

Title:

The Semantic Web and Web3+ for Local First and Actor-Centric Commons-based Peer Production

Abstract:

The vision for the Semantic Web had potential, but it did not scale well, the data could not be trusted to be available or accurate, and the confusion from the days of the “tower of babel” reared its ugly head again.

How can tools for the semantic web and linked data be enhanced with things like content addressable data, verifiable credentials, blockchains, the object capabilities model, and applied category theory?

This question might be answered by extending the Enterprise Information System for Peer Production research and concept. Furthermore, the virtual companies that the concept envisioned with self-aggregating distributed data may be a motivating factor for more mainstream adoption of Web3+ technologies.

One line description: Develop your passions with a self-organizing and self-realizing system of co-creation.

What will they learn?

Content that will be talked about in order of precedence:

(0) History, motivation, and potential for amending EISPP wireframe animations & P2P World-OS: A P2P Enterprise Platform writing

The first start of this project was started from an inspiration, the second start of this project started from more of a frustration. I started the inspiration part of this project in 2008 after observing the talk-polywell.org website where adults were instructing others, some in high school, how to scrounge around and build their own fusion devices. After seeing this, and buying many books, and seeing many blog posts, and publications I wondered if it was possible to have some sort of simplified training system, so I proposed a quiz website: <https://talk-polywell.org/bb/viewtopic.php?t=683&highlight=> . I started the frustration part of the project after I got out of graduate school. I saw a lot of people taking jobs they didn't want. I observed that published papers and thesis were alone insufficient, and that many of the notes taken by those in the lab were or were going to lose context after they left. I observed my own difficulty matching my skills and connections to job descriptions. All these observations led me to think about graphs, mind maps and topic maps and I first posted about the semantic web in 2011 <http://raptorlicious.blogspot.com/2011/06/semantic-web.html> . I was so excited at times I just started running. My later blog <http://adistributedeconomy.blogspot.com/> just followed.

This sort of thinking was embedded in a blog post I created in 2011:

“It is great when we as a society set up artificial barriers that create value. Principally ones that require us to navigate an obstacle course of delusional importance, and then leave us thinking that we are somehow better and more qualified than everybody else. Sure, acquiring skills is important, but why do we have to become the skills themselves? Would we perform better (and be happier) if we made our creative intelligence the center and let the skills be learned as needed? “

<http://raptorlicious.blogspot.com/2011/07/some-thoughts-on-structured-education.html>

And also in what I wrote in 2014:

“We need a system that encourages learning and creates business and research opportunities through self-organization. The traditional model is failing us. We must go beyond the traditional model and personalize education, business, and research with self-organization, so that individuals can contribute their own ideas and work together toward common goals. “ http://bshambaugh.org/Master_14.html

This stimulated research which led to E.I.S.P.P. (1) was for aggregating data together that was semantically similar as well as most used and hopefully also most geographically and culturally important. It was also for keeping track of who did what and what changes they made. Questions arise when migrating this over to the IPFS stack. (2) was for upper ontologies. Questions arise when considering structural and semantic interoperability. Usually in the Ceramic Network, a schema is defined but full description logic expressiveness is not available. No reasoning can be done between terms within a schema and between schemas. Schemas may even lack hierarchical structure like in taxonomies. OCA is an architecture that to my knowledge does not allow for mappings between schemas. Project Cambria does, but it may only be structural. What is needed for moving amongst a fully heterogeneous data space, which would occur in the data for a peer-to-peer economy, is both semantic and structural mappings. Applied Category Theory could guide how to do this and possibly this could be expressed in code with LSA or Dragon/Hydra. (3) is for enhancing data that is in the system. This could be with the aid of genetic algorithms like in ActiveGenLink, semantic reasoning using ideas from SwarmLinda, addition of uncertainty as a percentage through fuzzy logic, and addition of more structured textual data with entity extraction. As the previous work dealt with location addressed linked data, this would need to be mapped to content-addressable IPFS blocks. At first glance, this seems to be using the JSON already in blocks and maintaining mutable pointers between blocks for a larger graph. (4) dealt with entry to the data space and presentation of it. PowerAqua uses an inverse document index, ontology index, and mapping between the document and ontology index to guide natural language queries which take advantage of structured data with semantics. E.I.S.P.P. considered having RDF data and ontologies used returned by PowerAqua. Then the RDF linked data and ontologies were seen as a bootstrap to SPARQL queries for more RDF data, further queries using the structure of the ontologies for more RDF linked data, and for “follow your nose” graph traversal for more RDF linked data. To make the linked data and have RESTful retrieval of chunks that are useful for application building the Linked Data Platform which was used to inspire the SOLID Project was added. To make this more Web3+, again mappings to content-addressable schemes from RDF would need to be considered. Also GraphQL and a relation of GraphQL and SPARQL made through GraphQL-LD seems important due to the wide adoption of GraphQL through the Graph. For Restful retrieval of content-addressable data, Mauve’s IPLD URL work could be considered. (5) considered the structures recording who worked, how people worked, and how much their work was worth. More modern reward schemes from Web3 as well as money streaming may need to be considered. (6) E.I.S.P.P. drew on access control lists location addressed identifiers for people and agents. In a web3+ world decentralized identifiers and accessing schemes that are self-contained and granular on function rather than by group or agent. Verifiable credentials could be useful for determining the whether agents holding certain attestations are allowed to utilize a particular resource. (7) secure data transfer channels were not considered for E.I.S.P.P, nor was a means to look at computing for the agents in an IPFS centric way.

