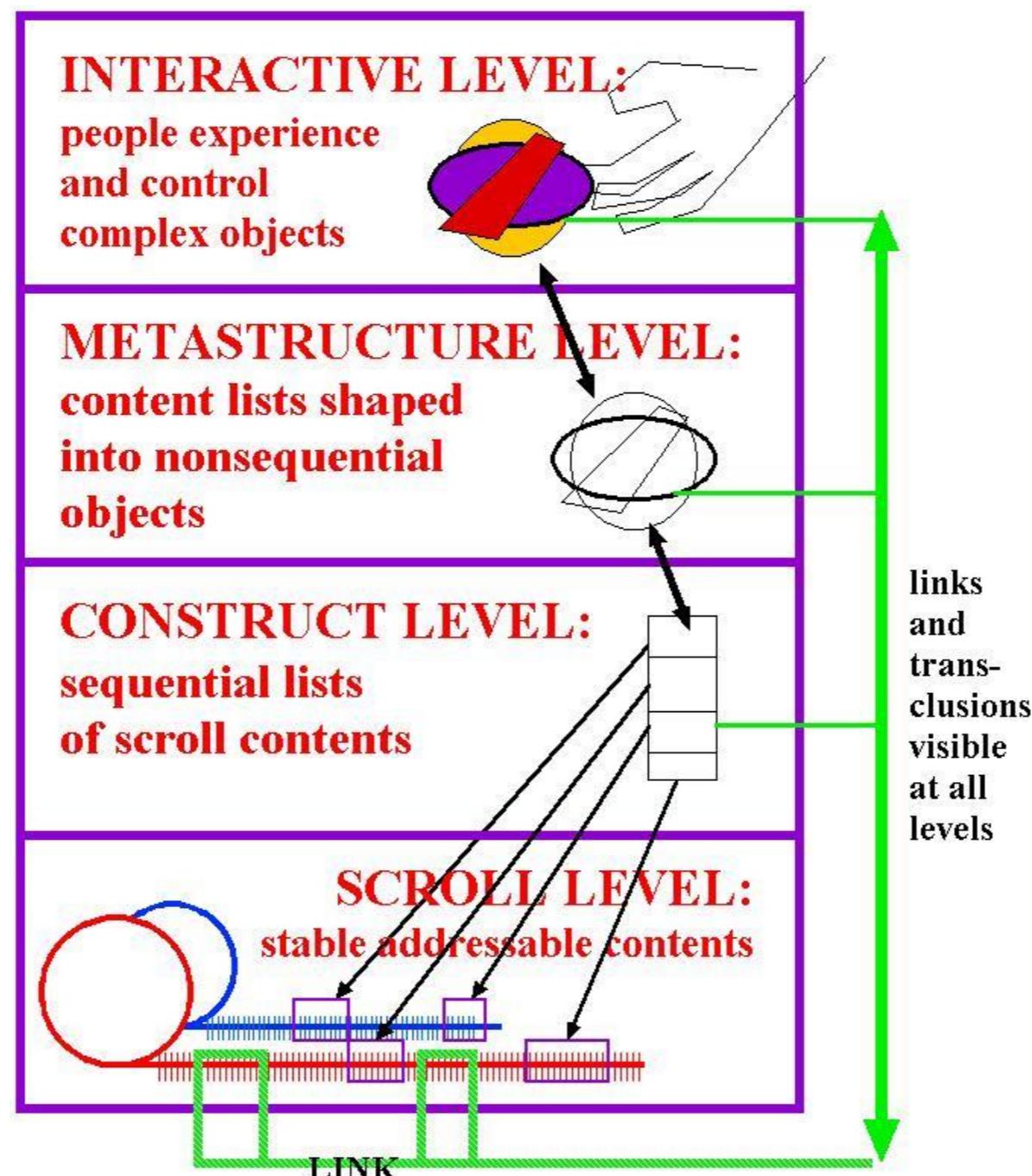
Baked-in
copyright



The Xanadu design:
1972 mockup

<http://xanadu.net/NOWMORETHANEVER/XuSum99.html>

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



Xanadu - What happened?

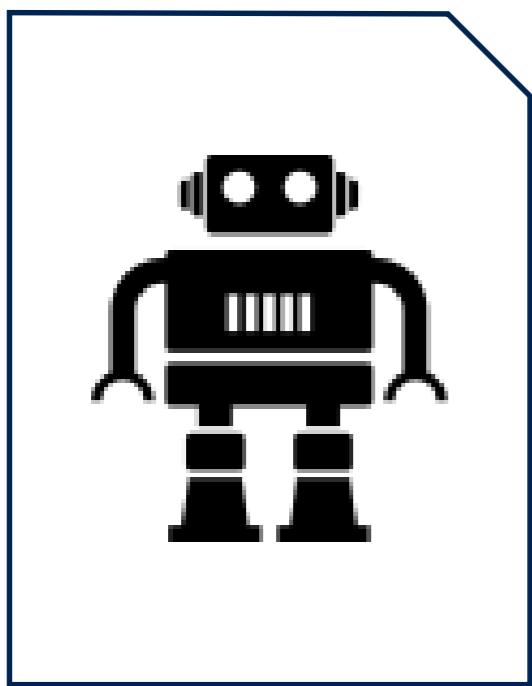
1. Complex → hard to build
25+ year effort – “vaporware”

2. The simpler WWW came along

3. And ate its lunch...

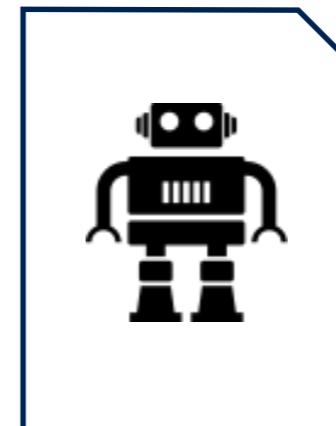
So now we have the
WWW, warts and all

Zero links: Copy with no attribution

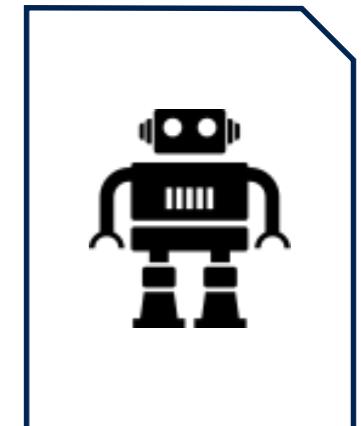
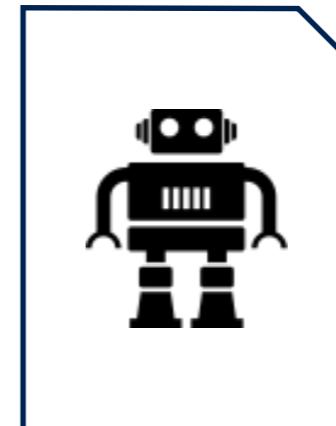


Original

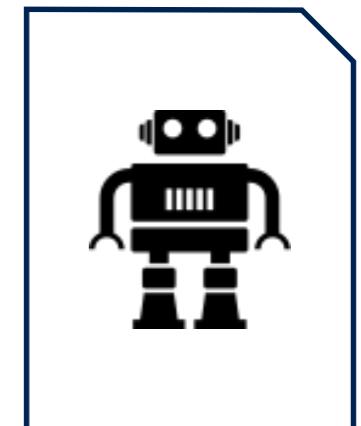
*Uni-directional links:
Attribution but
no ownership control*



-Ted Nelson



*or missing
attribution*



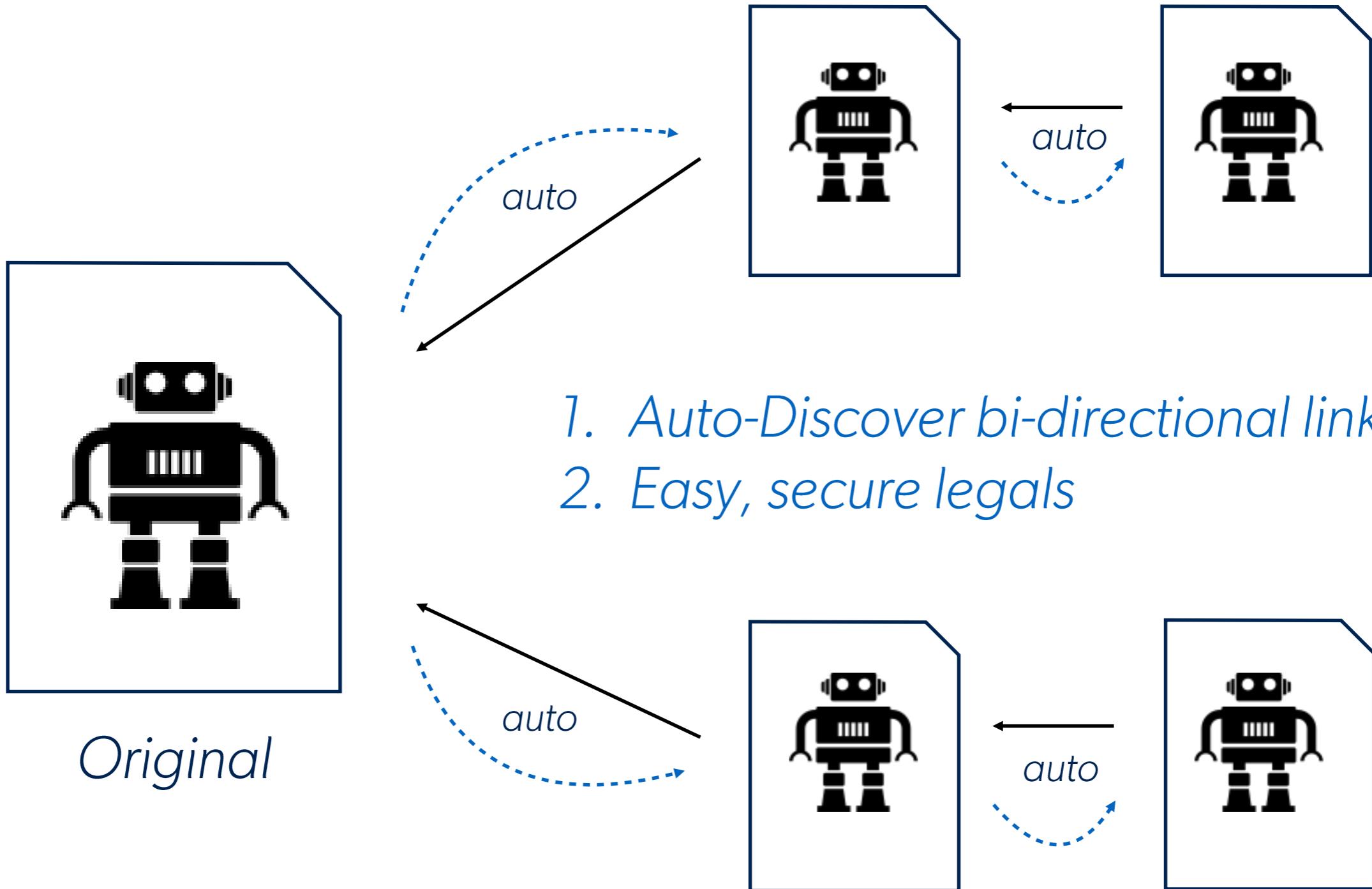
“HTML is precisely what we were trying to prevent --
ever-breaking links ... no rights management.”

