

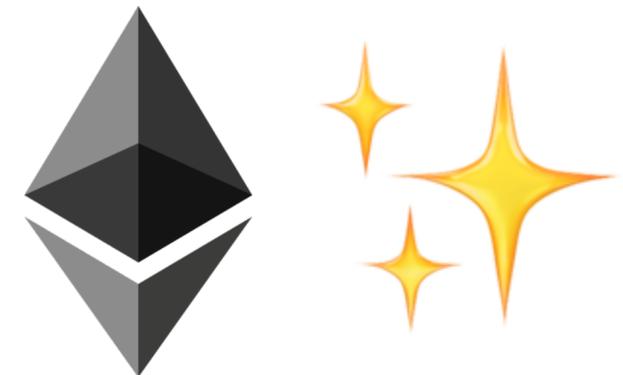
DRUPAL AND THE DECENTRALIZED WEB

BORIS MANN
DRUPALCON GLOBAL
JULY 2020

BORIS MANN



- Got involved in Drupal back in 2003
- Ethereum community, helping out with the Ethereum Magicians, Core Devs
- Fission makes open source developer tools





GPL!

WEB 2.0!!!

A PHP-based CMS

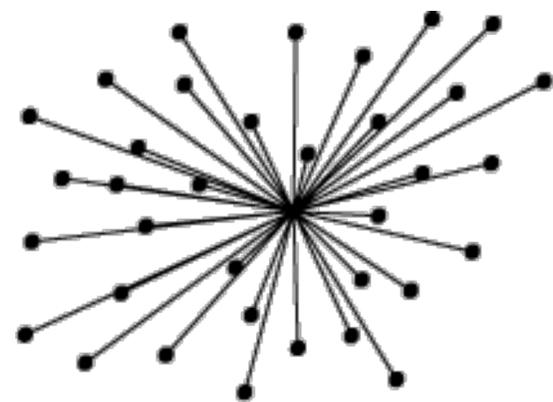
...or web application framework

...or community website and blogging tool

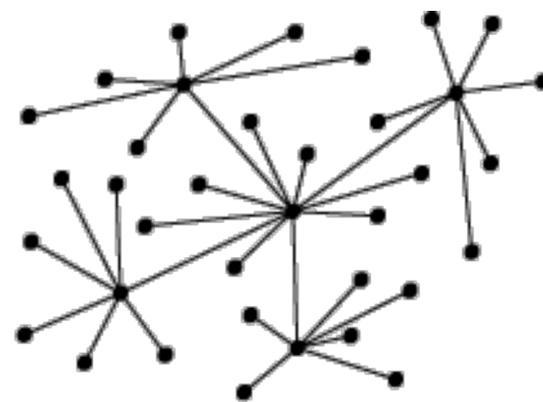
Fully buzzword compliant: AJAX, RSS, aggregation, syndication, tagging, blog

Web 1.0 → Web 2.0

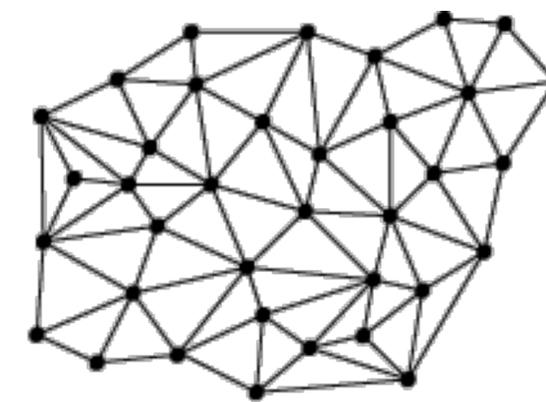
DECENTRALIZED WEB: WEB2 → WEB3?



centralised



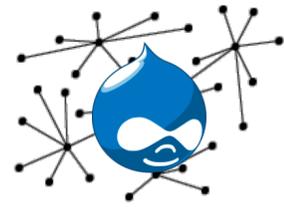
decentralised



distributed

They gave us a fully decentralized Internet and we used it to build web services — Facebook, Twitter, Gmail, iCloud — so massively centralized they verge on being quasi-medieval fiefdoms.

— John Evans, *Decentralize All the Things!*, TechCrunch, 2015



WHAT DOES OPEN SOURCE MEAN?

- The problem with the term open source is that everyone means something different when they use it
- Some people just mean licensing
- Some people think of a particular community's practices
- Others think that it means some kind of fuzzy democracy and/or mob rule

DEFINITION OF OPEN SOURCE



1. Legal innovation of licenses
2. Way of working together on code, collaboratively, asynchronously, remotely
3. Ideology of code re-use & sharing "information wants to be free"

COMMONS BASED PEER PRODUCTION

Lots of people work on it,
everybody benefits from it, and
then people can build upon it
(even in a revenue generating
fashion)

[Ted Leung: Explaining Commons Based Peer Production, er, Open Source \(2005\)](#)

LICENSING INNOVATION



- For the first time in 15+ years, we're starting to see licensing innovation again
 - License Zero: Parity (share alike for open source) & Prosperity (non-commercial)
 - Fair Source
 - 996ICU
 - Ethical Licenses
 - Cross License Collaboratives (XLC)

DATA ETHICS



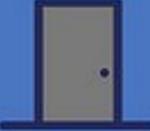
- We are starting to see people care about data — specifically, **their** data
- What requires software developers or companies to act in certain ways with data?
- From principles (Fair Data Society, Local First Software) to licenses (Cryptographic Autonomy License, Icepick)

WHY IS APPLE MOVING FROM BASH TO ZSH?