(1) **Start with:** Tribler / INGA / Ant Colony Optimization (swarm intelligence) ,R&WBase,
Provenance, Ontology, Powder, Semantic Clustering
Add: IPNS / IPLD / IPFS / IPFS Router Layer / libp2p

- (2) **Start with:** ISO15926, UMBEL, OpenCyc, upper ontologies
Add: LSA, OCA, Project Cambria, Applied Category Theory, Dragon/Hydra, Typed Lambda, Calculus, Structural and Semantic Interoperability / Ceramic Network
- (3) **Start with:** ActiveGenLink / Reasoning by Swarm Intelligence, Fuzzy Logic, Entity Extraction
Add: IPNS / IPLD / IPNS / IPFS Router Layer / Ceramic Network
- (4) **Start with:** PowerAqua/ SPARQL / Browsing /Visualization / Linked Data Platform
Add: theGraph, GraphQL-LD, Mauve's IPLD URL work
- (5) **Start with:** Sensorica, REA, Value Accounting (exchange, role, reputation system), MNDF
Add: Governance for DAOs, Quadratic Funding, Superfluid
- (6) **Start with:** ACL, WebID
Add: RBAC & ACL vs. Capabilities Model [ACL vs (zcap-ld, UCAN), Verifiable Credentials
- (7) **Start with:** P2P World-OS: A P2P Enterprise Platform writing
Add: didComm, libp2p, IPVM

Links for sourcing and embellishment:

[0] **Start With:**

EISPP – YouTube, User: Brent Shambaugh

https://www.youtube.com/playlist?list=PLbVZNfQhcZ3eG_nbgKbC1KKtMXlIjnEsd ,

P2P World-OS: A P2P Enterprise Platform

http://bshambaugh.org/Master_17.html

Add:

Clarify how the use of URI identifiers maps to IPLD graphs#155

<https://github.com/ipfs/notes/issues/155>

Information Management: A Proposal, Tim Berners-Lee, March 1989

<https://cds.cern.ch/record/1405411/files/ARCH-WWW-4-010.pdf>

Sir Tim Berners-Lee

<https://www.w3.org/People/Berners-Lee/>

PROJECT XANADU®

Founded 1960 * The Original Hypertext Project

<https://www.xanadu.net/>

Intelligent Databases Object Oriented, Deductive Hypermedia Technologies by Kamran Parsaye; Mark Chignell, Paperback; New York: John Wiley & Sons Inc (Computers), May 3, 1989, ISBN 10: 0471503452

Consider:

(23) Milojevic et al., Peer-to-peer Computing, HP Laboratories, Palto Alto, March 8, 2002,

<http://www.cs.ucsb.edu/~almeroth/classes/F02.276/papers/p2p.pdf>

other links

[1] **Start With:**

P2P World-OS: A P2P Enterprise Platform (software and device interoperability, Peer-to-Peer Computing, Feasibility of Merging Value Networks)

http://bshambaugh.org/Master_17.html

Introduction to ISO15926, FIATECH, October 2, 2011

<http://www.posccaesar.org/wiki/ISO15926Primer> (try archive)

(24) Pouwelse, J.A. et al., Tribler: A Social-based Peer-to-peer system

<http://iptps06.cs.ucsb.edu/papers/Pouw-Tribler06.pdf>

(25) Loser, Alexander et al., Semantic Social Overlay Networks, IEEE Journal on Selected Areas in Communication, Vol. 25, No. 1, January 2007,

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.72.7668&rep=rep1&type=pdf>

(try archive)

(99) Robert Tolksdorf et al., Selforganization in Distributed Semantic Repositories. FIS 2009, LNCS 6152, pp. 1-14, 2010, Springer-Verlag.

http://link.springer.com/chapter/10.1007%2F978-3-642-14956-6_1

(100) David Gelernter, Generative Communication in Linda, ACM Transactions on Programming Languages and Systems, Vol. 7, No. 1, January 1985, Pages 80-112,

<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.113.9679>

try instead: <https://dl.acm.org/doi/10.1145/2363.2433>

(101) Sebastian Koske, Swarm Approaches For Semantic Triple Clustering And Retrieval In Distributed RDF Spaces, Masters Thesis, Freie Universitat Berlin, Fachbereich Mathematik Und Informatik, February 2009,

<http://www.mi.fu-berlin.de/inf/publications/techreports/tr2009/B-09-04/TR-B-09-04.pdf?1346662692>

try instead: <https://www.mi.fu-berlin.de/inf/research/publications/techreports/tr2009/B-09-04/index.html>

(102) Ronaldo Menezes and Robert Tolksdorf, A New Approach to Scaleable Linda-Systems based on Swarms (Extended Version). Technical Report CS-2003-04, Florida Institute of

Technology, Department of Computer Sciences, 2003. <https://repository.lib.fit.edu/bitstream/handle/11141/111/cs-2003-04.pdf?sequence=1>

(103) Daniel Graff, Implementation and Evaluation of a SwarmLinda System, Technical Report TR-B-08-06, Freie Universitat Berlin, Department of Computer Science, Florida Institute of Technology, Department of Computer Science,

<http://www.inf.fu-berlin.de/inst/pubs/tr-b-08-06.abstract.html>

(66) Miel Vander Sande et al., R&Wbase: Git for triples, LDOW2013, May 14, 2013, Rio de Janeiro, Brazil,