Summary so far

- Ownership of digital property (especially 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 Question:
Can we retrofit
the Internet for ownership?
(and realize the Xanadu aims in the process)

The ascribe idea



Where's my stuff?

Auto bi-dir.
links

Easy, secure
legals

Where's my stuff?



How (scribe):

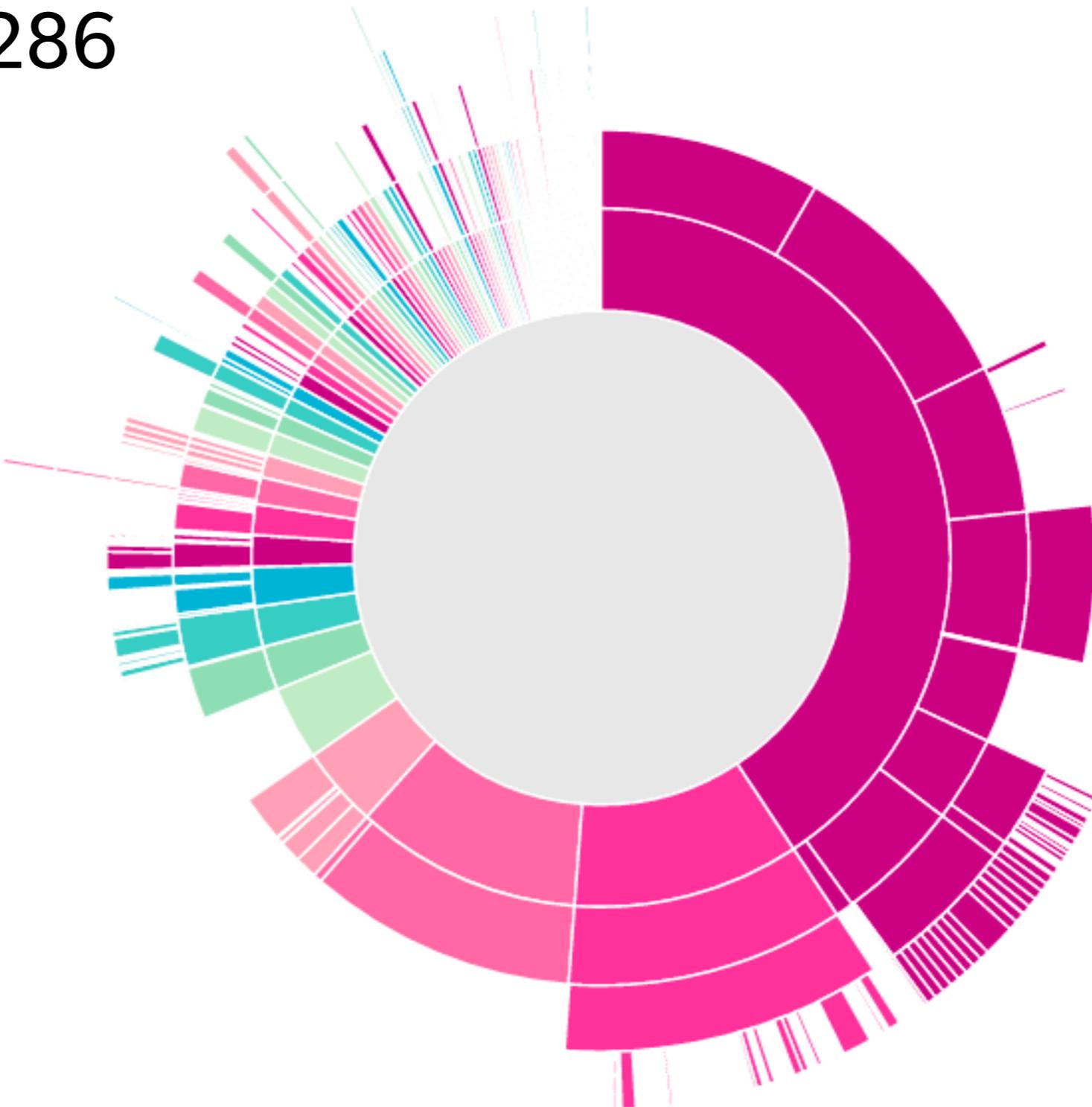
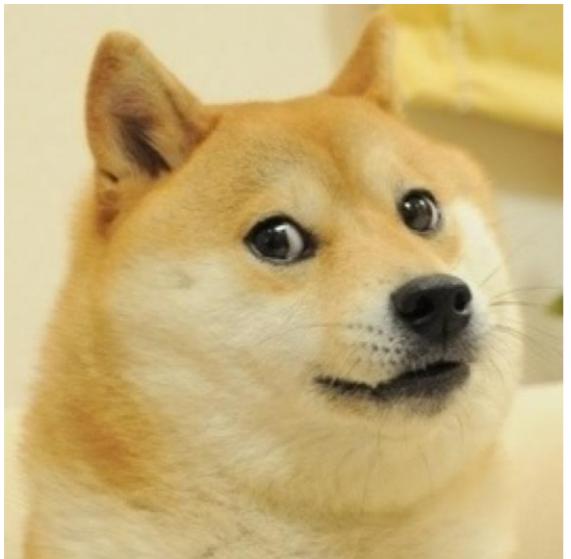
- Crawl the entire internet (220 Tb text)
- Similarity match against creator's content (10G+ images, 3d designs, ..)
- This is a machine learning problem, at Internet scale
- To know when someone's using your work



Where's
doge?

Website: sc2tv.ru

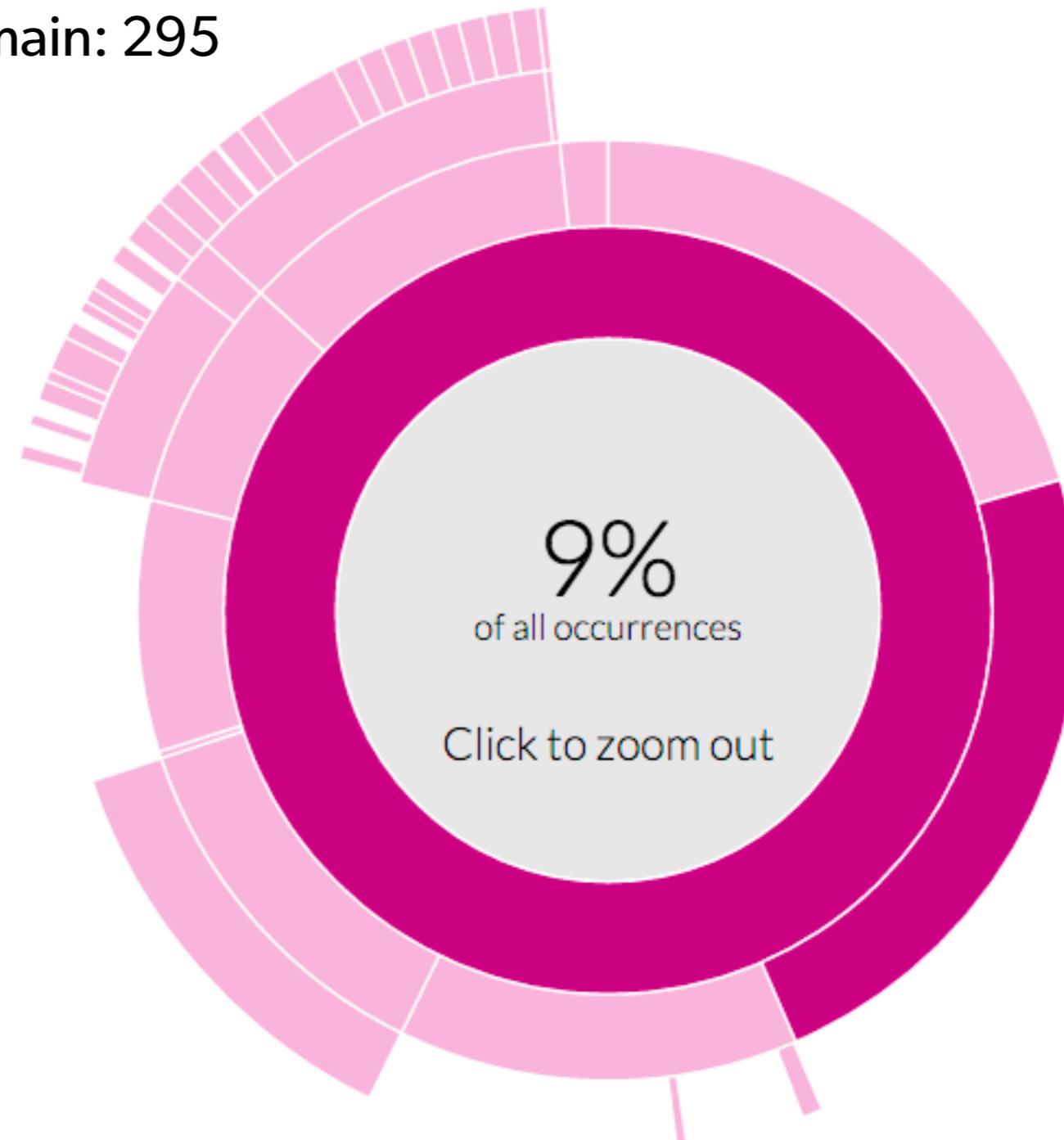
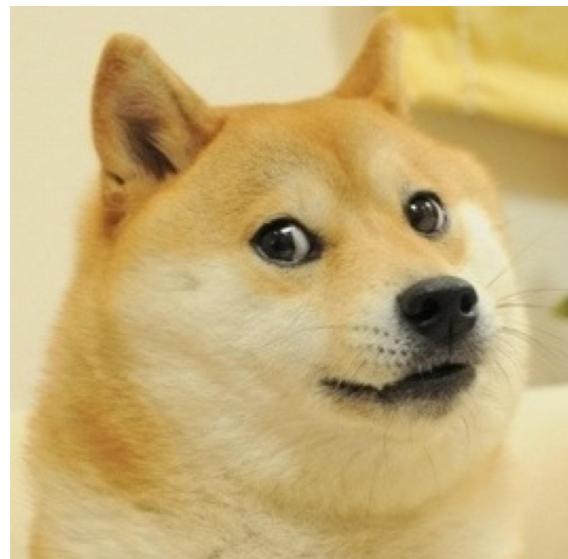
Occurrences: 1286