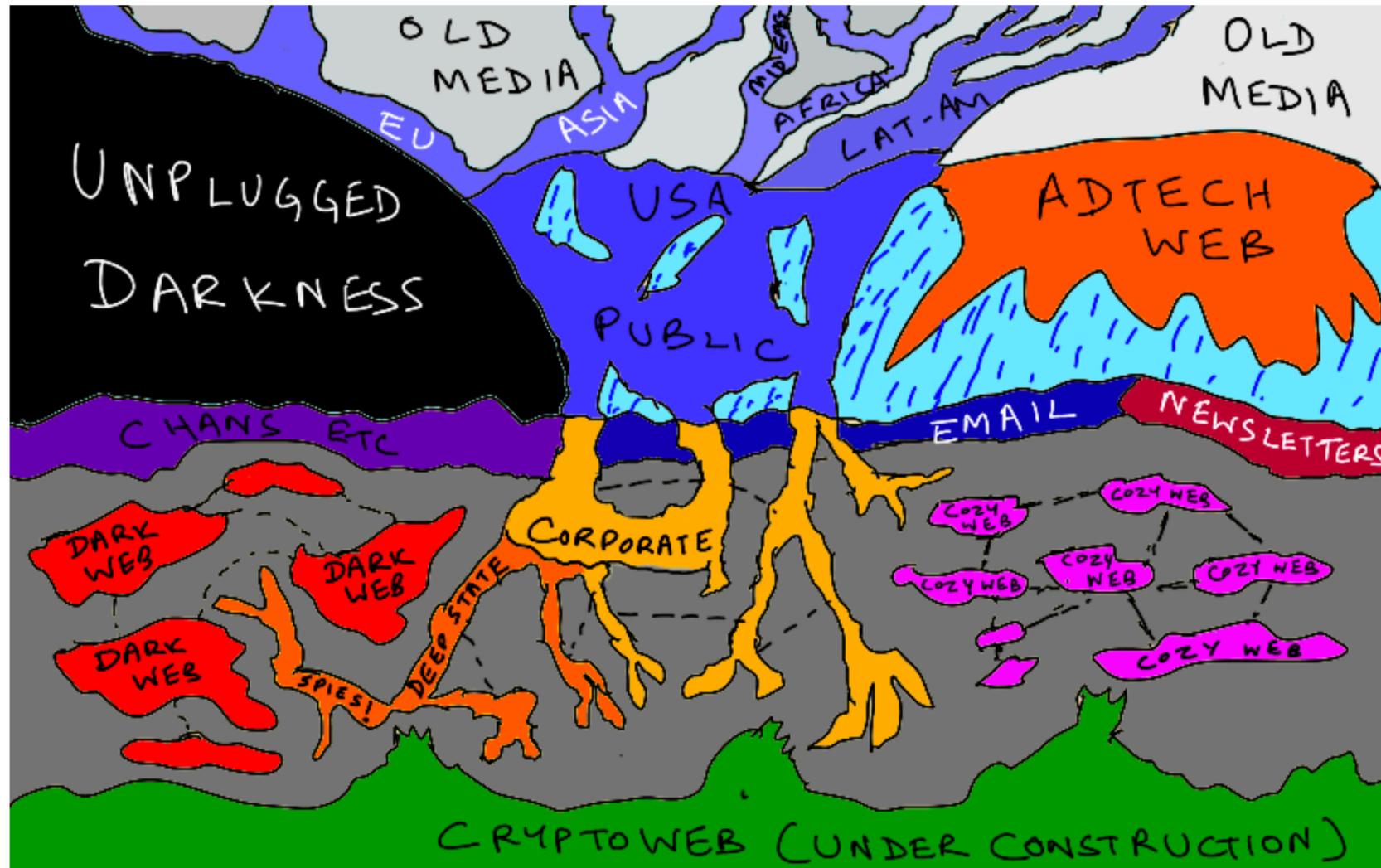
- Licensing of course!
- Apple has been shipping an “old” version of bash with Mac OS for a long time, because it is GPLv2, and newer versions now use GPLv3
- Zsh uses an “MIT-like” license, plus some GPL shell functions



	<i>Excludable</i>	<i>Non-Excludable</i>
<i>Rivalrous</i>	 Private Goods Food, clothing, cars, personal electronics	 Common Goods Fishing grounds, forests, oceans, parks
<i>Non-rivalrous</i>	 Club Goods Cinemas, private parks, broadband TV	 Public Goods Lighthouses, radio, street lighting

— Dries Buytaert, *Balancing Makers and Takers to Scale and Sustain Open Source*

WEB2 = ADVERTISING SUPPORTED WEB



Things were so simple 20 or even 10 years ago (social media, dated to the invention of RSS, is 20 years old, bitcoin is 10 years old).

— Venkatesh Rao, *The Extended Internet Universe*, May 2019

Unlike the main public internet, which runs on the (human) protocol of “users” clicking on links on public pages/apps maintained by “publishers”...

...the cozyweb works on the (human) protocol of everybody cutting-and-pasting bits of text, images, URLs, and screenshots across live streams.

We create tiny underground burrows of Slack channels, WhatsApp groups, Discord chats, and Telegram streams that offer shelter and respite from the aggressively public nature of Facebook, Twitter, and every recruiter looking to connect on LinkedIn.

