Sonar

Decentralizing archives through peer to peer tools

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arso project

- build tools for decentralized archiving and preservation
- currently building **Sonar**: a peer to peer database and search engine
- exploring "decentralized autonomous archives" (P. van Garderen)

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Decentralizing archiving

- archiving has a history of centralization
- inclusiveness needs equal access
- public open spaces vs power of knowledge
Decentralizing technology

- centralized stacks need centralized structure
- complex technology is a gatekeeper
- open data movement: progress through open source & open apis
- traditional software stack makes real decentralization hard
Traditional archiving stack
Traditional archiving stack

- hard to setup and maintain: requires continuous investment & knowledge
- interoperability as add-on
- even with open APIs: no equal access
Peer to peer archiving stack

- peer to peer storage: no difference between source and copy
- local first software: dumb servers, thick clients
- open source plus open source data: extend, hack, branch, fork
Sonar

• Building on top of Hypercore protocol hypercore-protocol.org
• Part of the Dat ecosystem dat.foundation
• Research project: Alpha stage, reaching beta soonish
Sonar peer to peer stack
Data storage & replication

- Cryptographically secure append-only logs (*Hypercore*)
- Distributed hash tables for peer discovery: no servers needed
- Simple replication protocol with support for sparse replication
- Filesystem abstraction (*Hyperdrive*)
Kappa architecture

- simple base storage, but p2p first
- rich "materialized views": all messages "flow" into a secondary database
- full-text search, graph db, etc
- local-first architecture: work offline, sync on demand
Ownership models

- fork everything: extend other collection with own data, frontends, mappings
- access per collection by keypairs
- secure preservation through easy full replication
- challenges: splitting access, blind replication
Challenges

- collective schema management and RDF vs JSON
- open spaces vs copyright
- key distribution
Way forward

- Sonar as a framework to enable exploration of peer to peer archiving
- looking into practical project & partners
- looking into exploring resilient free software financing models
Sonar

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We're looking for contributors or interested advisors!

archiving for everyone: decentralize the preservation of history