[sc2tv.ru](#)

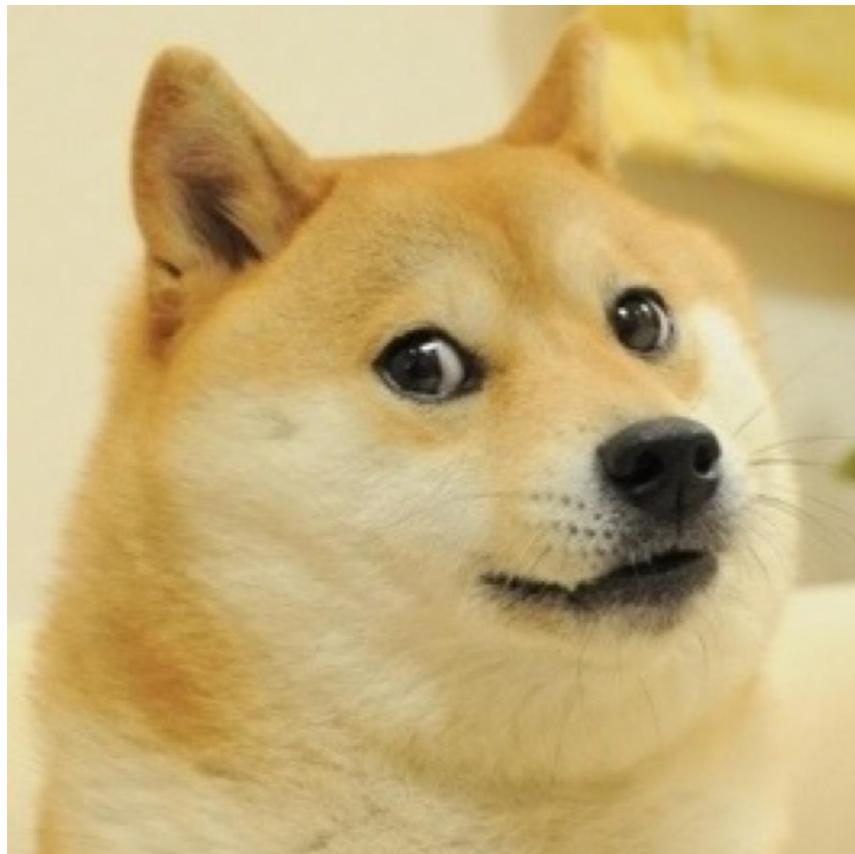
Domain:content

Occurrences under this domain: 295



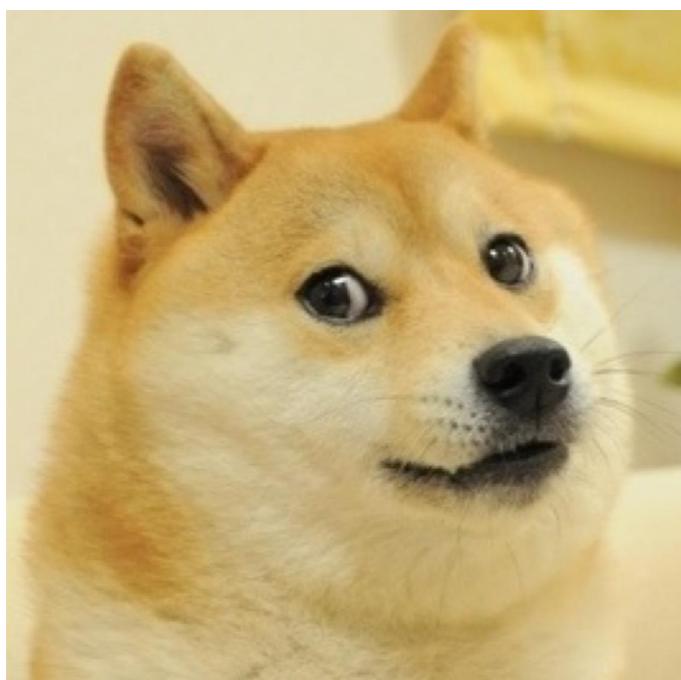


How did doge
spread?