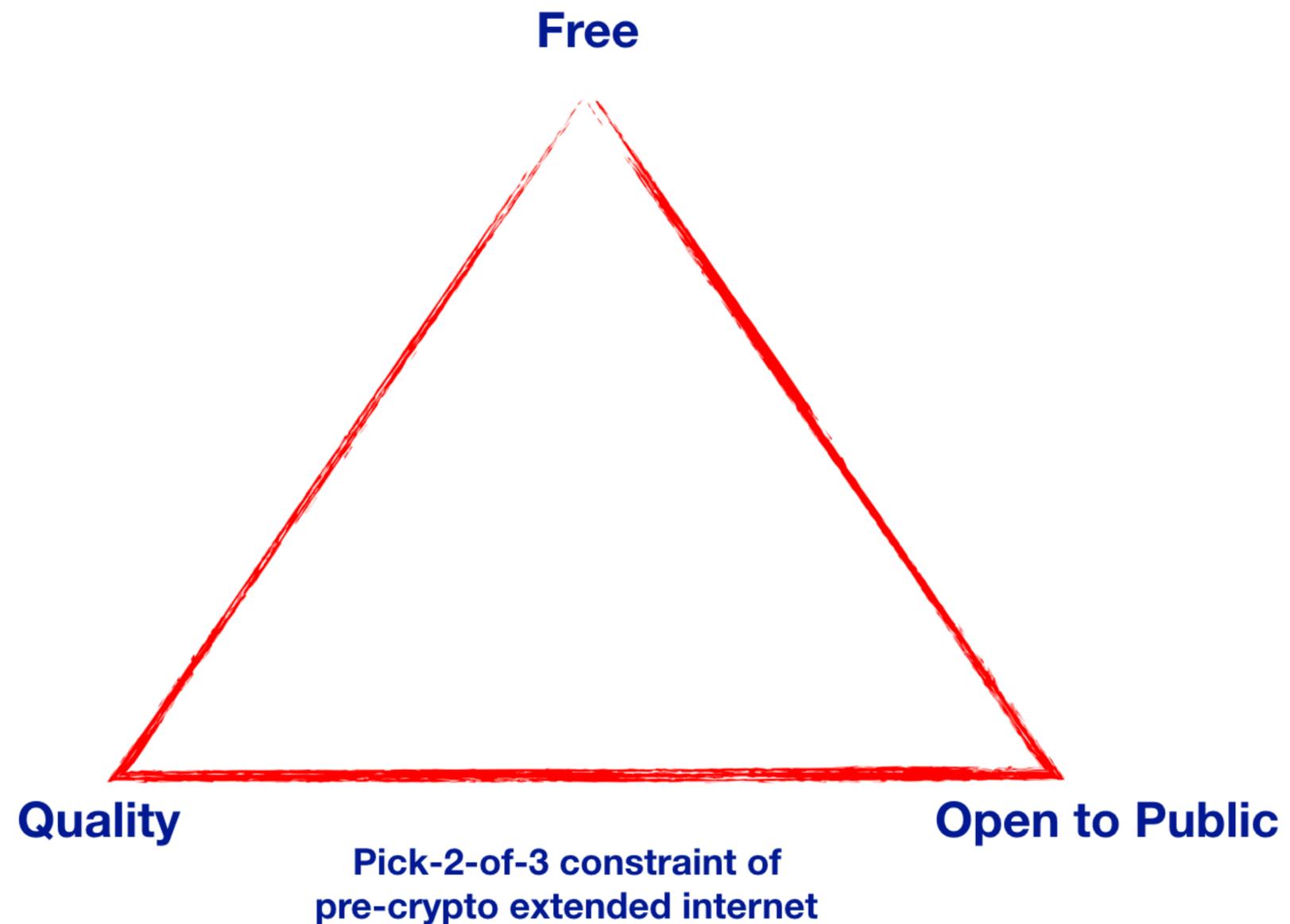
— Maggie Appleton, *The Dark Forest and the Cozy Web*



DEFINITION OF WEB3



1. Tech (cryptography, distributed systems) & legal & governance & business model innovations
2. Commons-based global infrastructure
3. Ideology of decentralization, user control of data & identity, business models beyond advertising



That's the promise of the crypto world...cryptographic technologies in general, starting with private-key based identity and security for everything). It is still at a very rudimentary stage of development.

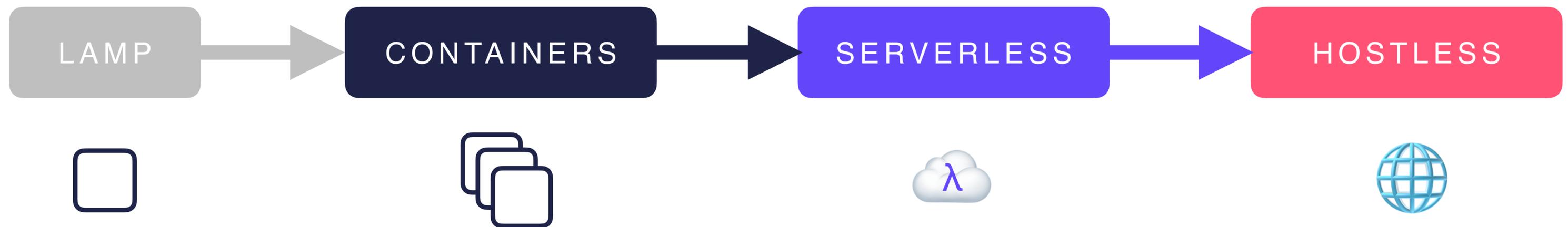
- Meanwhile, over on Drupal Island...



