Federated Open Learning Resources

Stephen Downes
2025 Open Education Conference
October 30, 2025
https://www.downes.ca/presentation/596

Attendees of this session will be able to:

- Join and learn from federated networks.
- Create decentralized communities around topics of interest.
- Co-learn with others by creating and sharing learning resources.
- Use a personal learning environment to support open learning.
- Appreciate the role of community and creativity in an AI world.
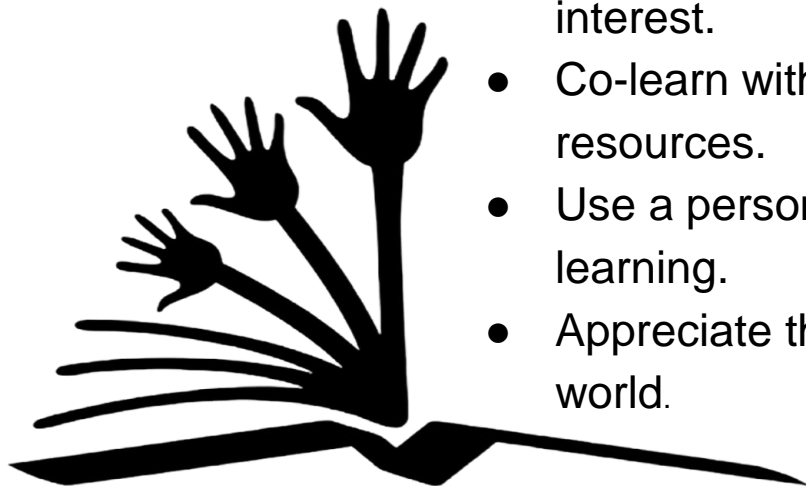
Prehistory: Federated OER Search

https://www.saskoer.ca/oerhandbook/chapter/search-tools/

"Federated open learning resources" refers to the practice of using federated search tools to find and access **Open Educational Resources (OER)**.

Eg. OASIS, search multiple OER repositories at once to broaden your search for materials that are freely available and openly licensed.

Eg. Mason OER Metafinder https://publishing.gmu.edu/whos-using-the-mason-oer-metafinder/

"OER Metafinder launches a real-time, simultaneous search across 22 different sources of open educational materials as you hit the Search button."

SCALE https://pascalsc.libguides.com/c.php?g=842021&p=6039381

Issues with Federated Search

Advantages

- Limited to a few trusted sources, hence, no spam
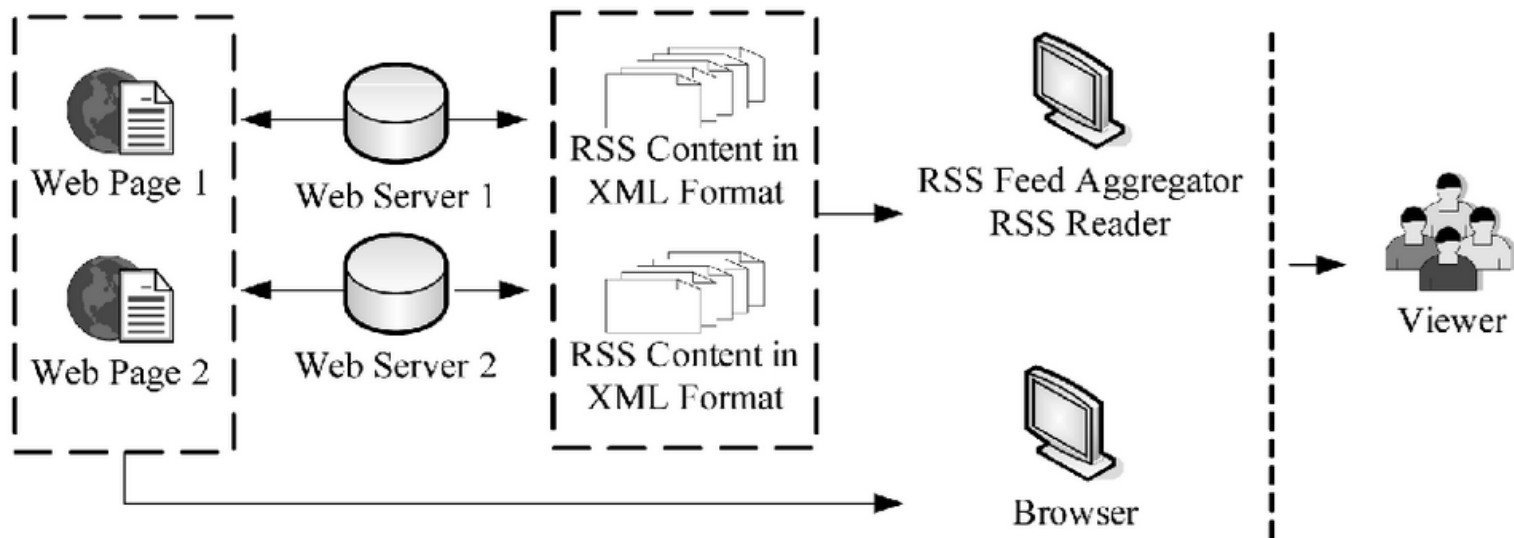- Did not require duplication of search metadata listings
- Always up to date

Disadvantages

- Created additional overhead on individual servers
- Unordered results
- No possibility of 3rd party metadata
- Was never better than Google

Prehistory: RSS

A bit about RSS

https://www.downes.ca/post/31465

History: Centralized Everything

- Search: Google
- Social media: Facebook, Twitter
- Education: Learning Management System