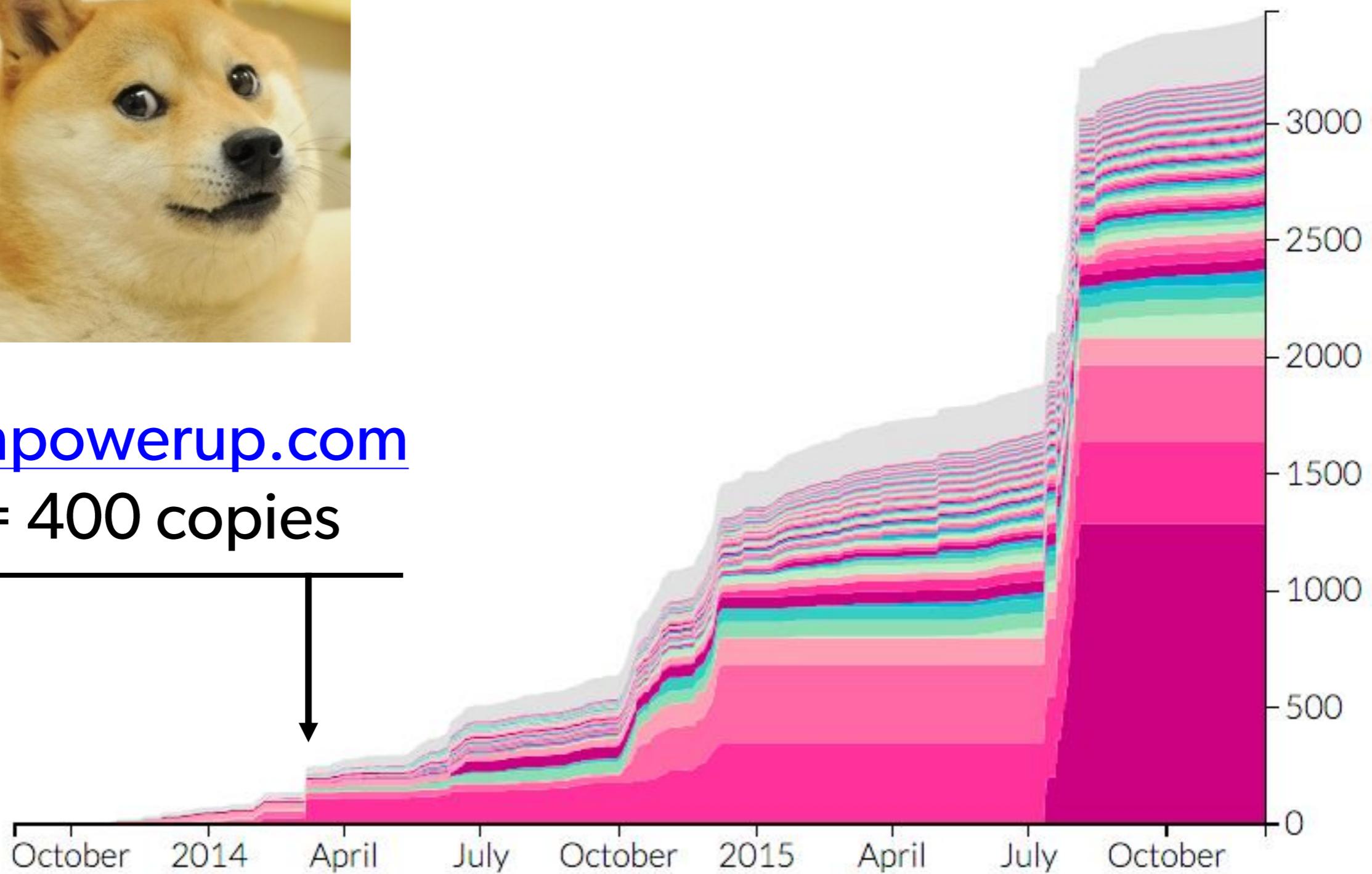


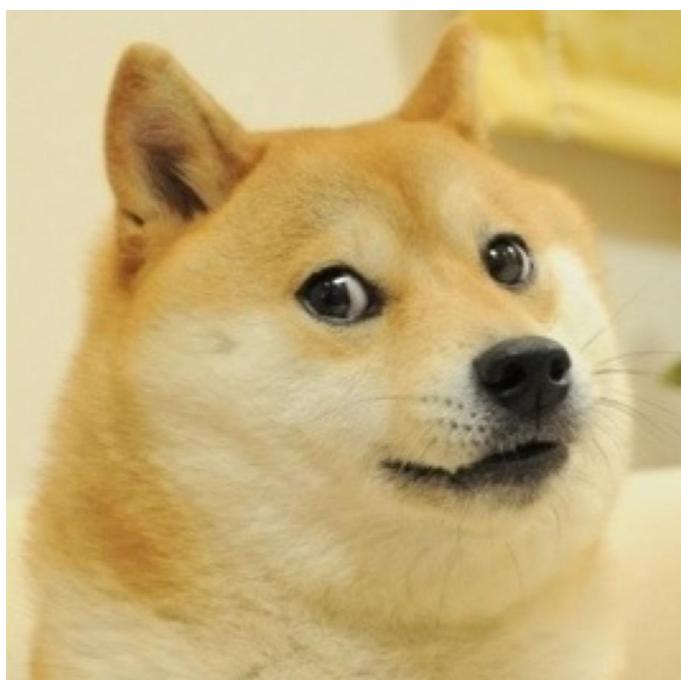
Oct 2014 = 0 copies



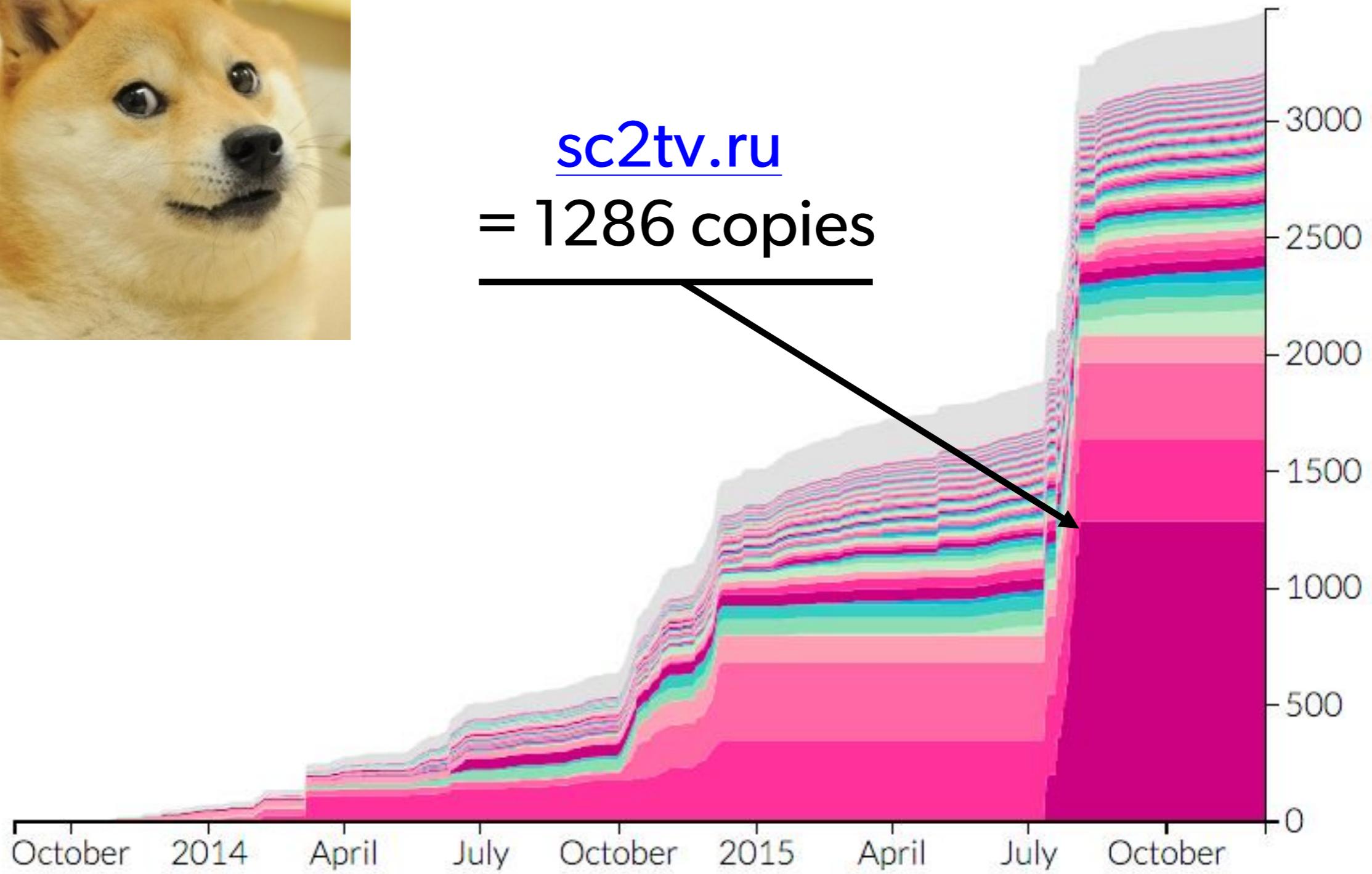


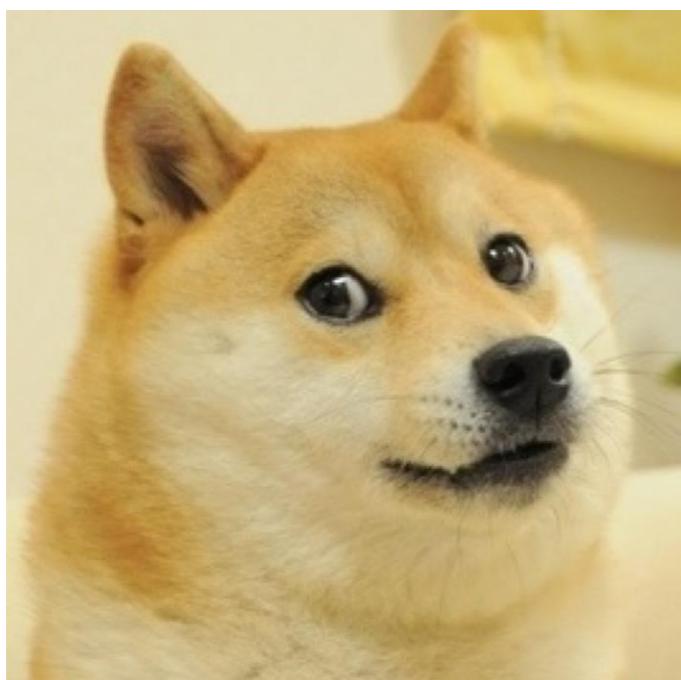
techpowerup.com
= 400 copies



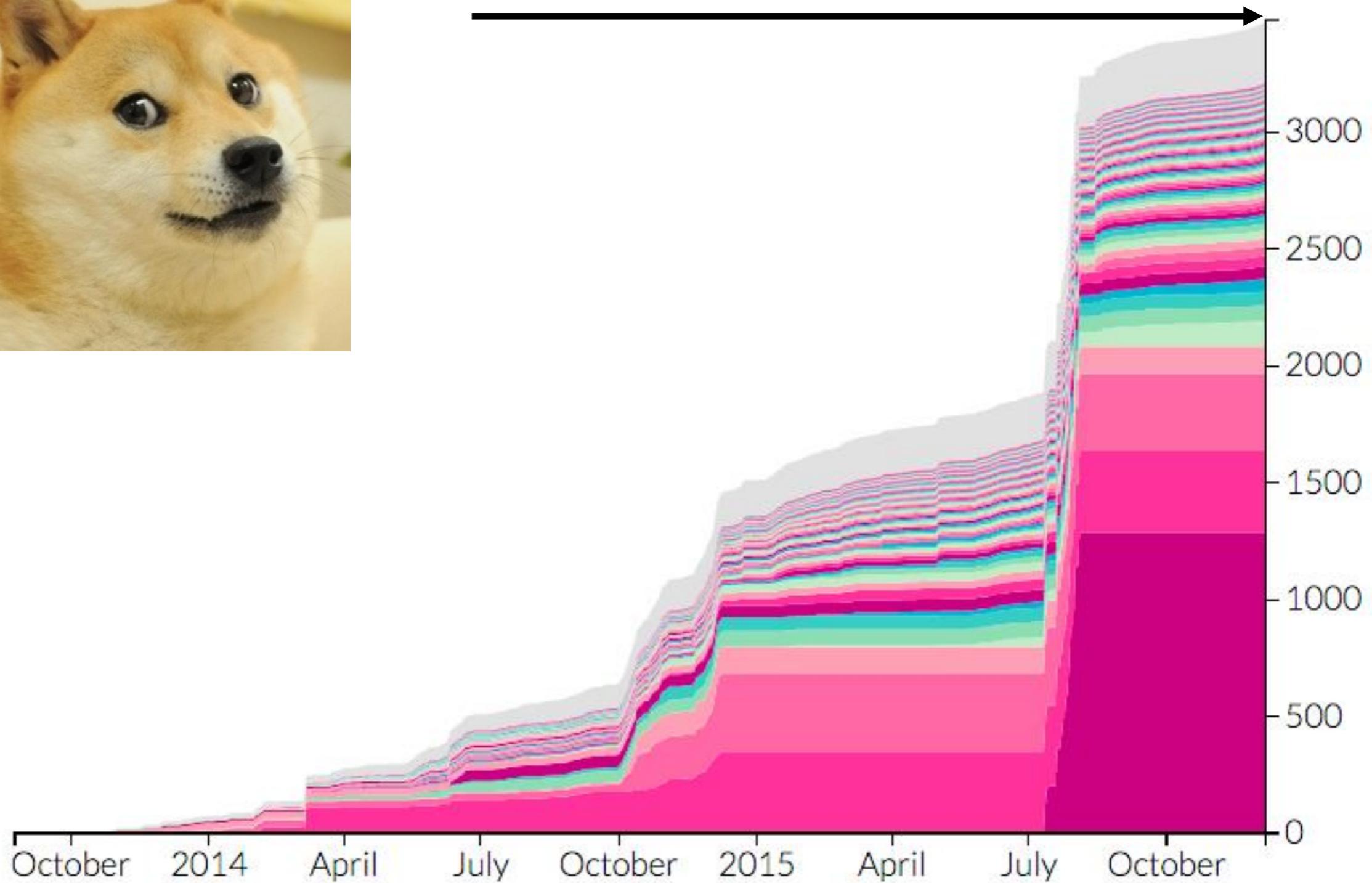


[sc2tv.ru](#)
= 1286 copies

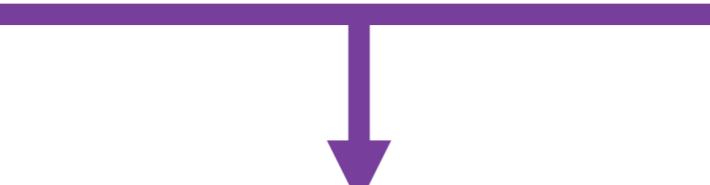




Now = 4000 copies



Where's my stuff?

- 
- Easy legals via terms of service:
“I claim copyright rights” (creator) and
“I transfer [beneficial-use] copyright rights” (sale).
 - Copyright in a box!

Easy legals: snippet of ascribe terms of service

contract unless you object to the inclusion *vis-a-vis* ascribe in writing within three weeks beginning from the receipt of the notice of amendment. In case of such objection, ascribe has the right to extraordinary termination.

3. ASCRIBE DEFINITIONS

You can access the ascribe service through our website www.ascribe.io.

3.1 WORK

"**Works**" are all physical, digital, or intellectual items, objects, or other properties or services that can be traded digitally (e.g. 3D-STL files, photos, stocks, physical property, texts, music, videos, licenses).

3.2 EDITION

"**Edition**" is a digital copy of a Work that can be bought and sold on ascribe. Editions can be thought of as digital property, and can be used in the same way a physical Work could be used (e.g. displayed in private or in public, with or without admission being charged, rented for a fee, loaned, sold, etc.).

3.3 OWNERSHIP TRANSACTIONS

"**Ownership transactions**" are all actions pertaining to the ownership of, rights in, or license to a Work or Edition of a Work. These include, but are not exclusive to, registering the Work, assigning and un-assigning representation, and transferring editions of the Work.

3.4 THE SPOOL

The "**SPOOL**" is a **Secure, Public, Online Ownership Ledger**, which is used to record ownership transactions. When a Work is registered with ascribe, pseudonymous information pertaining to the user and the Work are recorded on the SPOOL, as well as other data related to the user and the Work, and transactions related to the Work. More information about the SPOOL can be found in the Registration of Works section and the Technical Overview page.

3.5 SELLER AND BUYER

These Terms use the terms Seller and Buyer as a generalization referring to the two parties needed as a minimum to close a contract (e.g. to rent or to transfer an Edition).