DRUPAL IS STUCK ON LAMP ISLAND

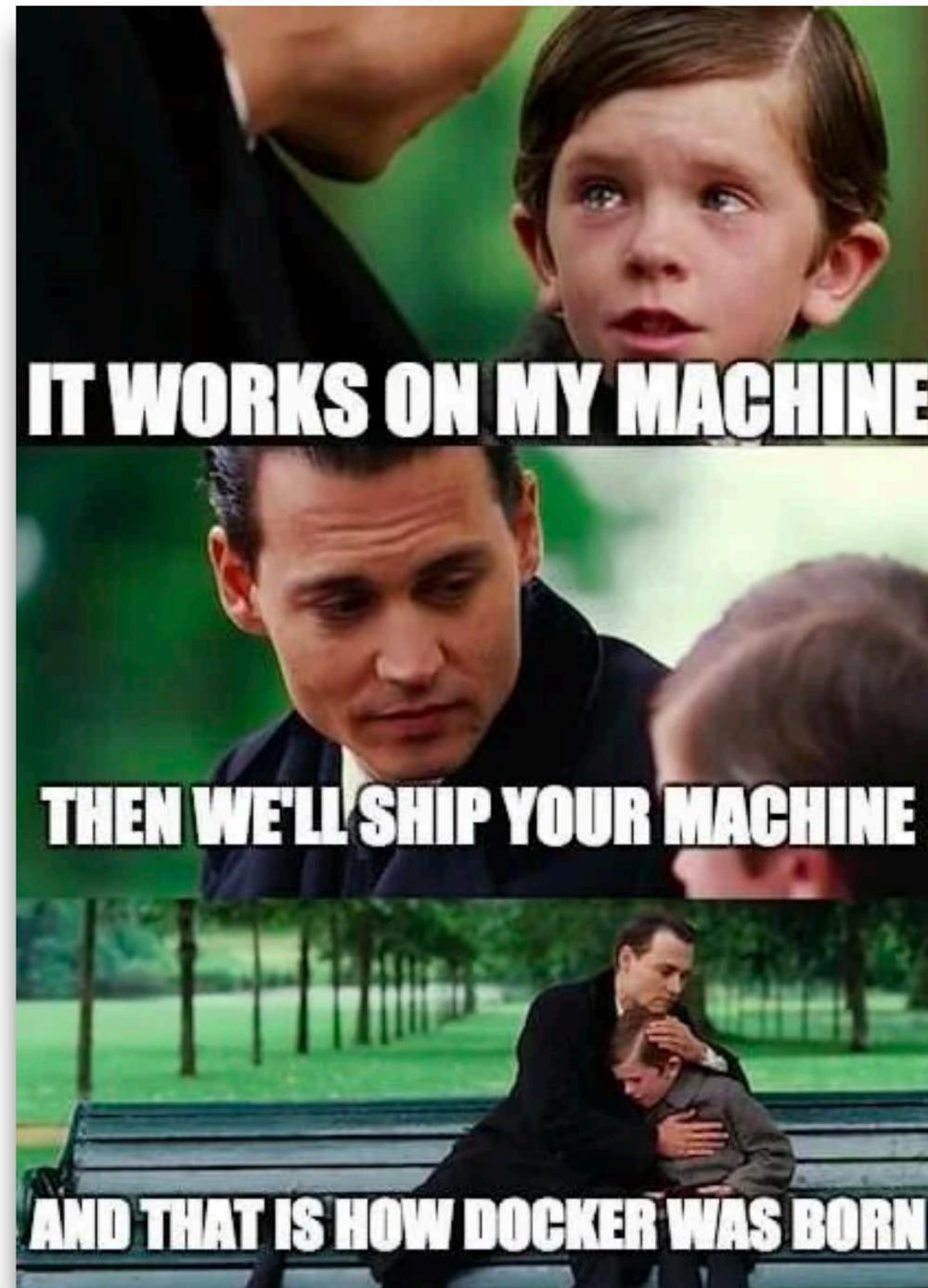


- But there's a problem — Drupal is stuck on a different kind of island — LAMP island!



- We have many more people online, and the architectures need to be more scaleable to support them all
- Which makes them too complex for people to self host





- It turns out: there are tons of islands
- Some of them are about privilege and cultural bias
- Open source license island, LAMP island
- Even HTTP island!





- The biggest island — the Web: HTML, CSS, JS
- ...and now WebAssembly



- But what if we had common infrastructure
- Commons infrastructure

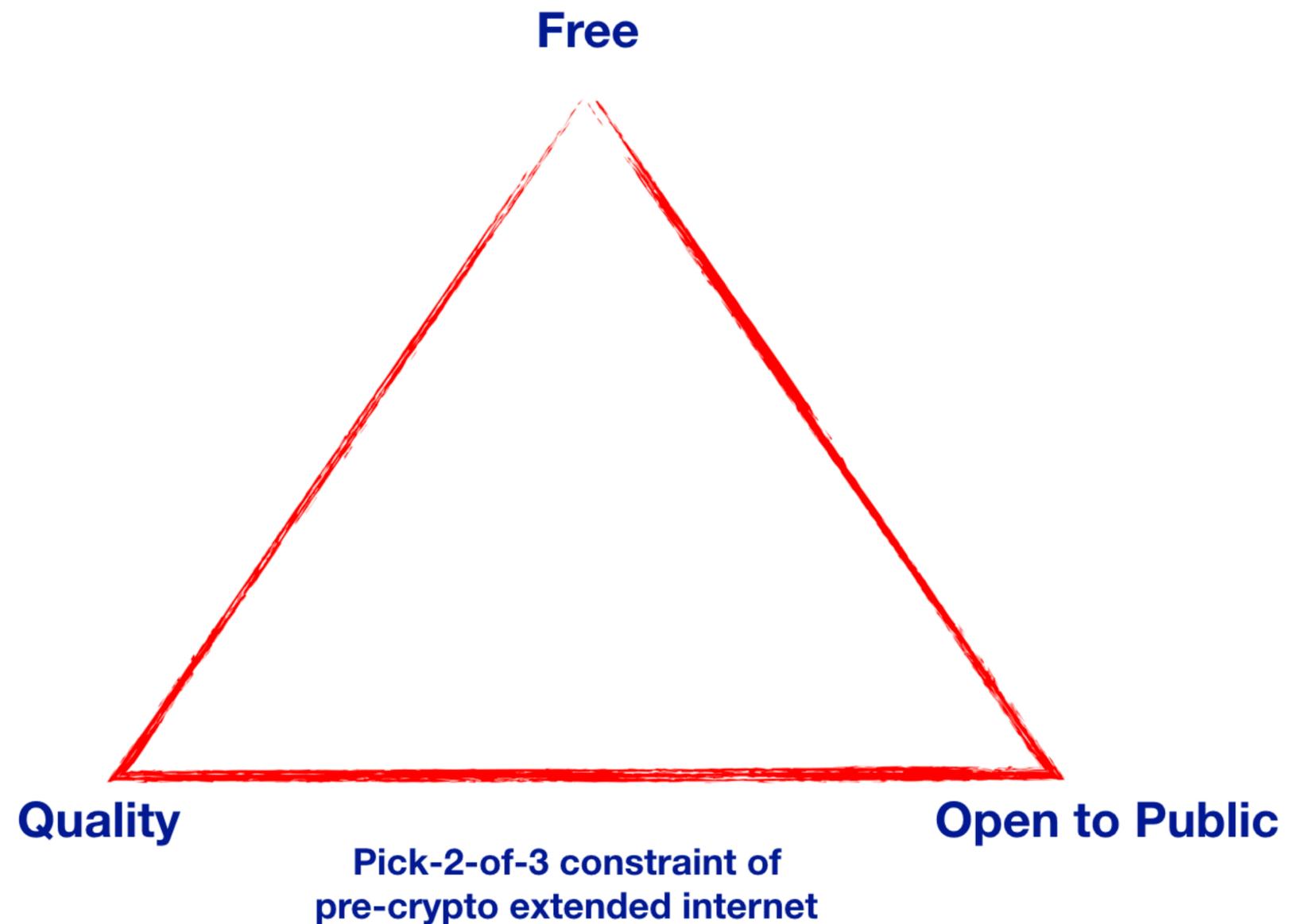


Common Goods
Fishing grounds, forests, oceans, parks

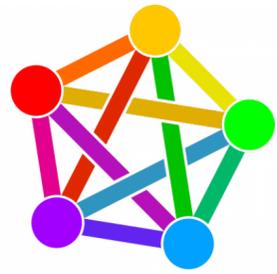


Public Goods
Lighthouses, radio, street lighting





But once [cryptographic tech] matures, we will see the entire extended internet universe getting rearchitected on better foundations, where we could at least push out the boundary of the 2-of-3 pareto.