<http://ceur-ws.org/Vol-996/papers/ldow2013-paper-01.pdf>

(63) W3C Provenance Incubator Group, Overview of Provenance on the Web, Semantic Web Activity, November 30, 2010, <http://www.w3.org/2005/Incubator/prov/wiki/images/0/02/Provenance-XG-Overview.pdf>

(64) Yolanda Gill, Simon Miles Ed., PROV Model Primer, <http://www.w3.org/TR/2013/NOTE-prov-primer-20130430/>

(65) Timothy Lebo et al. Ed., PROV-O: The PROV Ontology, <http://www.w3.org/TR/prov-o/>

Protocol for Web Description Resources (POWDER) Working Group, Phil Archer, 2009/11/24, <http://www.w3.org/2007/powder/>

Phil Archer et al., W3C Protocol for Web Description Resources (POWDER): Web Description Resources (WDR) Vocabulary, W3C Working Draft 25 September 2007, <http://www.w3.org/TR/powder-voc/>

Add:

Using Swarm Intelligence in Linda systems, Robert Tolksdorf and Ronaldo Menezes
<http://www.ag-nbi.de/research/swarmlinda/slesaw.pdf>

On the Implementation of SwarmLinda?

A Linda System Based on Swarm Intelligence, Ahmed Charles¹, Ronaldo Menezes and Robert Tolksdorf
<https://cs.fit.edu/media/TechnicalReports/cs-2004-03.pdf>

Ceramic Network – Let your data flow

<https://ceramic.network/>, <https://developers.ceramic.network/learn/advanced/overview/>

How IPFS works - Content Routing, Accelerated DHT

<https://hackmd.io/@UV0H7uWJTQ6Wm8jsq8w8mQ/HkLA2ZtbY>

InterPlanetary Name System (IPNS)

<https://docs.ipfs.tech/concepts/ipns/#mutability-in-ipfs>

A Terse, Quick IPLD Primer for the Engineer

<https://ipld.io/docs/intro/primer/>

Tutorials | Protoschool <https://proto.school/tutorials>

IPLD - The data model of the content-addressable web <https://ipld.io/> >>>

GPN19 - Foundations for Decentralization: Data with IPLD, media.ccc.de

<https://www.youtube.com/watch?v=totVQXYS1N8>

Juan Benet: Enter the Merkle Forest

https://www.youtube.com/watch?v=Bqs_LzBjQyk

ResNetLab: Elective Course Module - InterPlanetary Linked Data (IPLD)

https://www.youtube.com/watch?v=Sgf6j_mCdjI

Distributed Hash Tables (DHTs) | IPFS Docs

<https://docs.ipfs.tech/concepts/dht/#kademlia>

Kademlia (DHT) – Network Implementation, Nodes – BitcoinWiki

<https://en.bitcoinwiki.org/wiki/Kademlia>

Petar Maymounkov and David Mazières, Kademlia: A Peer-to-Peer Information System Based on the XOR Metric

https://www.ic.unicamp.br/~bit/ensino/mo809_1s13/papers/P2P/Kademlia-%20A%20Peer-to-Peer%20Information%20System%20Based%20on%20the%20XOR%20Metric%20.pdf

A fully decentralized triplestore managed

via the Ethereum blockchain, Damien GRAUX a and Sina MAHMOODI b
a Inria, Université Côte d’Azur, CNRS, I3S, France - damien.graux@inria.fr
b Ethereum Foundation - sina.mahmoodi@ethereum.org

https://dgraux.github.io/publications/RDF_Ethereum_SEMANTiCS_2021.pdf

Incorporating Blockchain into RDF Store at the Lightweight Edge Devices, Anh Le-Tuan, Darshan Hingu, Manfred Hauswirth & Danh Le-Phuoc, First online: Nov 4, 2019

https://link.springer.com/chapter/10.1007/978-3-030-33220-4_27

Pronto - galacteek: P2P browser [uses RDF and IPFS]

<https://galacteek.gitlab.io/docs/pronto/>

Searching for IPFS and RDF on IPFS Discord:

“IPFS Bot
BOT

—
10/15/2022 4:49 PM

@reload posted in c: v0.5.8 update>

galacteek (download) was updated to v0.5.8, see the release changelog below.

All the discovered content is now stored as RDF and thanks to the SparQL models it’s now much easier to search for content from the UI.

[0.5.8] - 2022-09-24

Added

browser: Monkeypatch fetch() to support loading IPFS objects natively without any JS requirements
Interceptor: add http://domain.eth/ to ens://domain.eth re...

>

Sonia

BOT

—

07/28/2022 3:17 AM

Thanks Mauve Signweaver I've asked the team to share additional notes on these questions. Tagged you on the Github thread.

mauve

I think it'd be nice if they specified that they'd be working with IPLD Schemas or if they were working with something like RDF for the data that will be represented.

They're talking about a "protocol" but it's not clear if it's a data transfer protocol of some sort or if it's a specification for how to talk to a database of stuff in their data format.

Not entirely clear which chain they're planning to use. e.g. is this an eth thing or is this a filecoin thing. This is relevant for "web3 users can talk directly via our sdk". Also not clear whether this is going to be a paid service or just open source software folks can self-host.

07/25/2022 11:42 AM

mauve

BOT

—

07/25/2022 11:42 AM

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Not entirely clear which chain they're planning to use. e.g. is this an eth thing or is this a filecoin thing. This is relevant for "web3 users can talk directly via our sdk". Also not clear whether this is going to be a paid service or just open source software folks can self-host.