Issues with Centralization

- The Algorithm over relationships
- Inserted content and advertisements
- The silo effect
- The user is the product

Digression: Federated Learning in Machine Learning

A federated learning platform is a solution designed for data science on distributed and therefore non-centralized data.

https://www.apheris.com/resources/blog/how-to-choose-the-best-federated-learning-platform
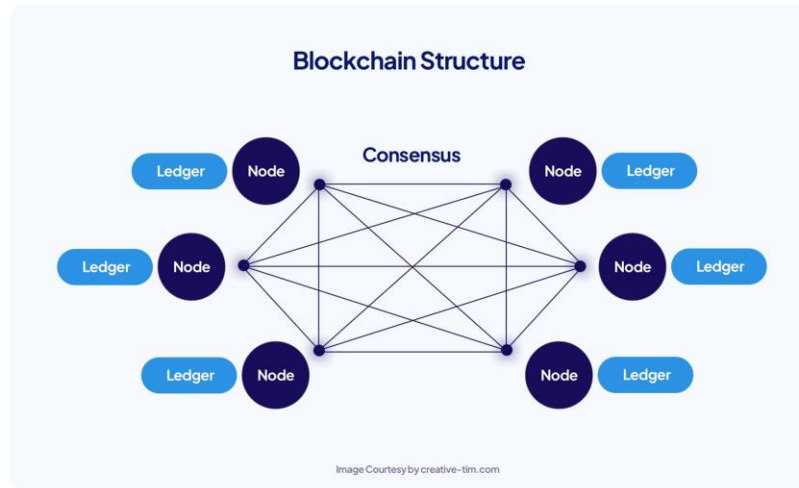
https://en.wikipedia.org/wiki/Federated_learning
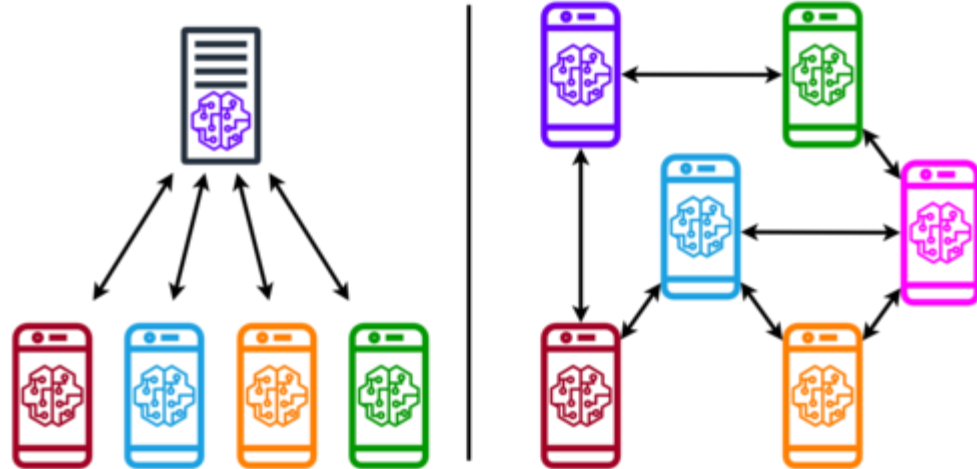
Digression: Blockchain and Consensus Networks

https://builtin.com/blockchain/consensus-mechanism

Common types of consensus mechanisms used in blockchain networks include:

1. Proof of Work
2. Proof of Stake
3. Delegated Proof of Stake
4. Proof of Authority
5. Proof of History
6. Proof of Weight
7. Proof of Capacity
8. Proof of Burn
9. Proof of Elapsed Time
10. Proof of Importance

Blockchain Structure

Consensus

Ledger Node | Node Ledger
Ledger Node | Node Ledger
Ledger Node | Node Ledger

Image Courtesy by creative-tim.com

Recent History: The Fediverse Awakens

Steve Foerster - Academic Twitter is for the Birds - https://stevefoerster.com/category/free-culture/oer/

List of Fediverse software - https://www.reddit.com/r/fediverse/comments/1i9bgs8/list_of_fediverse_software/

Federated Social Media Platforms - https://www.edps.europa.eu/data-protection/our-work/publications/techdispatch/2022-07-26-techdispatch-12022-federated-social-media-platforms_en

Fedican - https://fedecan.ca/en/guide/get-started

Get Federated Discussion - https://connect.oeglobal.org/t/open-education-get-or-is-federated/4346/32 (incl the AI-authored Mastodon community)

How to Join the Fediverse

Join the Fediverse:

https://jointhefediverse.net/?lang=en-us

Eg. https://joinmastodon.org/servers

Eg. https://mas.to/auth/sign_up

GENERAL

mastodon.social

The original server operated by the Masto don gGmbH non-profit

Create account

GENERAL

mas.to

Hello! mas.to is a fast, up-to-date and fun Mastodon server.

Create account

GENERAL

social.vivaldi.net

Vivaldi Social is part of the Mastodon net work and is hosted in Iceland by the maker s of Vivaldi Browser. Everyone is welcome to join.

Create account

TECHNOLOGY

techhub.social

A hub primarily for passionate technologi sts, but everyone is welcome

Create account

REGIONAL

mstdn.ca

A community for Canadians, First Nations, Metis, and Inuit Peoples of the great whit e north.

Create account

REGIONAL

aus.social

Welcome to thundertoot! A Mastodon Inst ance for the People.