Fediverse Specs
(many W3C)



Activity Pub

drupal.org/project/activitypub



IndieWeb

drupal.org/project/indieweb

Cryptographic
Tech



Inter Planetary File System



github.com/fission-suite/drupal-ipfs

Matrix Chat Protocol

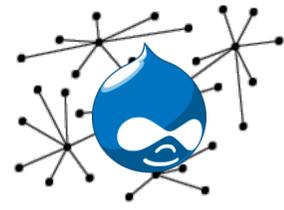


drupal.org/project/matrix_api

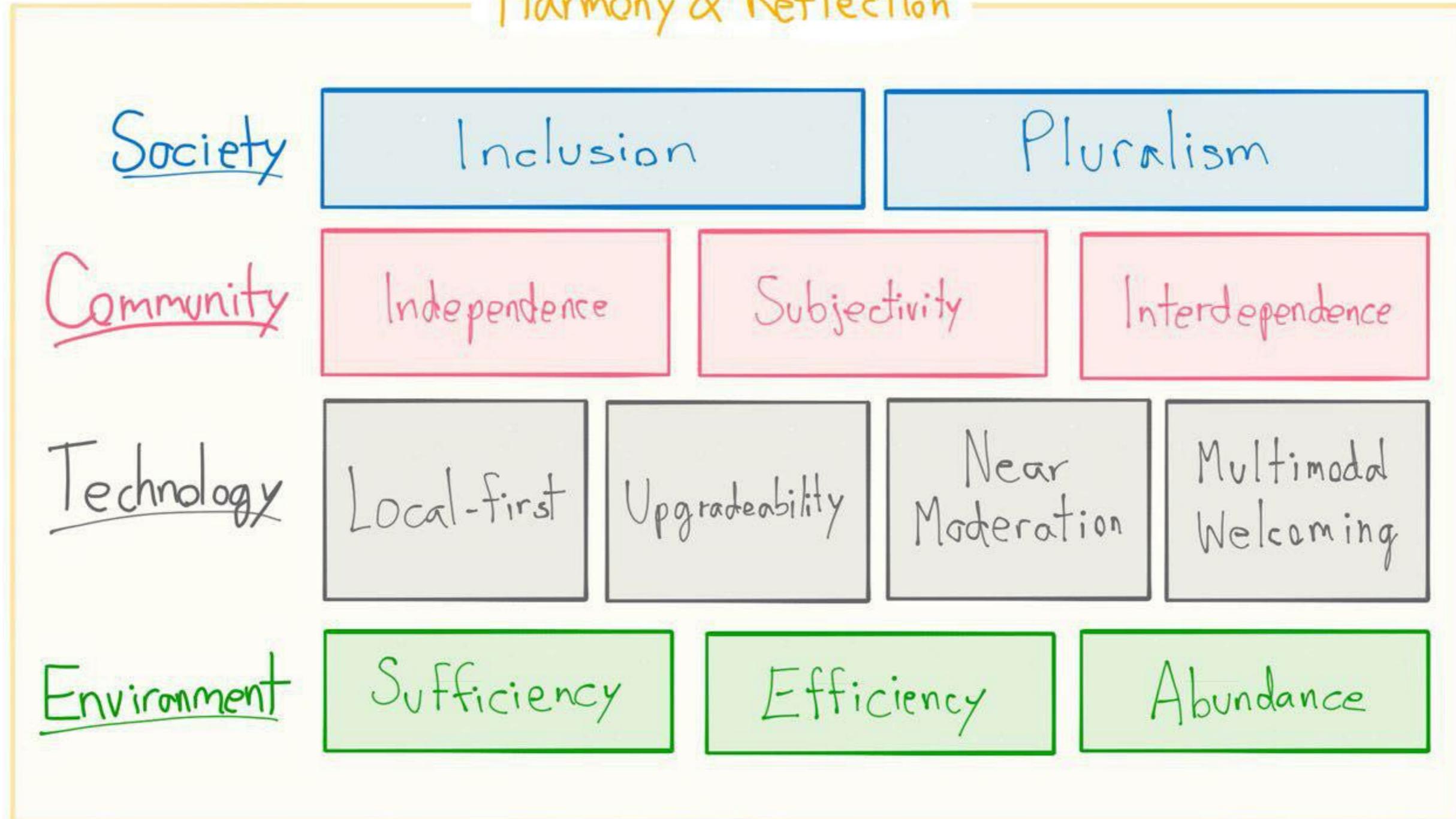
Secure Scuttlebutt



SSB PRINCIPLES STACK

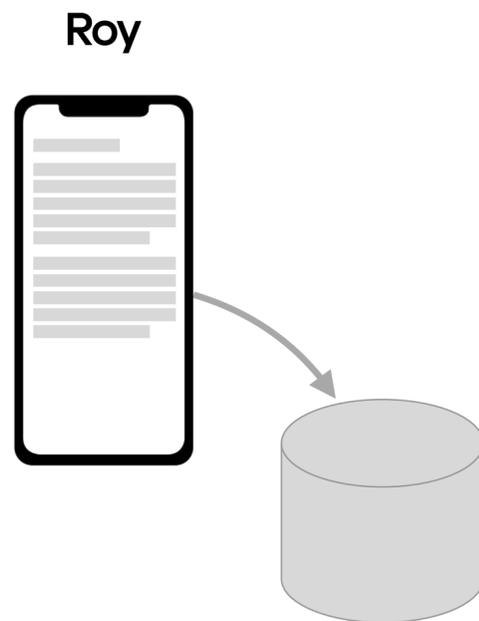


Harmony & Reflection

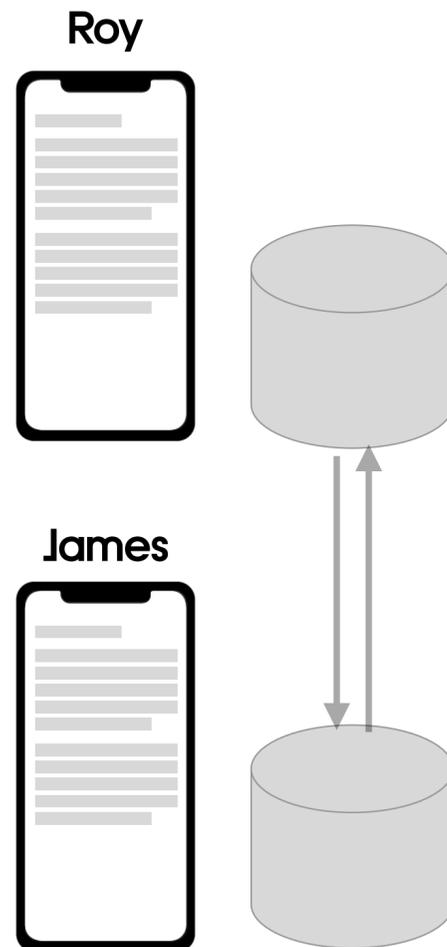




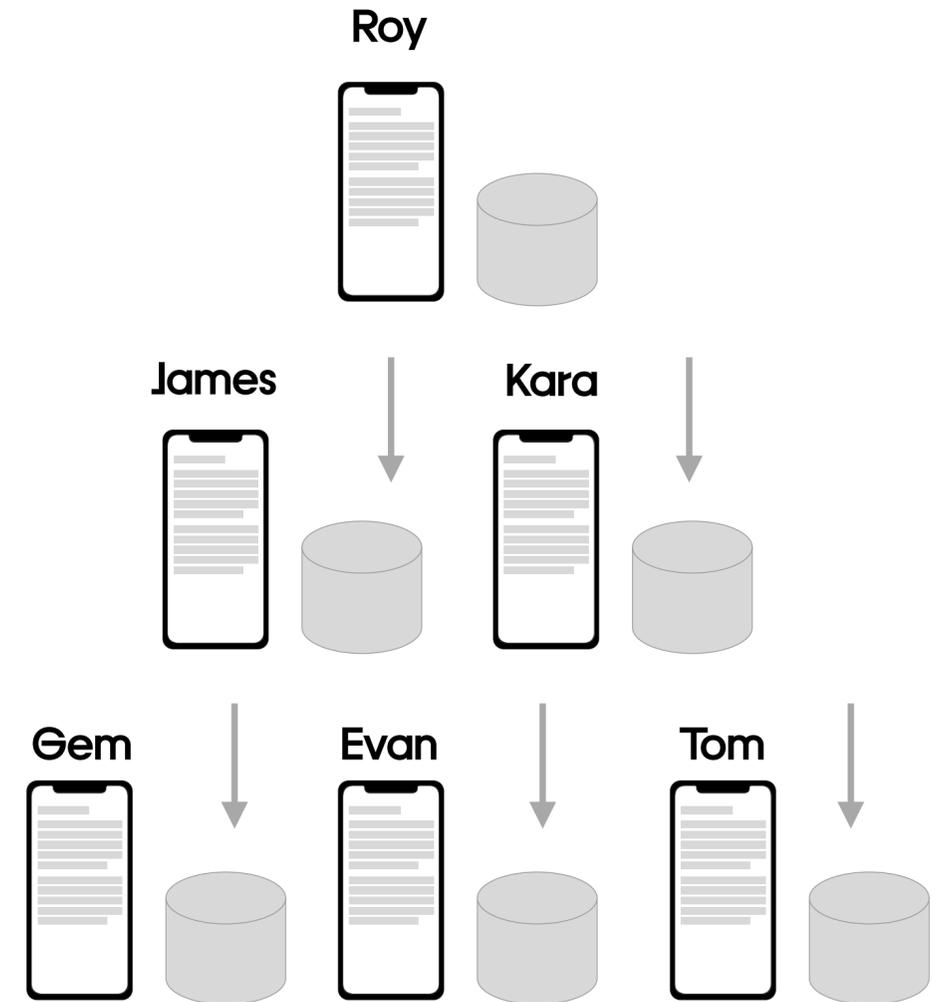
Scuttlebutt



When you write a post in scuttlebutt it is stored on your local storage

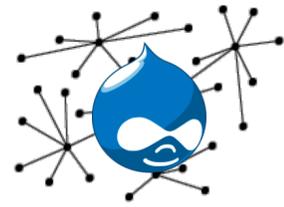