Where's my stuff?

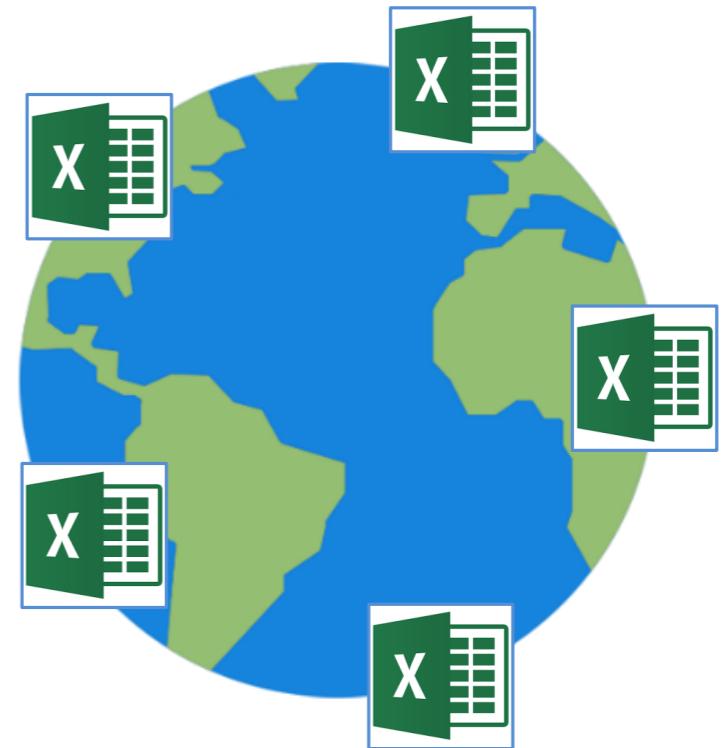
- 
- Easy legals via terms of service:
“I claim copyright rights” (creator) and
“I transfer [beneficial-use] copyright rights” (sale).
 - Copyright in a box!
 - Secure legals.... blockchain

Blockchain 101

A blockchain is simply a database.

Just a very weird one:

- anyone can add to it,
- and it gets auto-synced,
- nothing can be deleted
- it's public, and
- It's terrible by most traditional DB measures
(throughput, capacity, ..)



On the Bitcoin blockchain (DB), you can buy and sell e-money called "Bitcoin".

Where's my stuff?



- Easy legals via terms of service:
“I claim copyright rights” (creator) and
“I transfer [beneficial-use] copyright rights” (sale).
- Copyright in a box!
- Secure legals.... blockchain
- Secure legals by time-stamping evidence of ownership actions onto a trusted ledger (bitcoin blockchain).
- Special “SPOOL” protocol for ownership: unique editions, consign, loan ..
- Time-stamp = evidence for court in case of ownership dispute

How: full ascribe tech stack

marketplaces

ascr^{ie} web app

ascr^{ie} ownership REST API

ascr^{ie} ownership servers

ascr^{ie} crawl,
machine learning

the Internet
(crawl me)

ascr^{ie} TOS
(+ legal counsel)