Sonia

Mauve Signweaver did you have any initial thoughts from your review?

07/25/2022 11:36 AM

andrewzhurov

—

05/27/2022 4:43 AM

if you want to store json data, do it as dag-json, use CIDs, and you have properly content addressed linked data

I'm thinking on having a directy acyclic labeled graph as data model, as content-addressible RDF for SPARQL queries (yup, it can be serialized as json).

For that we'd need to have CIDs of RDF subjects (read "of a json map"), but these maps need not be published to ipfs right away (for offline-first and snappier behaviour), hence two fases: dagNode->CID and block put

github.com/ipld/js-dag-json looks interesting, it seems to encode JSON as CBOR, which perhaps even better than having it in dag-json due to performance benefit. Thanks for mentioning it. 😊

andrewzhurov

—

05/27/2022 3:46 AM

Atm I'm wondering how to get a content-based address for an RDF subject.
I.e., how to get a CID of a json map as thought it was ipfs.dag.put
andrewzhurov

—
05/27/2022 3:44 AM

I was thinking how we can have a powerful data model hosted on top of IPFS,
it seems to me that having content-addressable RDF is a good choice,
as it allows for powerful SPARQL queries and can be serialized in JSON (as JSON-LD) to be hosted on
top of IPFS DAG.”

[2] **Start With:**

P2P World-OS: A P2P Enterprise Platform (software and device interoperability, Peer-to-Peer Computing, Feasibility of Merging Value Networks)
http://bshambaugh.org/Master_17.html (and links from 1)

Add:

Layered Schema Architecture (Cloud Privacy Labs):
<https://github.com/cloudprivacylabs/lsa>

<https://github.com/cloudprivacylabs>
(samples from organization like <https://github.com/cloudprivacylabs/lpg>)

OCA Technical Specification
<https://oca.colossi.network/specification/>

JSON Schema, Schema.org, JSON-LD: What's the Difference?
<https://dashjoin.medium.com/json-schema-schema-org-json-ld-whats-the-difference-e30d7315686a>

Explorations of Category Theory for Self Sovereign Identity
<https://github.com/bshambaugh/Explorations-of-Category-Theory-for-Self-Sovereign-Identity>

Project Cambria Overview with Geoffrey Litt and Peter van Hardenberg – Fission
<https://fission.codes/blog/project-cambria-overview/>

CategoricalData/hydra: Transform your transformations
<https://github.com/CategoricalData/hydra>
[see design document (google doc linked to)]

Typed Lambda
https://www.dcc.fc.up.pt/~sandra/Home/Material_files/TypedLambda.pdf

Typed Lambda Calculus
https://en.wikipedia.org/wiki/Typed_lambda_calculus

E-mail Conversations with Burak Sedar of Cloud Privacy Labs about Structural vs Semantic Interoperability

A Scheme Primer, Spritely Institute

<https://spritely.institute/static/papers/scheme-primer.html>

Unlock Lisp / Scheme's magic: beginner to Scheme-in-Scheme in one hour, YouTube, Christine Lemmer-Webber, Aug 7, 2022

<https://www.youtube.com/watch?v=DDROSL-gGOo>

Categorical Databases for Functional Programmers, Ryan W.

<https://www.meetup.com/category-theory/events/gvjlmssyccmbkb/>

How to Build a Dragon: Part 1, Josh S.

<https://www.meetup.com/category-theory/events/zpvmgsyccfbhc/>

How to Build a Dragon: Part 2! Models, mappings, and graphs., Josh S. and Ryan W.

<https://www.meetup.com/category-theory/events/277185694/>

How to Build a Dragon: Part 3! Toward TinkerPop 4, Josh S. et al.

<https://www.meetup.com/category-theory/events/277331504/>

How to Build a Dragon: Part 4! Brass tacks, Josh S. et al.

<https://www.meetup.com/category-theory/events/277549986/>

How to Build a Dragon: Part 5! Nuts and bolts, Josh S. et al.

<https://www.meetup.com/category-theory/events/277673652/>

[3]

Start With:

(72) Robert Isele, Christian Bizer, Active Learning of Expressive Linkage Rules using Genetic Programming, Journal of Web Semantics, March 10, 2013,

<http://dws.informatik.uni-mannheim.de/fileadmin/lehrstuehle/ki/pub/IseleBizer-ActiveLearningOfExpressiveLinkageRules-JWS2013.pdf>

(try this link) <https://arxiv.org/pdf/1208.0291.pdf>

seeAlso: <http://silkframework.org/>

(106) Kathrin Dentler et al., Semantic Web Reasoning by Swarm Intelligence, Department of Artificial Intelligence, Vrije Universiteit Amsterdam, The Netherlands,

<http://www.few.vu.nl/~kdr250/publications/Reasoning-by-Swarm-Intelligence.pdf>

(try this link) <https://web.archive.org/web/20140207185135/http://www.few.vu.nl/~kdr250/publications/Reasoning-by-Swarm-Intelligence.pdf>

(69) Teemu Tommila, Juhani Hirvonen, Antti Pakonen, Fuzzy Ontologies for retrieval of industrial knowledge £45 a case study, VTT Working Papers 153, 2010

<http://www.vtt.fi/inf/pdf/workingpapers/2010/W153.pdf>

(70) Asma Djellal, Mounir Hermam, Zizette Boufaïda, An Extension of the Ontology Web Language with Viewpoint and Fuzzy Notions

<http://umc.edu.dz/vf/images/misc/session3A/24-3A-paper3-Asma%20djellal.pdf>

(try this link)