When people follow you, they copy the storage container, and then sync it whenever you're both online



If you're not online, the people following you can get their updates from someone who is

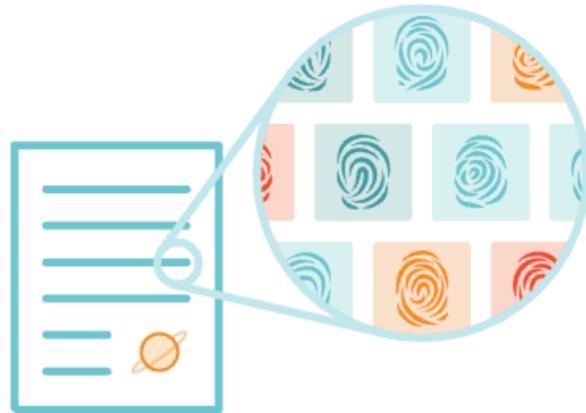
IPFS - INTERPLANETARY FILE SYSTEM



- Location addressing: an IP address pointing to a server, a web server pointing to a directory path
- Content addressing: every piece of content has a unique hash, making it location independent



IPFS - HOW IT WORKS



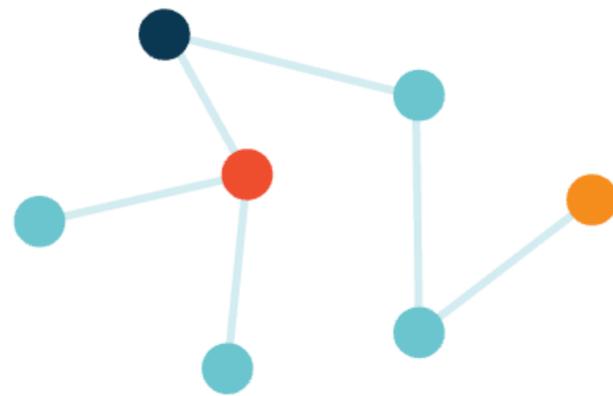
Your file, and all of the **blocks within it**, is given a **unique fingerprint** called a **cryptographic hash**.