Create account

ActivityPub: The Fediverse Protocol

https://hackernoon.com/a-brief-introduction-of-activitypub-the-future-of-social-networks

https://www.w3.org/TR/2018/REC-activitypub-20180123/
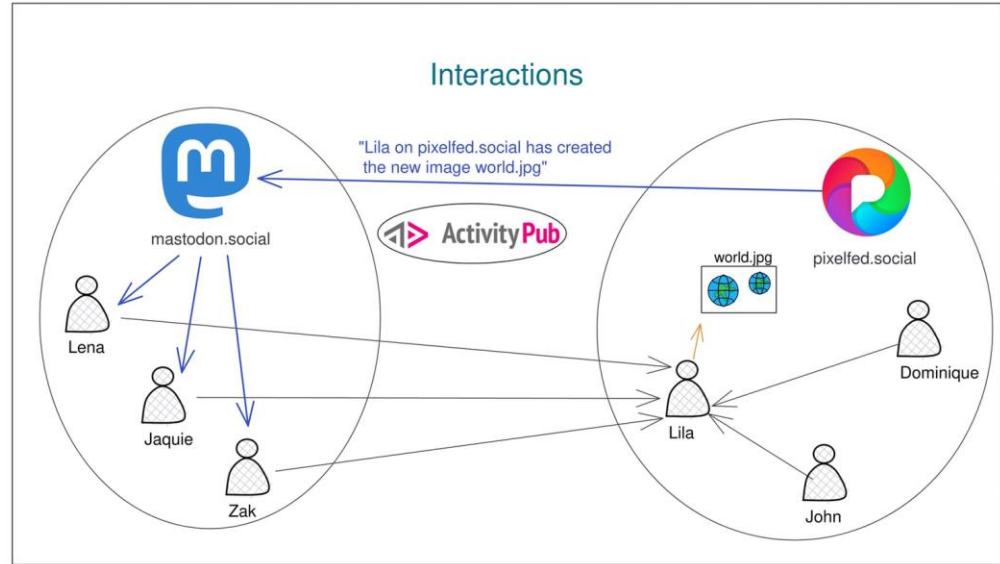
Recent History: MoodleNet (v1)

MoodleNet: What is a federated social network?

https://moodle.com/news/moodlenet-what-is-a-federated-social-network/

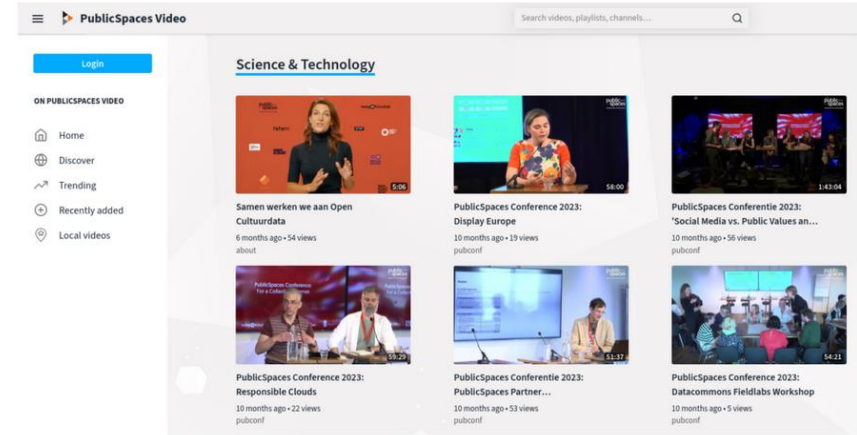https://moodle.com/news/moodlenet-the-up-and-coming-social-media-platform-for-educators/

(Not this MoodleNet https://moodle.net/ which is just a centralized resource repository)

"Just like Moodle Core, organisations will be able to host their own MoodleNet instance, but thanks to federation their users will also be able to connect, talk, and share content with users and communities on all of the other instances, if they wish." - Doug Belshaw

How the Fediverse Supports Sharing OERs

- The OER Foundation uses Fediverse technologies to widen access to open learning and collaborative content creation https://tech.oeru.org/updating-oer-foundation-web-services-july-2024

- PeerTube Spaces and similar initiatives support public organizations in creating federated video repositories, https://news.elenarossini.com/peertube-the-fediverses-decentralized-video-platform-part-2-creator-edition/ ---- https://english.publicspaces.net/project/peertube-spaces-sharing-videos-without-big-tech/

What is a Decentralized Community?