<https://web.archive.org/web/20140225042108/http://umc.edu.dz/vf/images/misc/session3A/24-3A-paper3-Asma%20djellal.pdf>

(71) T£224;nh L£233 BACH, Construction d'un Web s£233;mantique multi-points de vue, Th£232 doctorat en sciences, £200le des Mines de Paris, Sophia Antipolis, pp. 42. le 23 octobre 2006, http://pastel.archives-ouvertes.fr/docs/00/50/02/93/PDF/These_BACH-Thanh-Le.pdf

(73) Samir Vandic et al., A Semantic Clustering-Based Approach for Searching and Browsing Tag Spaces, SAC'11, March 20-25, 2011, <http://people.few.eur.nl/fhogenboom/papers/sac11-stcs.pdf>
(try for abstract) <https://pure.eur.nl/en/publications/a-semantic-clustering-based-approach-for-searching-and-browsing-t>

(74) Lucia Specia and Enrico Motta, Integrating Folksonomies with the Semantic Web, Knowledge Media Institute £45 The Open University,
http://people.kmi.open.ac.uk/motta/papers/SpeciaMotta_ESWC-2007_Final.pdf
(also reference e-mails with author)

ch_1_2_NLP (NLP Edit) – EISPP, bshambaugh, March 17, 2015

[https://www.youtube.com/watch?](https://www.youtube.com/watch?v=tq5r3g72IAg&list=PLbVZNfQhcZ3eG_nbGKbC1KKtMXlIjnEsd&index=9)

[v=tq5r3g72IAg&list=PLbVZNfQhcZ3eG_nbGKbC1KKtMXlIjnEsd&index=9](https://www.youtube.com/watch?v=tq5r3g72IAg&list=PLbVZNfQhcZ3eG_nbGKbC1KKtMXlIjnEsd&index=9)

Add:

Same Links as [1]

[4]

Start With:

(139) PowerAqua, Knowledge Media Institute, The Open University,
<http://technologies.kmi.open.ac.uk/poweraqua>

(140) Lopez, Vanessa Fernandez, Miriam Motta, Enrico and Stieler Nico (2011). PowerAqua: supporting users in querying and exploring the semantic web. Semantic Web , 3(3) pp. 249-265.
<http://dx.doi.org/doi:10.3233/SW-2011-0030>
(unavailable: try <https://content.iospress.com/articles/semantic-web/sw030>)

(141) Watson - Overview, Knowledge Media Institute, The Open University,
<http://watson.kmi.open.ac.uk/Overview.html>

seeAlso:

<https://github.com/mdaquin/Watson-Service-API>

<https://github.com/mdaquin/Watson-Indexer->

ch1_1nlq (Natural Language Query) - EISPP, bshambaugh, March 17, 2015,

[https://www.youtube.com/watch?](https://www.youtube.com/watch?v=OOySteqxitA&list=PLbVZNfQhcZ3eG_nbGKbC1KKtMXlIjnEsd&index=2)

[v=OOySteqxitA&list=PLbVZNfQhcZ3eG_nbGKbC1KKtMXlIjnEsd&index=2](https://www.youtube.com/watch?v=OOySteqxitA&list=PLbVZNfQhcZ3eG_nbGKbC1KKtMXlIjnEsd&index=2)

(inspired by PowerAqua)

Linked Data Platform 1.0, W3C Last Call Working Draft, 16 September 2014, Steve Speicher et al., ed.,
<http://www.w3.org/TR/ldp/>

Andrei Vlad Sambra, Data Ownership and Interoperability for a Decentralized Social Web, Dissertation, TELECOM SUDPARIS et L'UNIVERSITE PIERRE ET MARIE CURIE,
November 19, 2013, http://myprofile-project.org/thesis/manuscript_en.pdf
(try this link) https://theses.hal.science/file/index/docid/917965/filename/SAMBRA_Andrei-2.pdf

bshambaugh isdc2016 demo w voice, Brent Shambaugh, May 23rd, 2016
<https://www.youtube.com/watch?v=JLqvnFRiP24>

led to discovery of:

[
Apache Stanbol – Content Enhancement (parses text for items from dbpedia, etc.)
<https://stanbol.apache.org/>

Linked Media Framework - (Includes Apache Marmotta – Linked Data Platform Implementation and Apache Stanbol)
<https://web.archive.org/web/20160318002117/https://blog.iks-project.eu/linked-media-framework-2-2-with-apache-stanbol-integration/>
<https://web.archive.org/web/20150123063239/https://code.google.com/p/lmf/>
]

[visualization links from bidirectional link graph]

(118) Enrico Franconi et al., An Intelligent Query Interface Based on Ontology Navigation, Workshop on Visual Interfaces to the Social and Semantic Web (VISSW2010), Hong Kong, China.
<http://ceur-ws.org/Vol-565/paper3.pdf>

ch1_2_OB (Ontology Browsing) – EISPP, bshambaugh, March 17, 2015
https://www.youtube.com/watch?v=XbTeyqJzFvs&list=PLbVZNfQhcZ3eG_nbgKbC1KKtMXIIjnEsd&index=3

ch_1_2_ldbrowser (linked data browser like Fenfire) – EISPP, bshambaugh, March 18, 2015
https://www.youtube.com/watch?v=e1VAYiR6iC4&list=PLbVZNfQhcZ3eG_nbgKbC1KKtMXIIjnEsd&index=18