IPFS **removes duplications** across the network.



IPFS - HOW IT WORKS



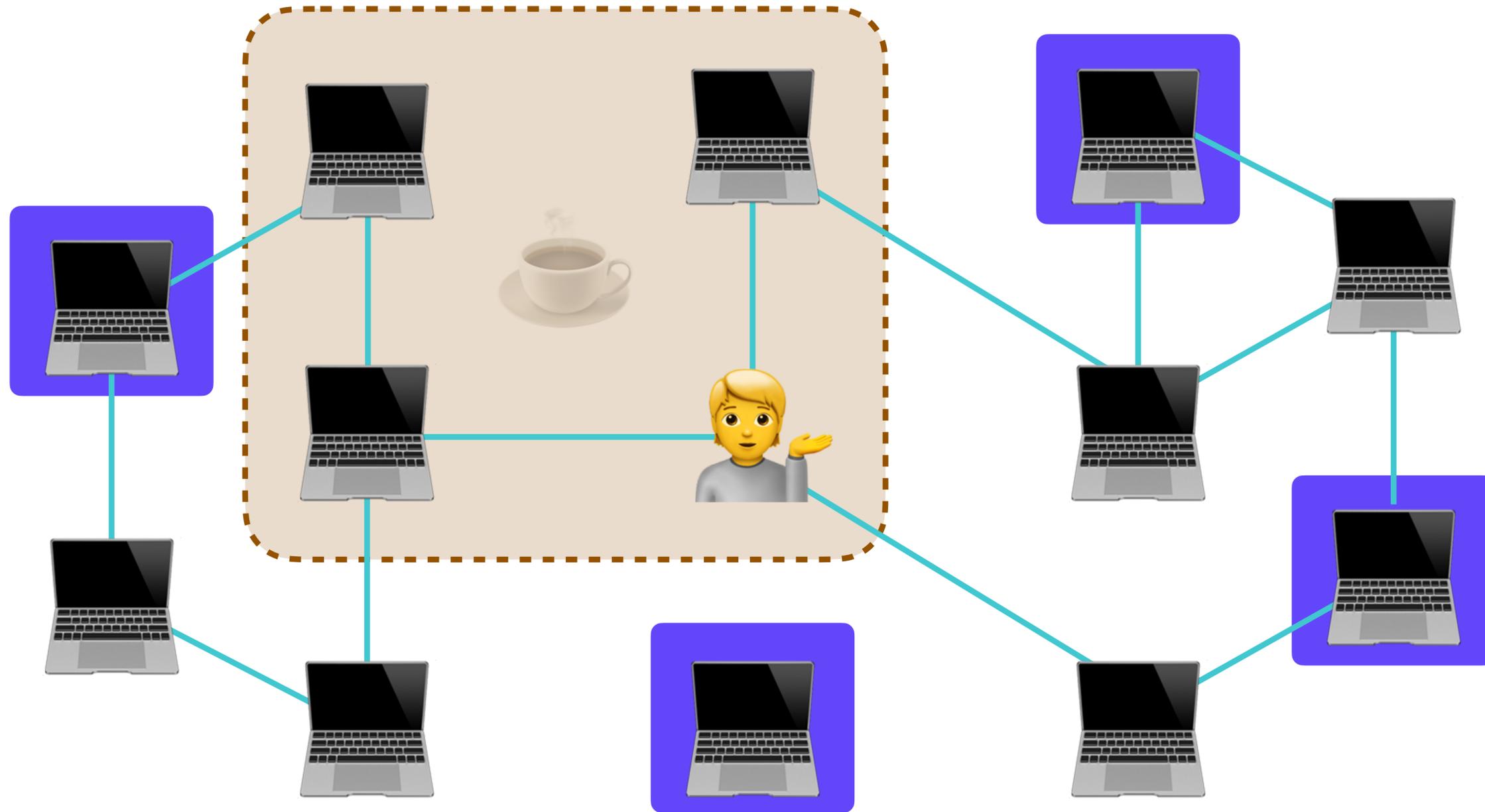
Each **network node** stores only content it is interested in, plus some indexing information that helps figure out which node is storing what.