Create decentralized communities around topics of interest.
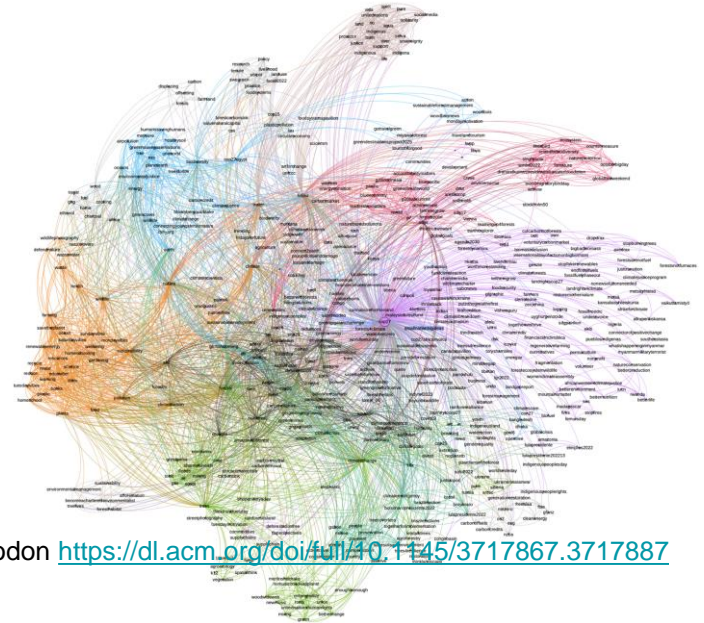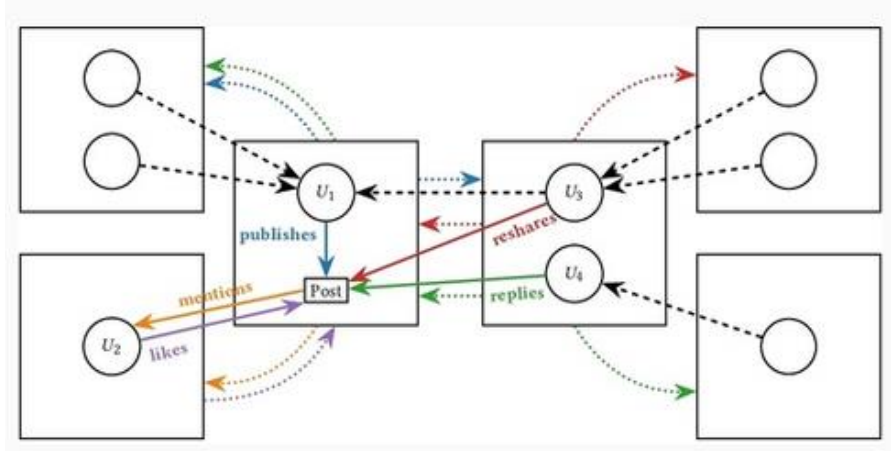
Some of the geeky number stuff: Decentralized Discourse: Interaction Dynamics on Mastodon https://dl.acm.org/doi/full/10.1145/3717867.3717887

Hashtag network: https://link.springer.com/article/10.1007/s42803-025-00108-6

Let's Explore Mastodon

https://mastodon.social/

How to Create a Decentralized Community

1. Join a fediverse site like Mastodon
2. Search for a subject or hashtag (or create your own)
3. Follow people who show up

alternatively

1. Create your own instance of Mastodon or any other fediverse server
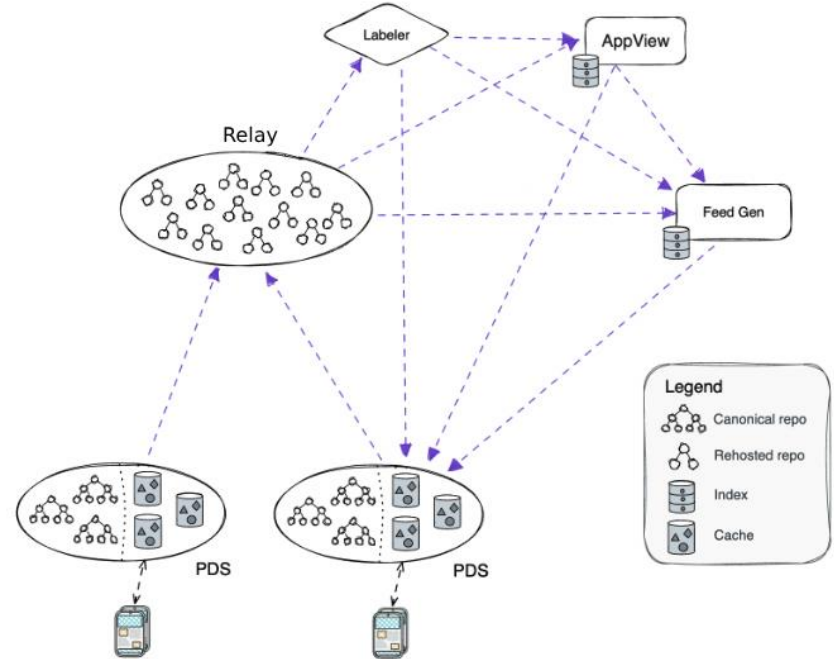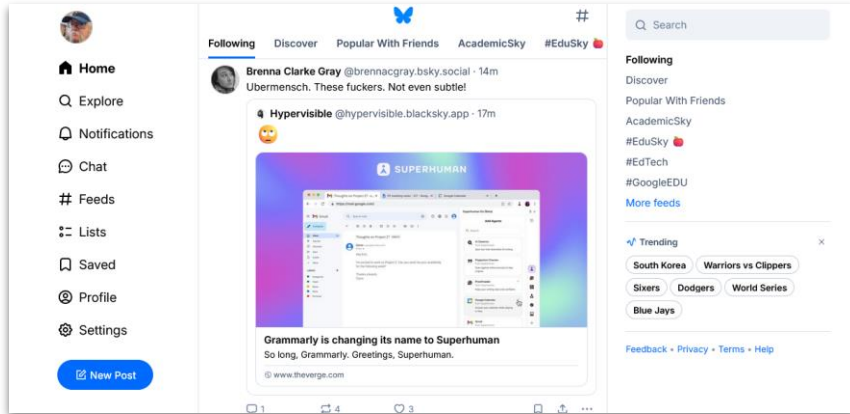2. Write your own 'rules'