Fenfire,
<http://fenfire.org/>
<https://github.com/fenfire-org/fenfire>

Archived Code:
<https://github.com/bshambaugh/fenfire-0.2>
<https://github.com/bshambaugh/fenfire-0.1>

_1_2_Facet (Faceted Browsing like S.I.M.I.L.E Longwell) - EISPP, March 18, 2015,
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Add:

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DID-JWT

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LibP2P

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IPVM-WG

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WebAssembly – Mozilla Development Network

<https://developer.mozilla.org/en-US/docs/WebAssembly>

In previous years, blog posts were created before the Enterprise Information System for Peer Production wire frame animations were created. They emphasized the prediction that mappings between two graphs were important to know how two actors, previously not collaborating, could collaborate. The author's exposure to Dr. Ryan Wisnesky led to a potential solution to the aching complaint that everyone describes things differently and people don't like creating graphs. Graph creation could possibly be aided by a computer, but what about different descriptions? Enter Category Theory created as an abstract approach for Homotopy Theory from 1945 created by Saunders Mac Lane and Samuel Eilenberg [1,2]. It was applied to model transformations for computing by Dr. Ryan Wisnesky and Dr. Spivak and is called Applied Category Theory.

Dr. Spivak goes into composable data with Applied Category Theory for SQL Databases in a talk to Kensho AI Labs. Dr. Wisnesky who worked to implement the concept in software as FQL and CQL also extended Applied Category Theory to Algebraic Data Types with Dragon and in a more general sense with algebraic property graphs to the lambda calculus with Hydra as "an open source toolkit for data integration" [4]. The Dragon and Hydra work was done with the help of Dr. Josh Shinavier who worked with Dr. Marko Rodriguez on the Apache TinkerPop project which included a functional graph traversal language called Gremlin [5]. Work on Gremlin and Dragon also seems to parallel some of the work with the layered schema architecture and layered property graphs by Cloud Privacy Labs.

In the following pages, select blog posts are reproduced and the intention is to reconsider them in light of discoveries from the Applied Category Theory and Cloud Privacy Labs communities.

[1] https://en.wikipedia.org/wiki/Saunders_Mac_Lane

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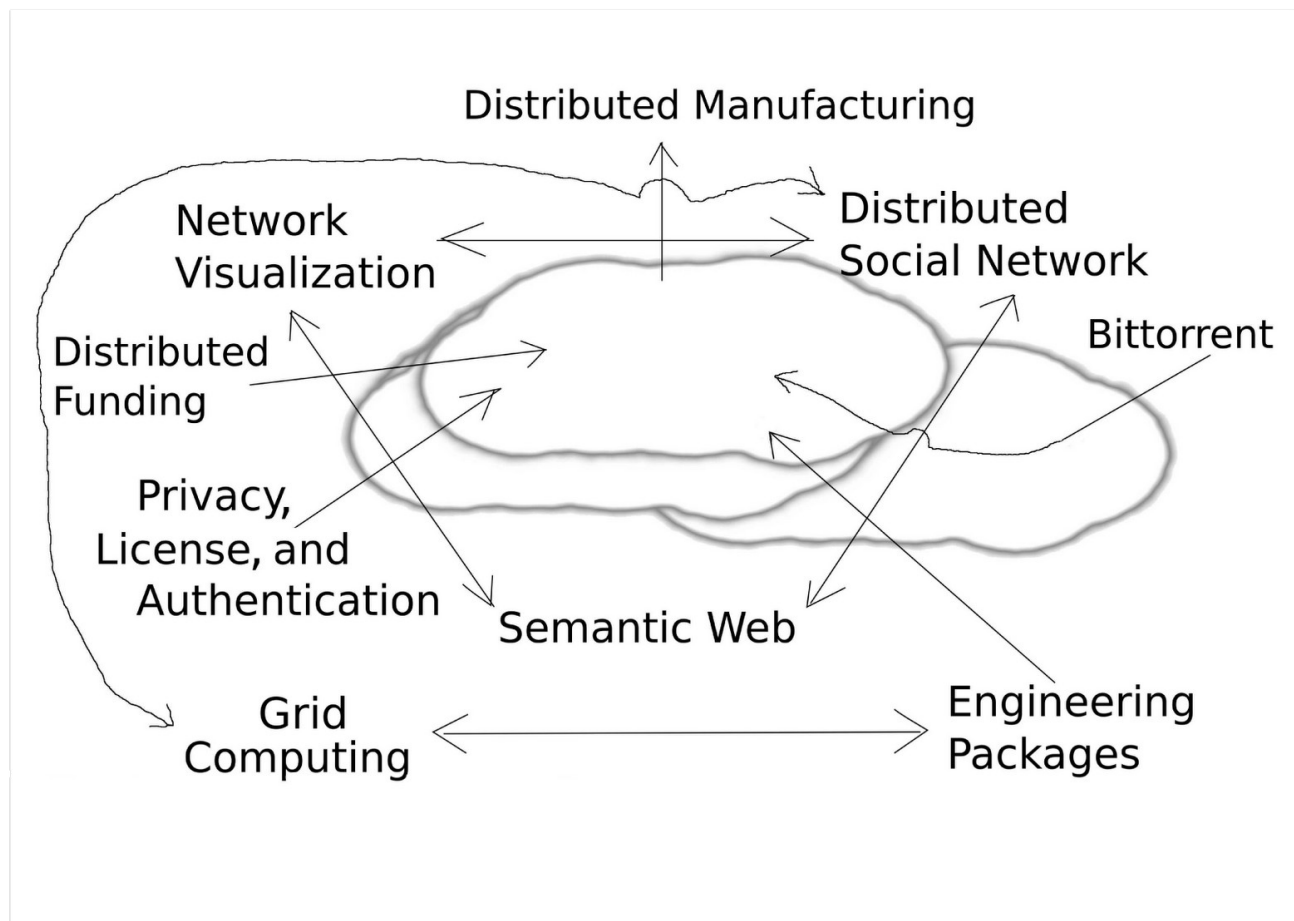
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<http://adistributedeconomy.blogspot.com/2012/03/overview.html> Friday, March 16, 2012