PySPOOL + transactions

SPOOL protocol

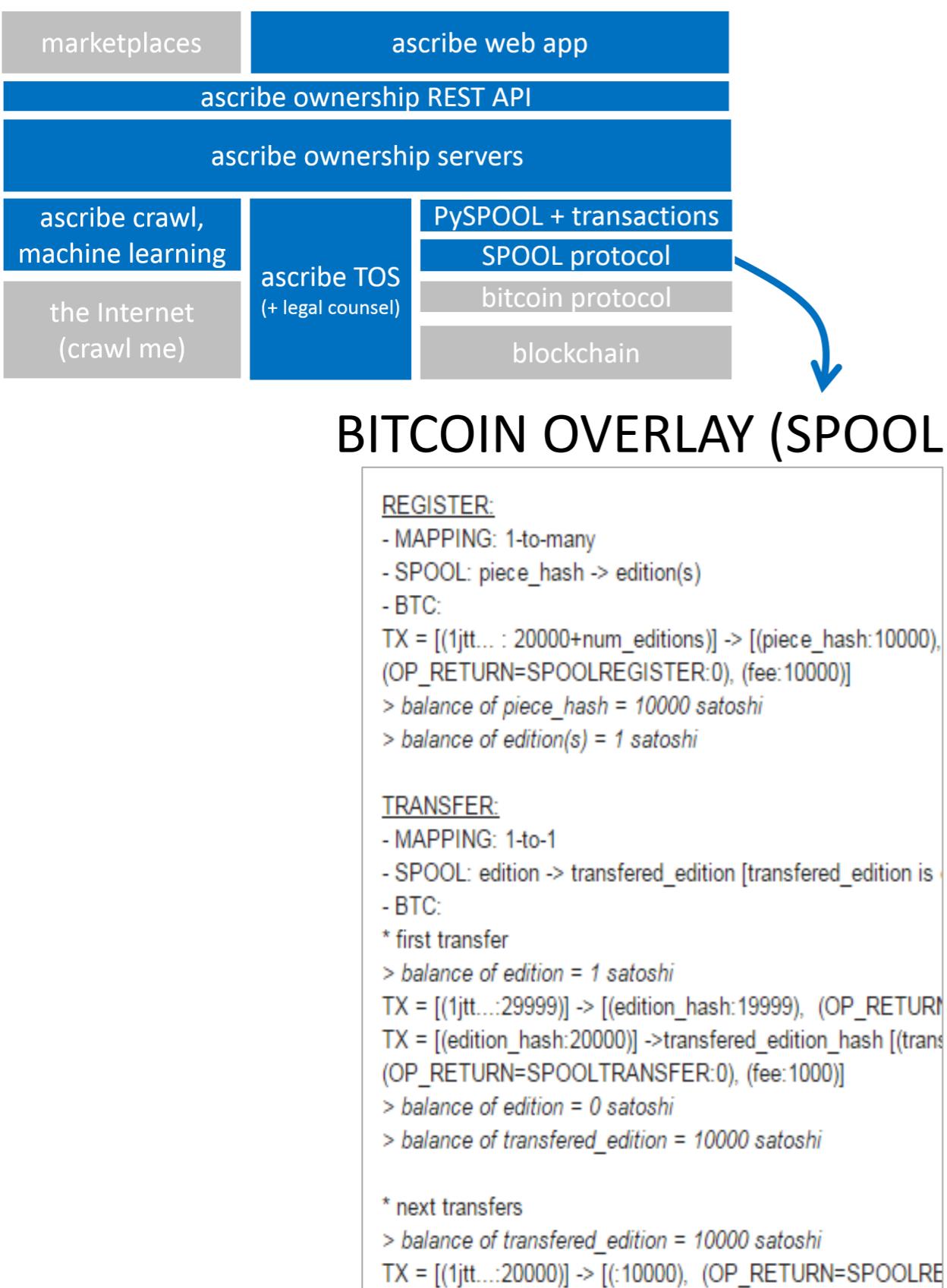
bitcoin protocol

blockchain

1. Auto-discover
bi-directional links

2. Easy, secure
legals

Interface 1/4 on the ascribe stack

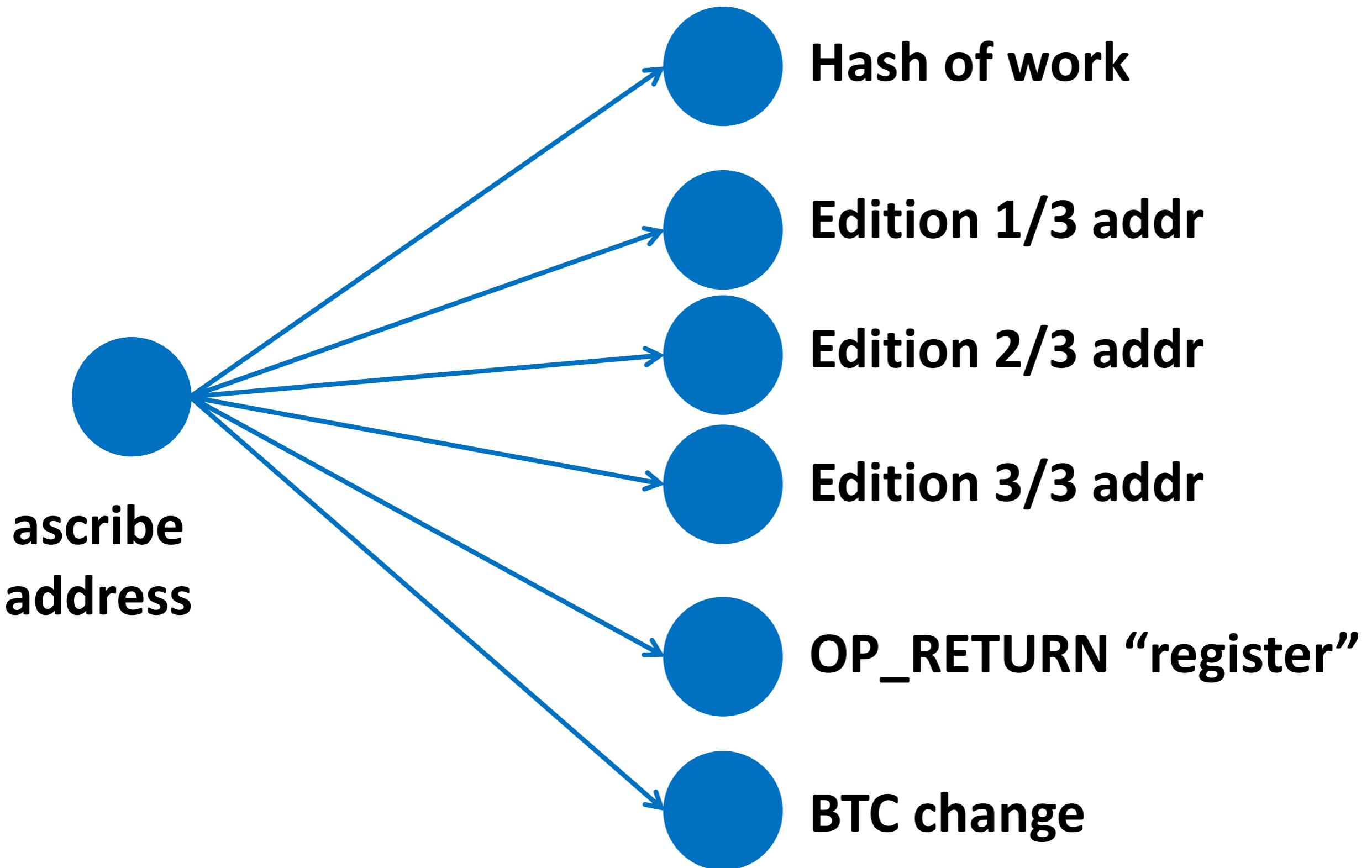


For adventurous
BTC hackers ☺

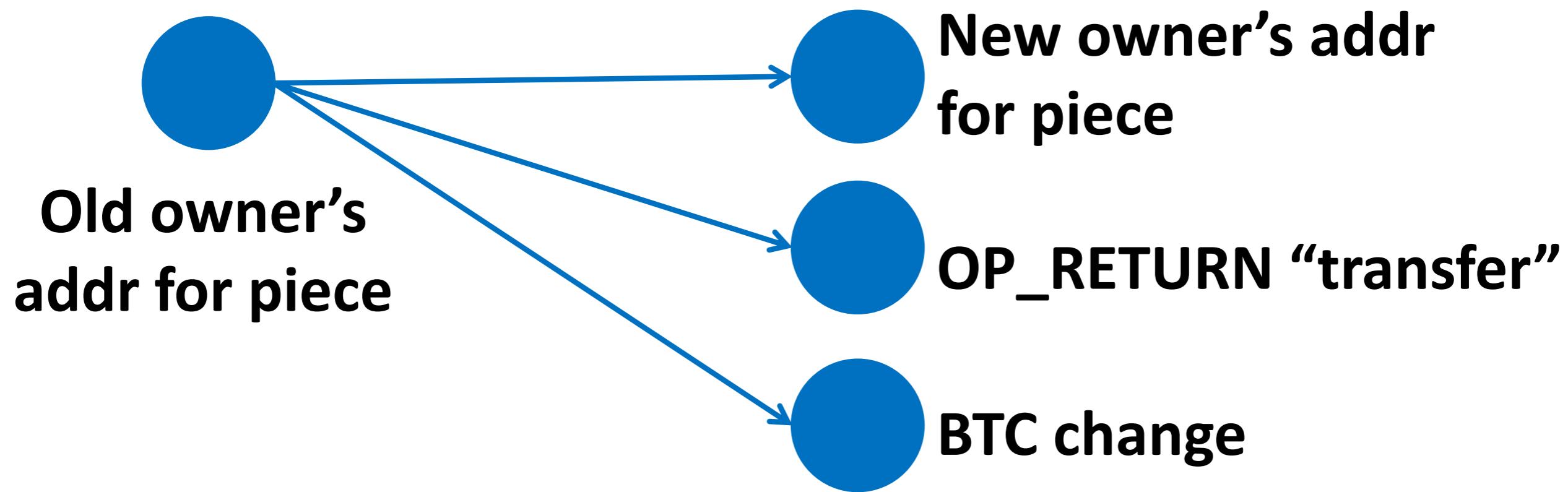
***SPOOL = Secure Public
Online Ownership Ledger**

Bitcoin overlay (SPOOL): register tx

Example on 3 editions

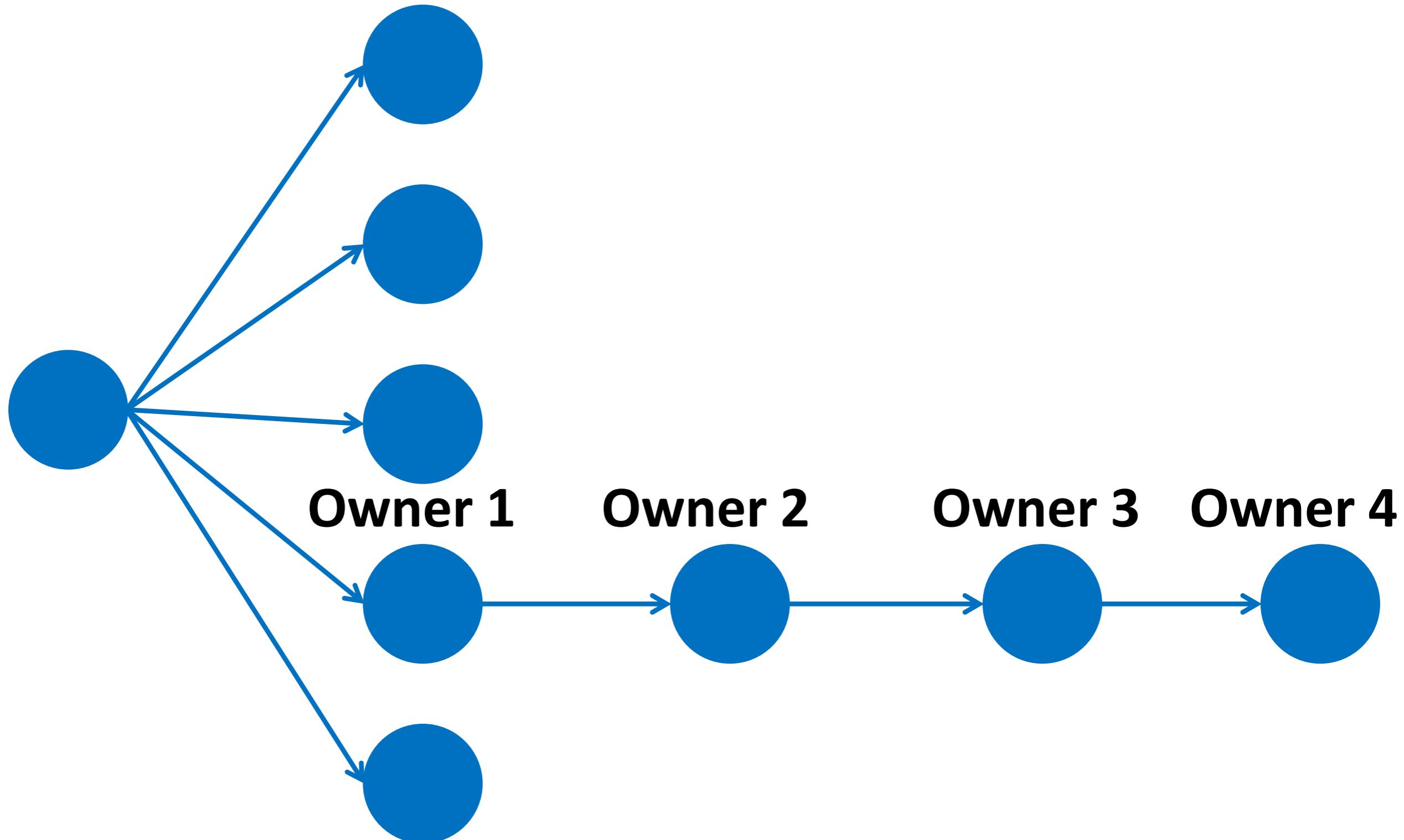


Bitcoin overlay (SPOOL): transfer ownership tx



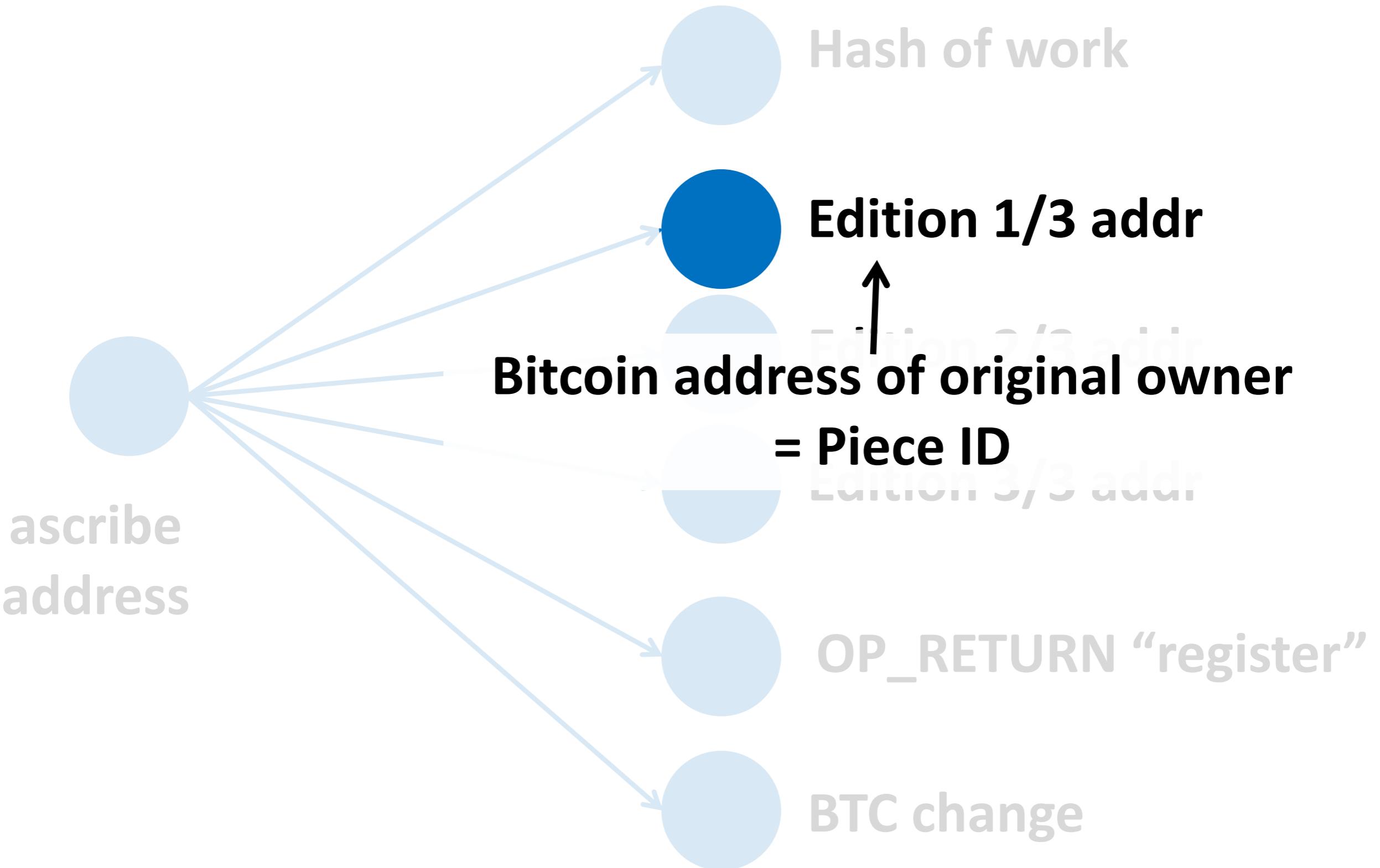
≈ the first time any bitcoin leaves existing owner's wallet,
ownership is transferred to the output wallet