https://blog.adrianalacyconsulting.com/building-communities-on-mastodon/

Digression: Bluesky

https://bsky.app/

https://bsky.social/about/blog/5-5-2023-federation-architecture

Lists and Starter Packs

https://blueskydirectory.com/starter-packs
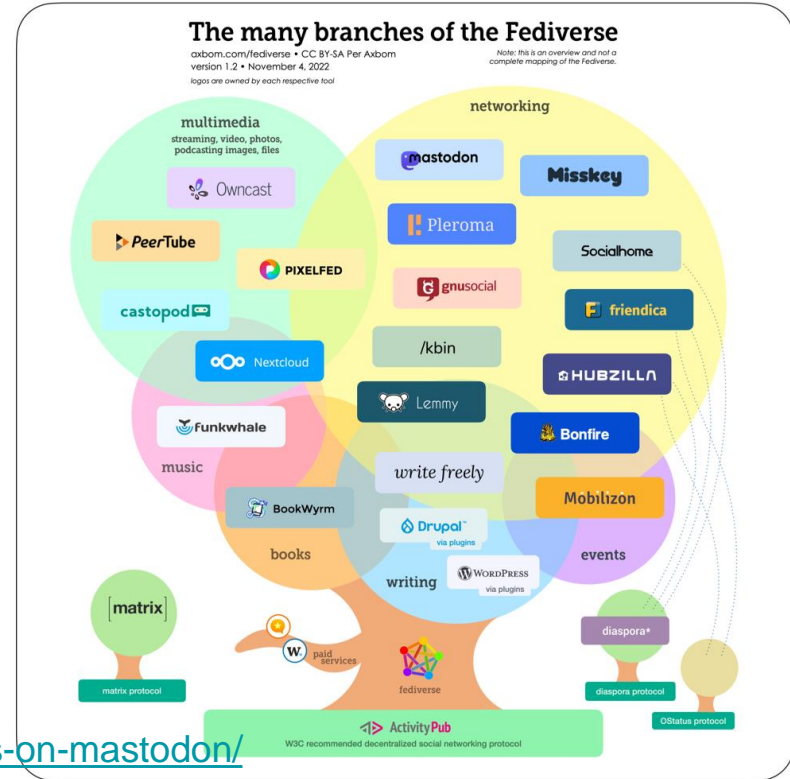
https://boringstorybook.com/a-list-oflists-and-feeds/

- **Feeds** – User-created timelines of posts populated by options drawn from Bluesky usually on a specific topic
- **Starter Packs** – Up to 150 collected accounts organized/curated by a user, ideally on a unifying theme,
- **Lists** – Collections of accounts created by a user.

Mastodon lists:
https://www.speedofcreativity.org/2025/01/29/sharing-mastodon-lists/

OpenLearn Commons

Steve Wheeler - https://www.e-learning-rules.com/projects/

Introducing OpenLearn Commons: A Federated Alternative to the LMS

OpenLearn Commons is not a single platform but an assemblage of purpose-built services, each part of the Fediverse or otherwise open and extensible:

- `Mastodon` for announcements and course discussion
- `WriteFreely` for student journals and reflective writing
- `Lemmy` for topic-based conversation and community Q&A
- `PeerTube` for lectures and student video projects
- `Nextcloud` for file sharing and collaborative editing
- `Grav CMS` for publishing modular course content in Markdown
- `Keycloak` for single sign-on and identity management

Co-Learning on the Fediverse

- **POSSE** - Publish Once Syndicate Stuff Everywhere - Eg. Pressbooks on Mastodon https://mastodon.social/@dougholton/115454977089297768 Doug Holton - See also - https://indieweb.org/POSSE
- **Communities of Practice** - eg. Learning for Sustainability - https://learningforsustainability.net/communities-of-practice/
- **Academics on Mastodon** - https://github.com/nathanlesage/academics-on-mastodon
- **Co-Create** with others - eg. Weave the Peopple https://social.coop/@Weavethepeople

How to Start a Co-op & Cooperative Ownership Models

Find out about the pros and cons of various legal structures for cooperative land stewardship, and 10 steps to starting a land-based community cooperative.
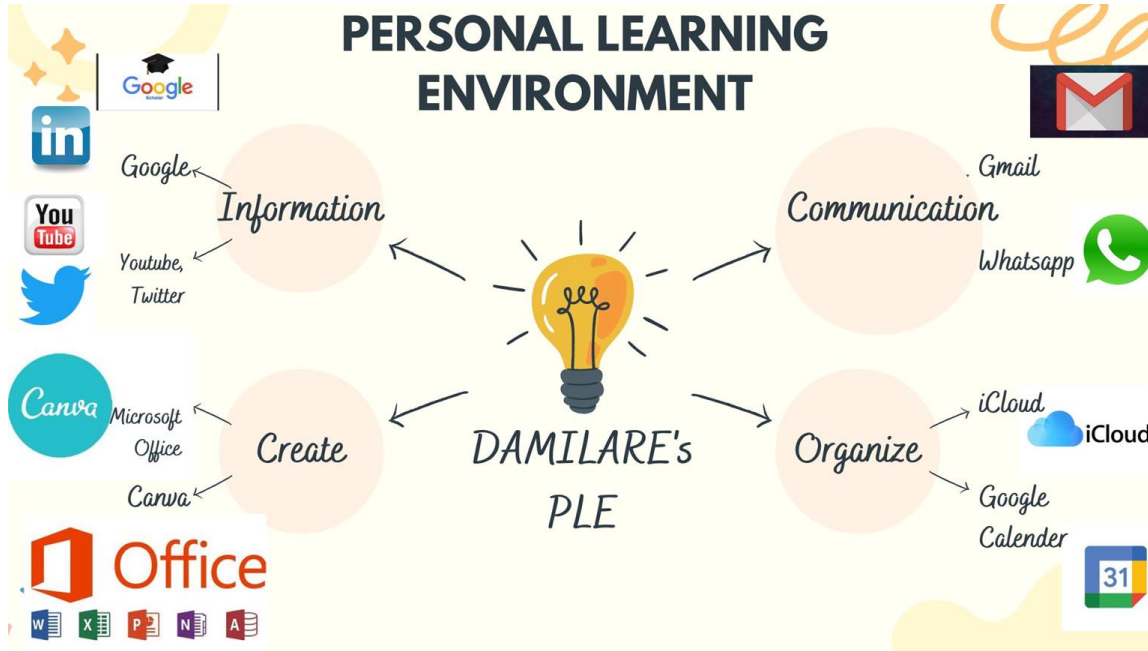
Wednesday Feb 5   5:30p-8p