In this [distributed economy](#), distributed social networks such as [Diaspora](#), [Friendika](#), and [GNU Social](#) work with the [Semantic Web](#), and are visualized with Network Visualization by means such as [topic maps](#) and [RDF](#) graphs. Files are shared amongst the network through [bittorrent](#), perhaps in conjunction with complete files stored on and shared from certain servers. The network would allow for privacy, authentication, and display of license terms. Users on the distributed social network would have the ability to use [grid computing](#) to form virtual supercomputers and run engineering packages on them.

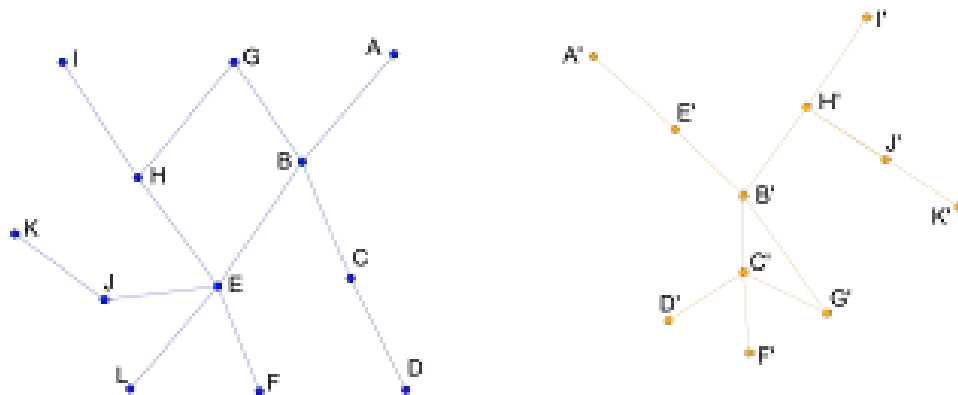
Some projects would be realized and/or tested in the physical world by distributed manufacturing. Funding would be available from and to various nodes in the network.

<http://adistributedeconomy.blogspot.com/2012/03/knowledge-discovery-with-semantic-web.html>
Sunday, March 18, 2012

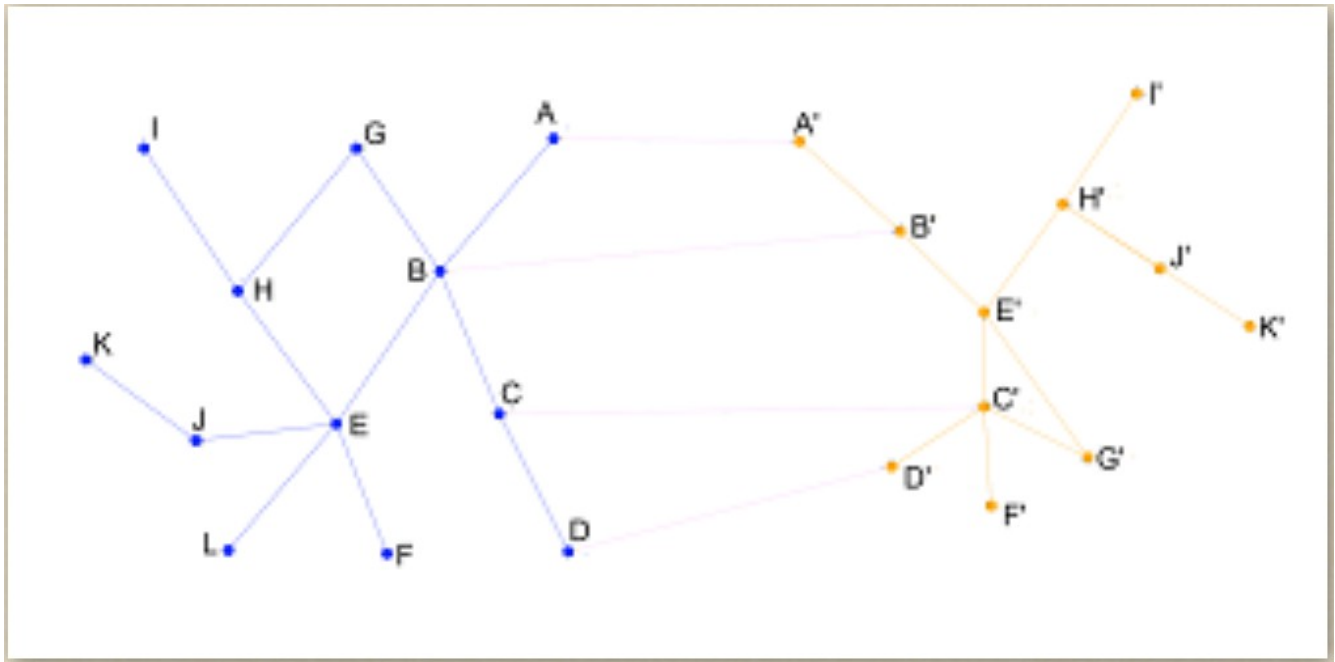
Knowledge Discovery with the Semantic Web

Awareness seems like an essential part of a distributed economy. Computers seem to be able to help, at least with the data side.