Bitcoin overlay (SPOOL): Provenance emerges naturally



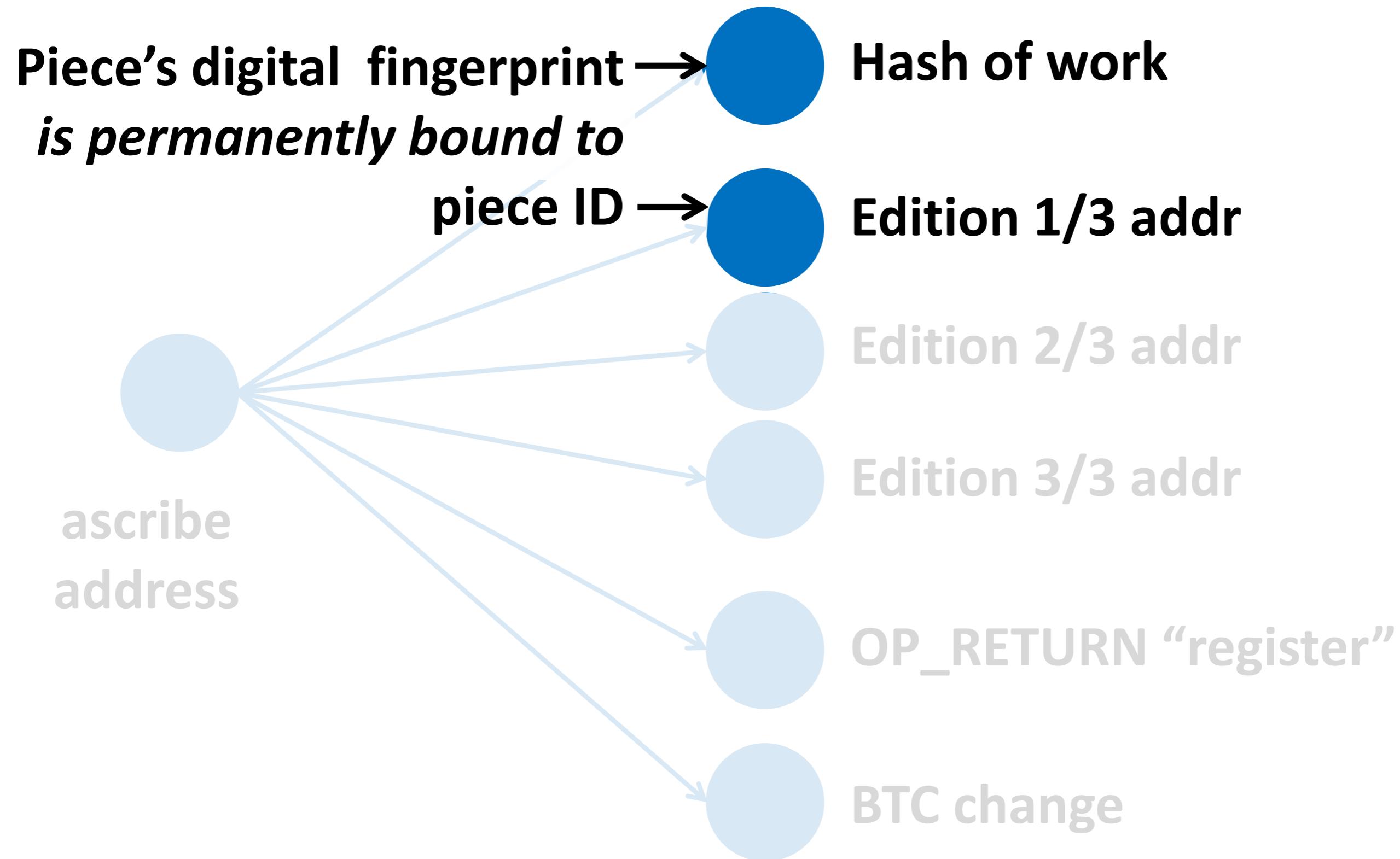
Bitcoin overlay (SPOOL):

Each edition of each work gets a unique ID

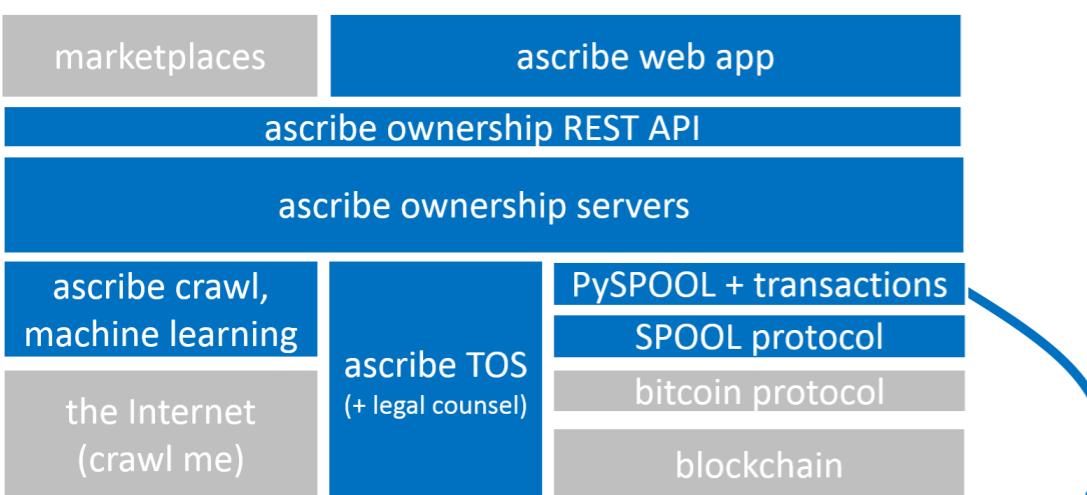


Bitcoin overlay (SPOOL)

Register tx binds work hash to piece IDs



Interface 2/4 on the ascribe stack



For pythonistas!



PySPOOL (ownership)

```
from spool import Spool

spool = Spool(testnet=True)

# lets refill the federation wallet with necessary fuel*7 and tokens*11 for this exam
txid = spool.refill_main_wallet(refill_root, federation_root[1], 7, 11,
                                refill_pass, min_confirmations=1, sync=True)
print txid
67d22e66ee46a96e94f08bed0c857f23de39aee8b25db5fa0369c495e072e44c
```

transactions (ez btc txs)

```
from transactions import Transactions

transactions = Transactions(testnet=True)
tx = transactions.simple_transaction('mqXz83H4LCxjf2ie8hYNs')
tx_signed = transactions.sign_transaction(tx, "master secre"
txid = transactions.push(tx_signed)
print txid
```

PySPOOL Details

<https://github.com/ascibe/pyspool>

Now that we have enough funds in the Federation wallet user1 can ascribe its master edition. A master edition its a register with edition number 0 that ascribes the piece to user1 making him the original owner/creator of the piece. Master editions are ascribed to the user's root address of the HD wallet

```
# user1 registers the master edition of piece with file_hash
txid = spool.register(federation_root, user1_root[1], file_hash,
                      federation_pass, 0, min_confirmations=1, sync=True)
print txid
f67aa26b5f47e83124040970246c969d04ec9adecc5a97d60754a0f54355ee81
```

PySPOOL Details

<https://github.com/ascibe/pyspool>

Now that and edition is registered the user can transfer ownership to another user. Transferring ownership implies a transaction originating from user1 wallet address holding the edition. This means that we need to fuel user1 wallet with the necessary funds before performing a spool transaction

```
# refill user1 wallet before transfer
txid = spool.refill(federation_root, user1_leaf[1], 1, 1,
                     federation_pass, min_confirmations=1, sync=True)
```

```
print txid
```

```
45bc2a3eecac9b5538a3b5bc325e94fcffee47c0025e78ece426aeebfac59c24
```

```
# now we can transfer ownership of edition 1 from user1 to user2
```

```
txid = spool.transfer(user1_leaf, user2_leaf[1], file_hash,
                      user1_pass, 1, min_confirmations=1, sync=True)
```

```
print txid
```

```
38509a49b00f3c3c3fadedd2c5ce35ffcc05a9737a36dd1b7ff00ed1ffe5fd80
```

```
45bc2a3eecac9b5538a3b5bc325e94fcffee47c0025e78ece426aeebfac59c24
```

```
38509a49b00f3c3c3fadedd2c5ce35ffcc05a9737a36dd1b7ff00ed1ffe5fd80
```

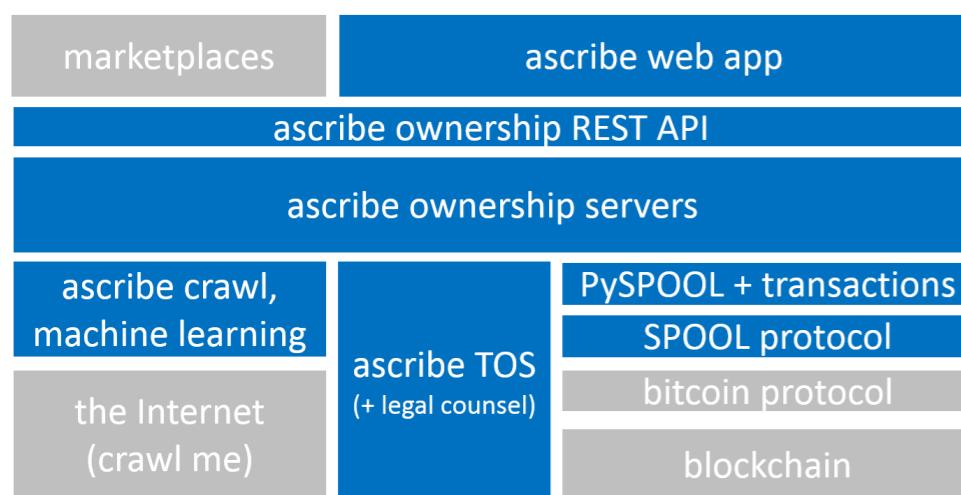
“transactions” details

<https://github.com/ascibe/transactions>

```
from transactions import Transactions

transactions = Transactions(testnet=True)
tx = transactions.simple_transaction('mqXz83H4LCxjf2ie8hYNs')
tx_signed = transactions.sign_transaction(tx, "master secret")
txid = transactions.push(tx_signed)
print txid
```

Interface 3/4 on the ascribe stack



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

REST API

Format (mandatory; optional)

POST <https://www.ascribe.io/3d/api/0.1/piece>

Headers:

Authorisation: Bearer <token id>

Body:

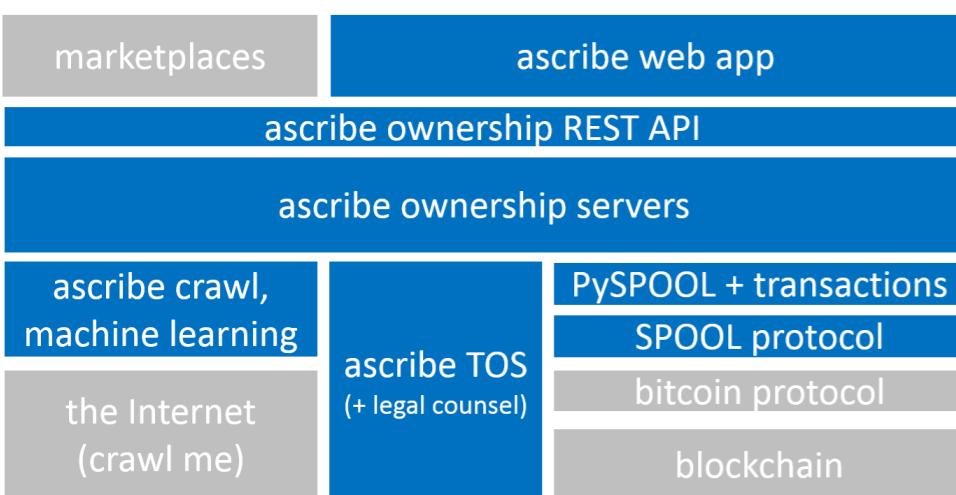
user_email=<email of a Makx user>
&file_url=<points to a url where the f
&asc-hash-md5=<hash of the file, e.g.
&asc-sig-foo=<a digital fingerprint us
&asc-sig-bar=<a digital fingerprint us
&asc-sig-...=<a digital fingerprint us
&title=<title for the piece>
&artist_name=<name of artist for the p

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
o-----

Interface 4/4 on the ascribe stack



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.**

The screenshot shows a user interface for registering artwork. At the top, there is a preview of a file named 'btc.png' (15.1kB) with a 'DELETE' button. Below this, there are five input fields: 'Artist's Name', 'Artwork Title', 'Year Created', 'Number of Editions', and a note stating 'This input is final and cannot be edited later. Additional details can be added after registration.' At the bottom are 'REGISTER' and 'CANCEL' buttons.

Certificate Of Authenticity

As of 30 November 2015, 17:36:00 GMT, Masha (Maria) McConaghy is the owner.
To verify current owner, please visit <http://asci.be/1luAOpo>



DOLLAR
EURO
SWISS FRANCS
JEFF KOONS
BITCOIN

Currency

Date: 2014

Edition: 3 of 100

Created by: Dan Perjovschi

Owner: maria.mcconaghy@yahoo.com

ARTWORK DETAILS

Artwork ID: 17uZBwSbLGfXy3vRRMWzF5PMjFVNc1tkQ2

File: currency-2014.jpg (499 KB)

PROVENANCE/OWNERSHIP HISTORY

Apr. 30, 2015, 12:36:19 - Registered by mail@cointemporary.com

May. 01, 2015, 09:46:08 - Transferred to admin

May. 08, 2015, 13:04:59 - Transferred to trent

Nov. 27, 2015, 19:35:14 - Transferred to maria.mcconaghy@yahoo.com

CRYPTOGRAPHIC STAMP

Use the summary and signature below to authenticate this certificate:
<http://asci.be/1Szr45Q>

Summary: Dan Perjovschi*Currency*3/100*2014*2015Apr30-12:36:19

Signature: 438B24CE06182FA3AA82BC285F867D03FB73F3BCC0F73FD8A6
EC2BFF7088E011E60355B7DC75D5745A9D5CA2A8115512FF835
C4ABEF6869BF6A991668A820F3FB03A48C6A9E05834716F6500
68E8E07E5266620BA815948DC265605D23FAF016CB46ACD4BC
BE75F08D0DEBD7AF55E4CB085B9A0A14583F135DBB399121B24
ED1L

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Jonathan Monaghan
Escape Pod
2015, 3 editions

ID: 1P1EumqcJoxMMGf79WwdkFn7uCRBeNaCR8

ascibed digital
art at bit forms
NYC

<http://asci.be/1KfMJt0>

The screenshot shows a web browser window for 'creativecommons.fr'. The header features the 'cc France' logo and navigation links: A PROPOS, LICENCES, ACTUALITÉS, RESSOURCES, and PARTENARIATS. Below the header, there's a large blue button with the text 'ENREGISTRER SON OEUVRE SUR ASCRIBE'. To the left of this button is an illustration of a person pointing at a screen with a 'CC' logo. The main text area below the button reads: 'Ascribe vous aide à enregistrer, archiver et partager vos œuvres numériques. Lorsque vous enregistrez une œuvre sur Ascribe, les conditions de la licence que vous avez sélectionnée seront enregistrées sur le blockchain. Ascribe vous permet de partager vos œuvres librement, tout en maintenant votre attribution. Pour en savoir plus sur le projet ASCRIBE Cliquez suite'. At the bottom of this section is a teal button labeled 'ENREGISTRER UNE OEUVRÉ'.

Creative Commons FR

The screenshot shows the 'ascrbe®' registration interface. At the top right are buttons for '+ NEW WORK' and 'COLLECTION'. The main title is 'Register under a Creative Commons license'. Below this is a dashed box for file upload with the text 'Drag file here or choose a file to upload'. Following this are fields for 'Artist Name' (example: 'e.g. Andy Warhol'), 'Title' (example: 'e.g. 32 Campbell's Soup Cans'), 'Year Created' (example: 'e.g. 1962'), and 'Copyright license...' (example: 'CC-BY-NC-ND-4.0: Attribution-NonCommercial-NoDerivs 4.0 International'). A link 'Learn more about cc-by-nc-nd-4.0 (ascrbe faq)' is shown next to the license dropdown. At the bottom is a checkbox for 'Specify editions' and a 'Submit' button.

With CC licenses
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<http://ascr.be/1KUWjt0>



152-year old art museum
MAK Vienna bought ascribed
digital art to its collection

<http://ascri.be/1datNRs>



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Berlin Art Prize tech platform:
349 artists ascribed 598 works

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contemporary

A temporary online exhibition of art for bitcoin

Harm van den Dorpel

Event Listeners

2015

OS X Screensaver

Duration: loop / infinite

Digital Edition of 100

→ Artist Vita

→ Description of Work

→ Artist M

Online art gallery

Cointemporary sells ascribed digital art, for *bitcoins*



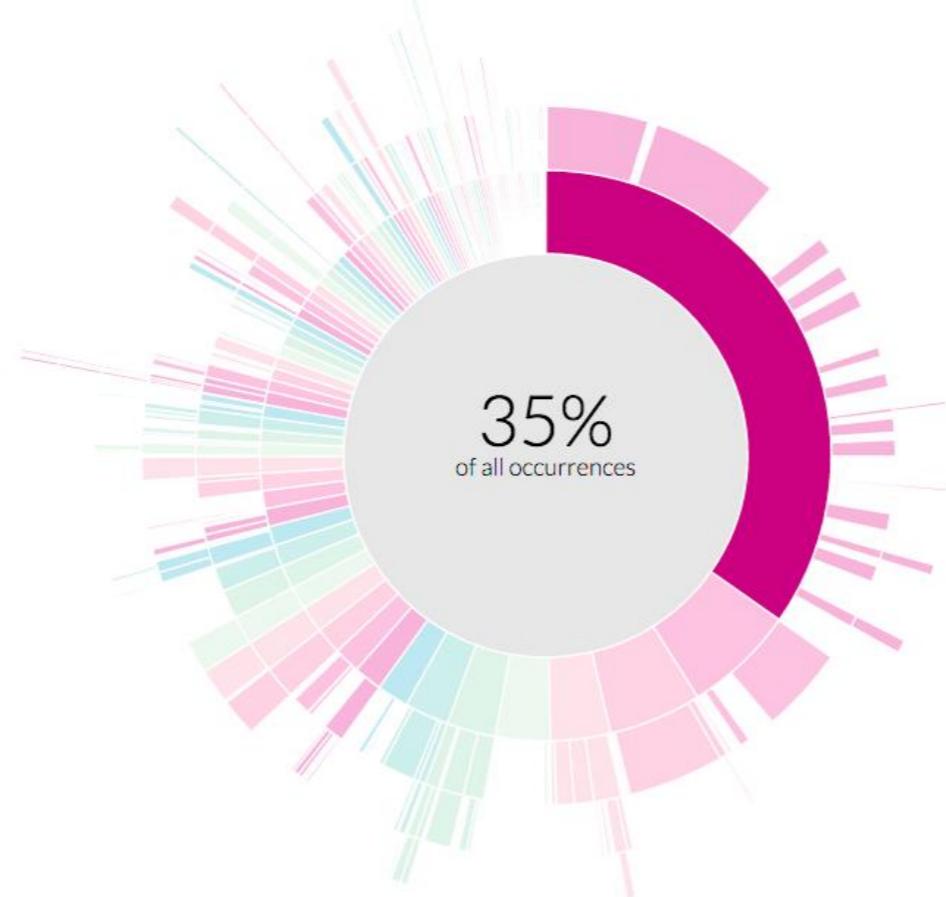
expectation: invariably disappoints

Preview

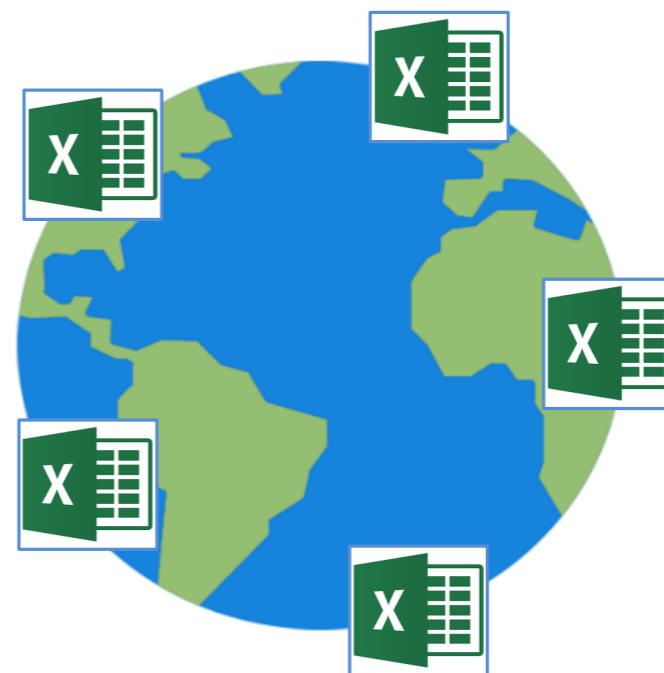
Where's my stuff?



Visibility



Easy, secure
legals



Where's my stuff?



Visibility

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are key to building an ownership
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*Scalable versions...



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Trent McConaghy, CTO

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