Online

info, Register @ weavethepeople.info/coops

Brought to you by:

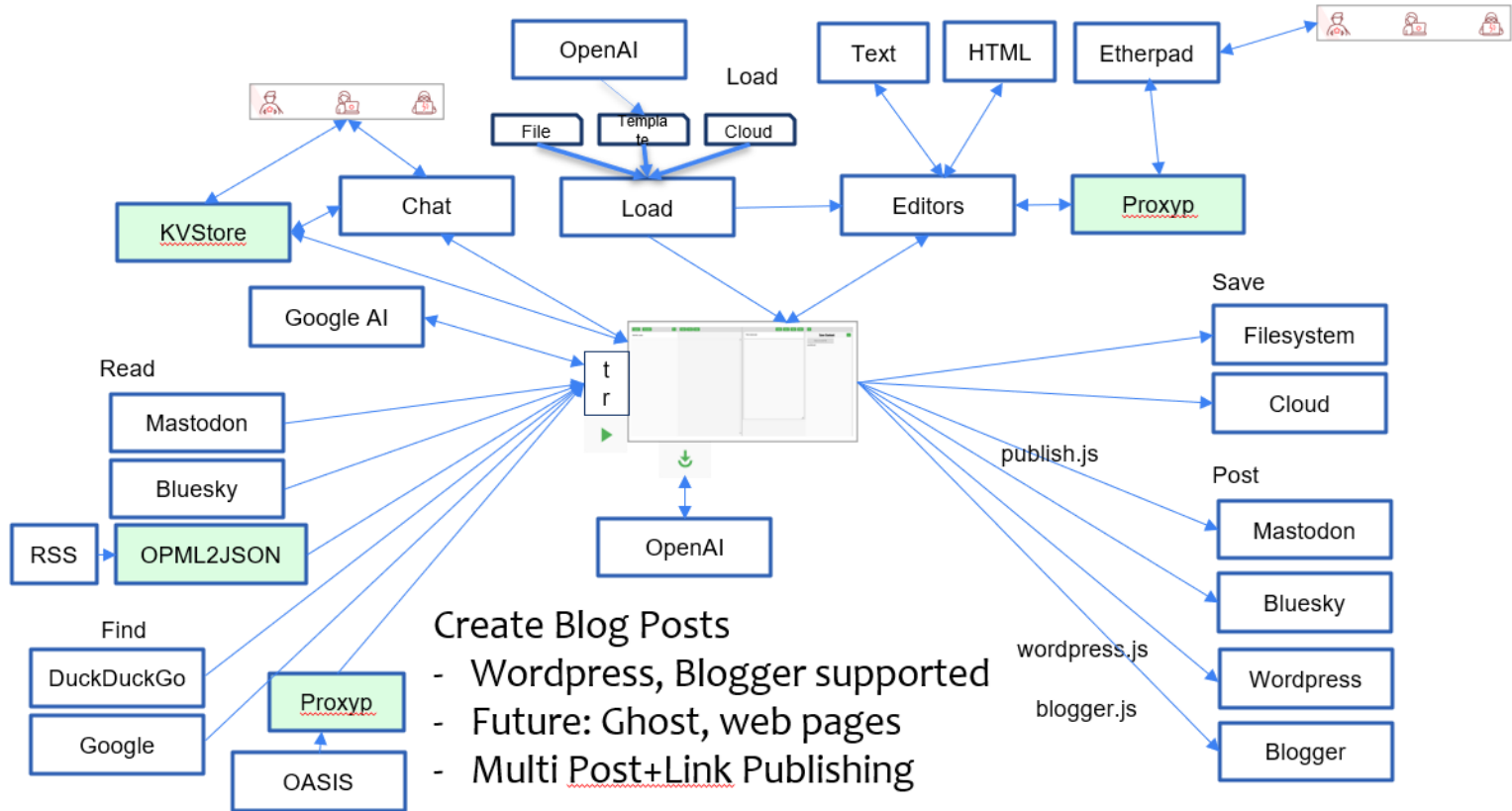Weave the People Cooperative & Cooperate WNC A Regional Mutual Aid Initiative
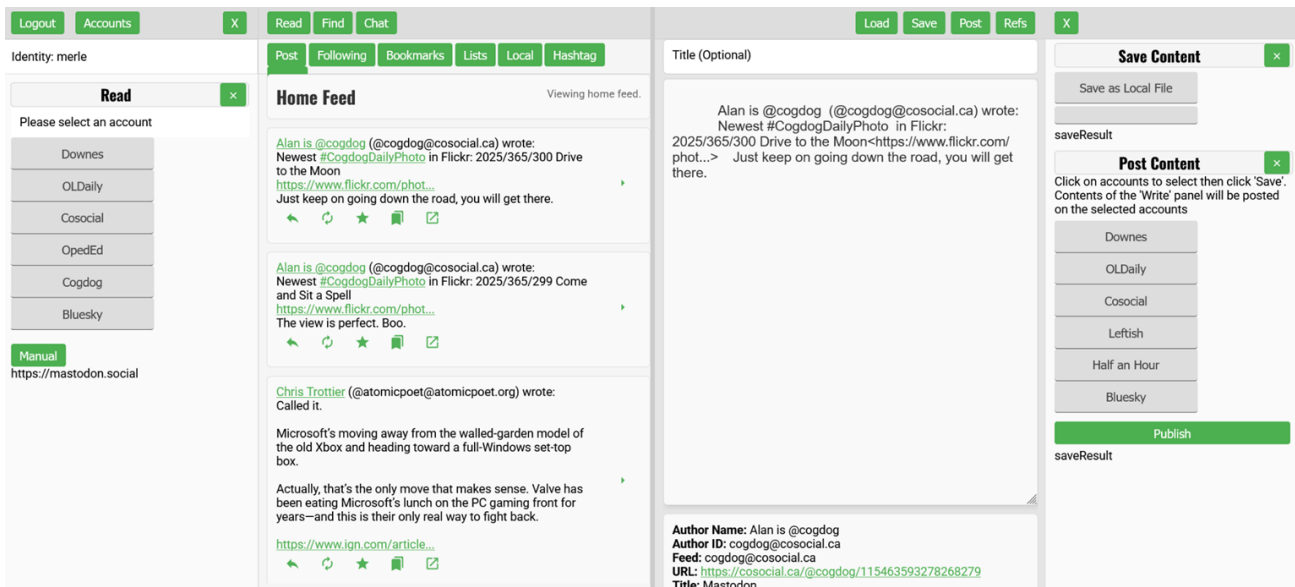
The Personal Learning Environment