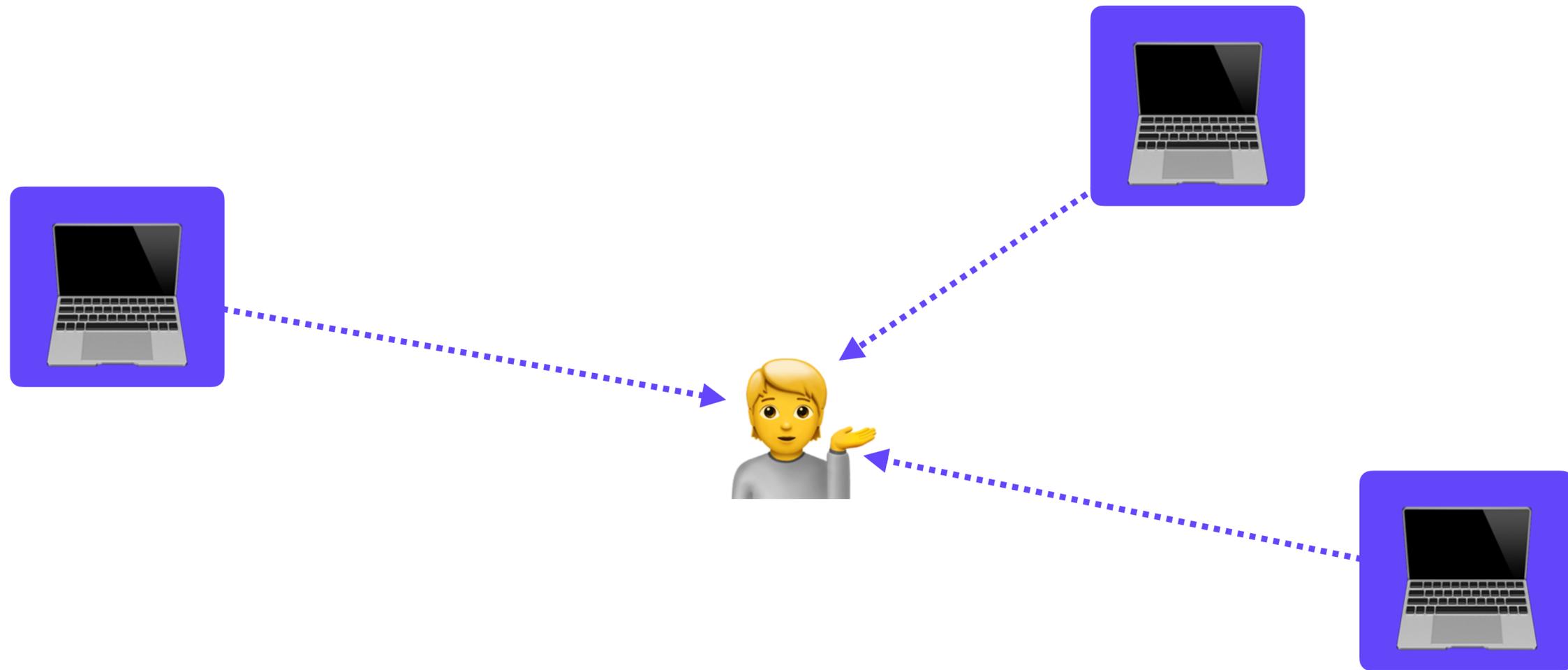
When you **look up a file** to view or download, you're asking the network to find the nodes that are storing the content behind that file's hash.



IPFS PEER DISCOVERY



IPFS PEERS DELIVERING BLOCKS TO USER



IPFS LINKED DATA



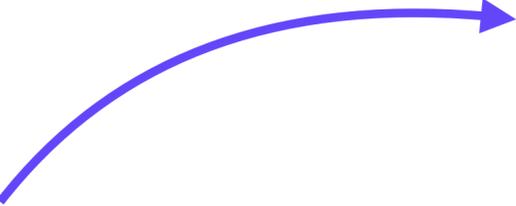
```
{
  Qm123456...: {
    data: "Hello world",
    links: [
      {name: "company", hash: Qmabcdef...}
      {name: "license", hash: Qmzyxwvu...}
    ]
  }
}
```

IPFS LINKED DATA



```
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  Qm123456...: {
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    ]
  }
}

{
  Qmabcdef...: {
    data: "FISSION",
    links: [
      {name: "city", hash: Qm1gb5sn...},
      {name: "about", hash: Qmzyxwvu...}
    ]
  }
}
```



IPFS LINKED DATA



```
{
  Qm123456...: {
    data: "Hello world",
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  Qmabcdef...: {
    data: "FISSION",
    links: [
      {name: "city", hash: Qm1gb5sn...},
      {name: "about", hash: Qmzyxwvu...}
    ]
  }
}
```

`ipfs cat /ipfs/Qm123456.../company/about/founder`
=> "Brooke"

CONTENT ADDRESSING - INTERPLANETARY SIZED NAMESPACE



- Same file = same hash
 - No matter when 🕒
 - No matter where 🌍 🌌
 - No matter who 🧑🔧 🤖 🧑🚀 🧑🎤
🦊
- Zero file duplication per node
- Replication = CDN-ish features
- Immutable data structures
 - Structural sharing = dedup blocks
 - Files & data living together!



SOME IDEAS FOR DRUPAL + IPFS



- Self-host large videos, files and data sets
- Manage assets with Drupal, store them in IPFS
- Take Drupal offline
- Sync and interact with desktops and mobile
- Let users own their data
- Distribute Drupal updates over IPFS

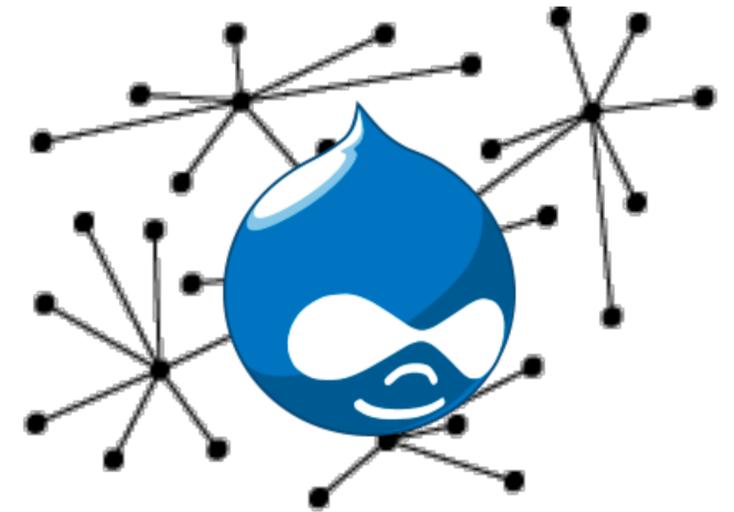


DRUPAL IPFS MODULE



- Available on Github <https://github.com/fission-suite/drupal-ipfs>
- Test site at <https://fission.dev.affinitybridge.com/>
- Use Fission or run your own IPFS node





THANK YOU!

BORIS MANN
@BMANN

- Session Review bit.ly/bmann-dweb-review
- Slides noti.st/bmann
- Talk Notes, Links & Comments
talk.fission.codes/t/729