https://blogs.upm.es/t4pdc/2022/11/24/1319/

https://library.educause.edu/-/media/files/library/2009/5/eli7049-pdf.pdf

PLE Development Work to Date

Load

File · Template · Cloud

OpenAI
Text · HTML · Etherpad

Chat · Load · Editors · Proxyp

KVStore

Google AI

Read
Mastodon
Bluesky

RSS · OPML2JSON

Find
DuckDuckGo
Google · Proxyp
OASIS

OpenAI

Save
Filesystem
Cloud

publish.js

Post
Mastodon
Bluesky

wordpress.js
Wordpress

blogger.js
Blogger

Create Blog Posts
- Wordpress, Blogger supported
- Future: Ghost, web pages
- Multi Post+Link Publishing

CList (Really Needs a Better Name)

https://ple.mooc.ca

https://www.downes.ca/cgi-bin/page.cgi?presentation=594 Convergent Discussions in the Fediverse

Not Just Books, Not Just Resources

https://tech.oeru.org/updating-oer-foundation-web-services-july-2024

OER Foundation web services

https://web.archive.org/web/20060813001259/http://www.elframework.org/

Jisc E-Framework
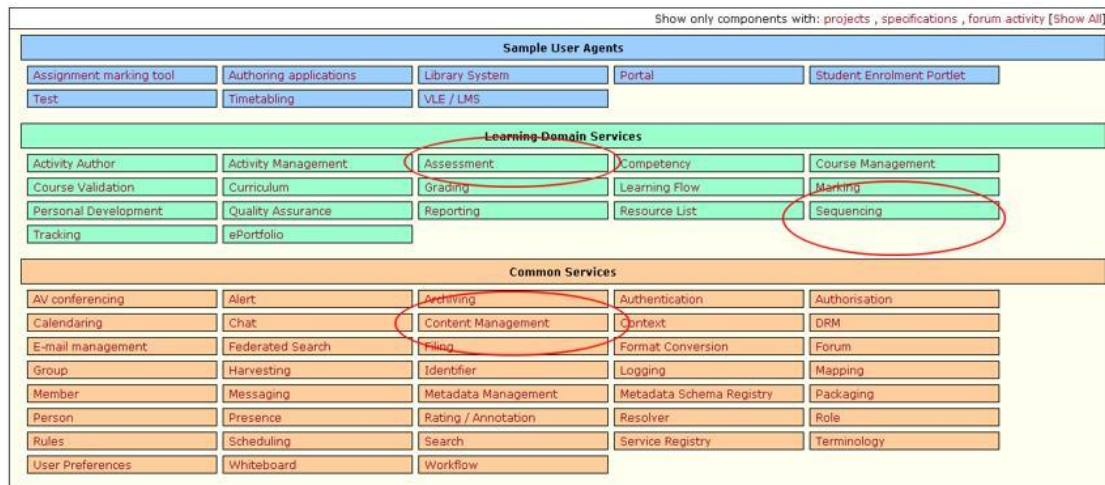
Digression: DID

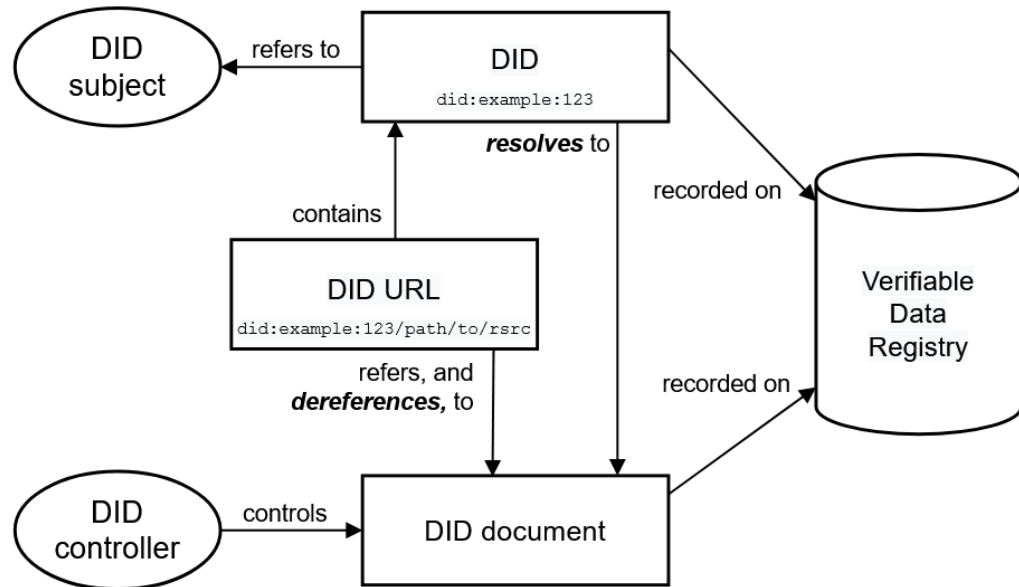https://en.wikipedia.org/wiki/Decentralized_identifier

https://www.w3.org/TR/did-1.1/

Figure 2 Overview of DID architecture and the relationship of the basic components. See also: narrative description.

Decentralized Syndication with ID

Decentralized Syndication—The Missing Internet Protocol - RSDS

http://tautvilas.lt/decentralized-syndication-the-missing-internet-protocol/

https://reader.did-1.com/posts

AI in the Personal Learning Environment

AI-Enabled PLE
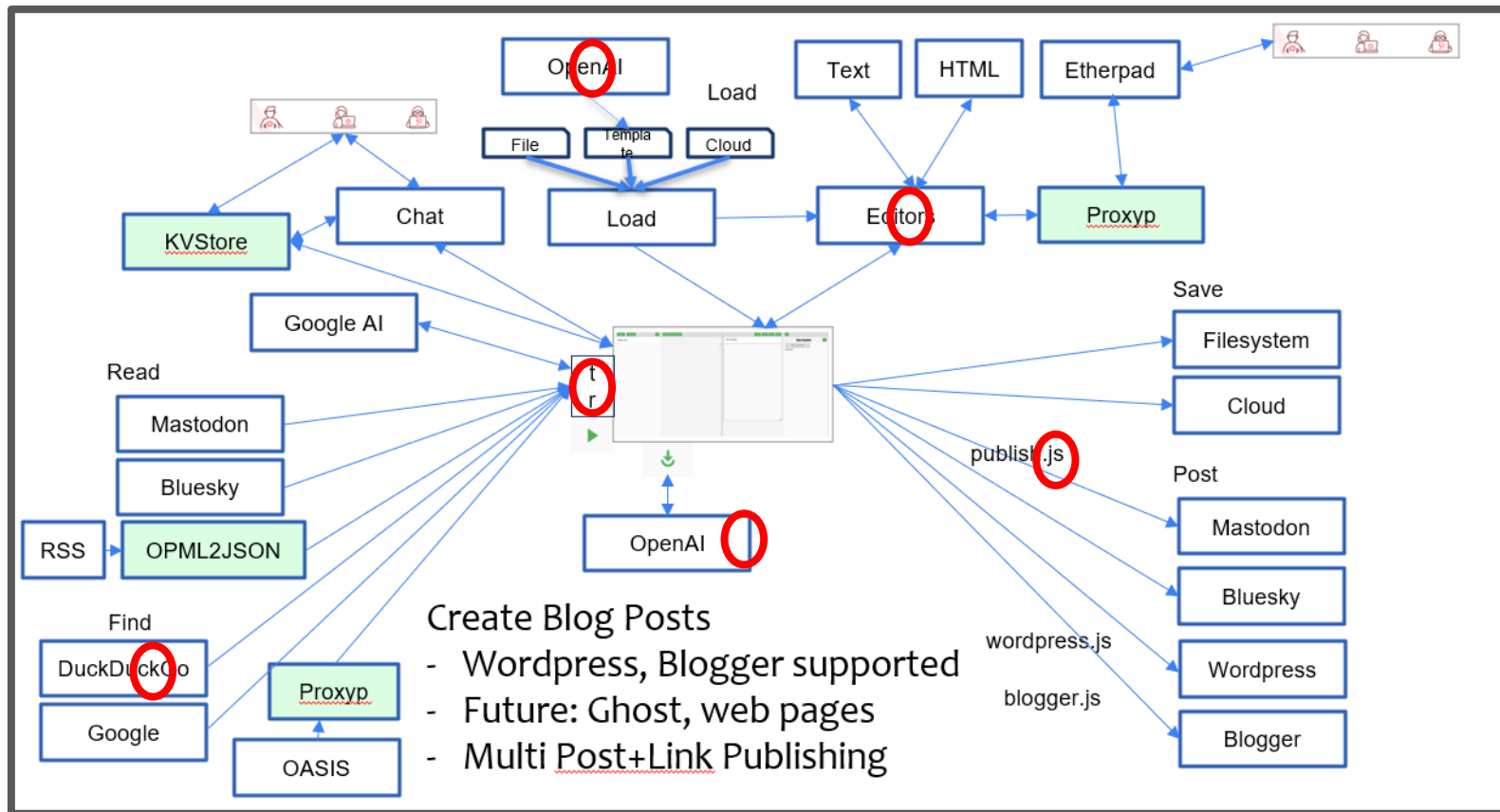
https://caffeine.ai/chat/0199e988-78d0-729f-92f3-b8cb9ed02b51 ActivityPub Server Application

Retrieval Augmented Generation - https://en.wikipedia.org/wiki/Retrieval-augmented_generation

Model ContextProtocol - https://modelcontextprotocol.io/docs/getting-started/intro