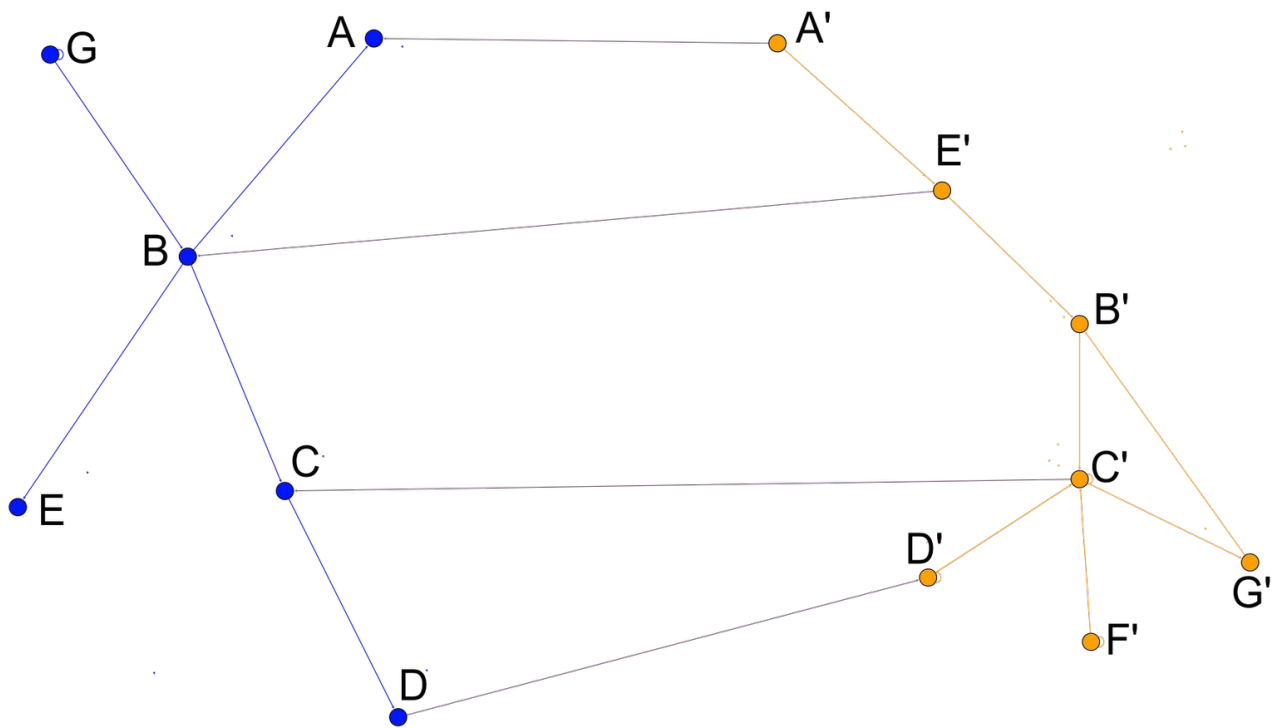
Consider two RDF graphs:



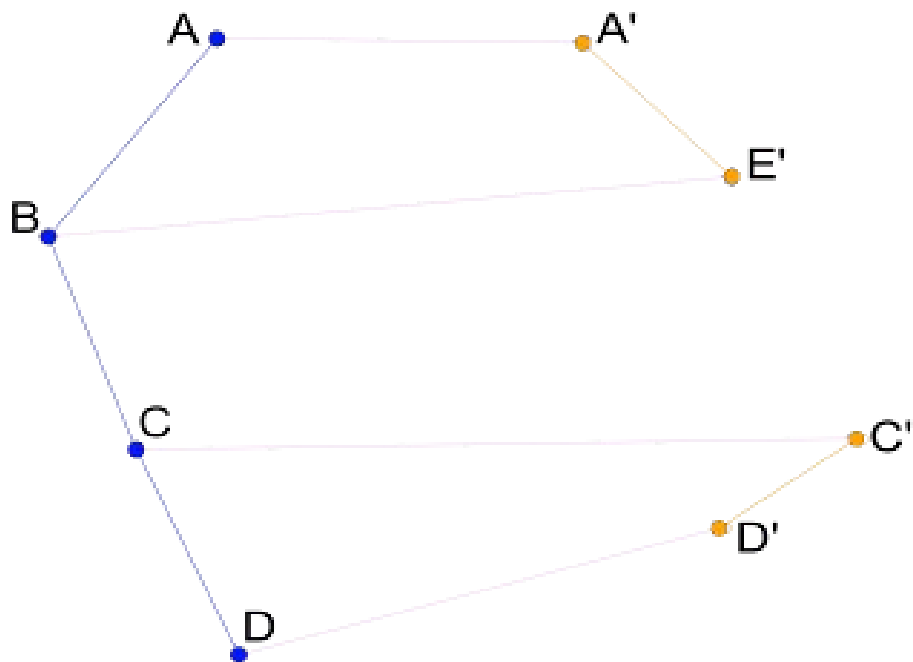
Now link these two graphs together, with A linking to A', B linking to B', C linking to C', and D linking to D'. That is, let them be the same URI.



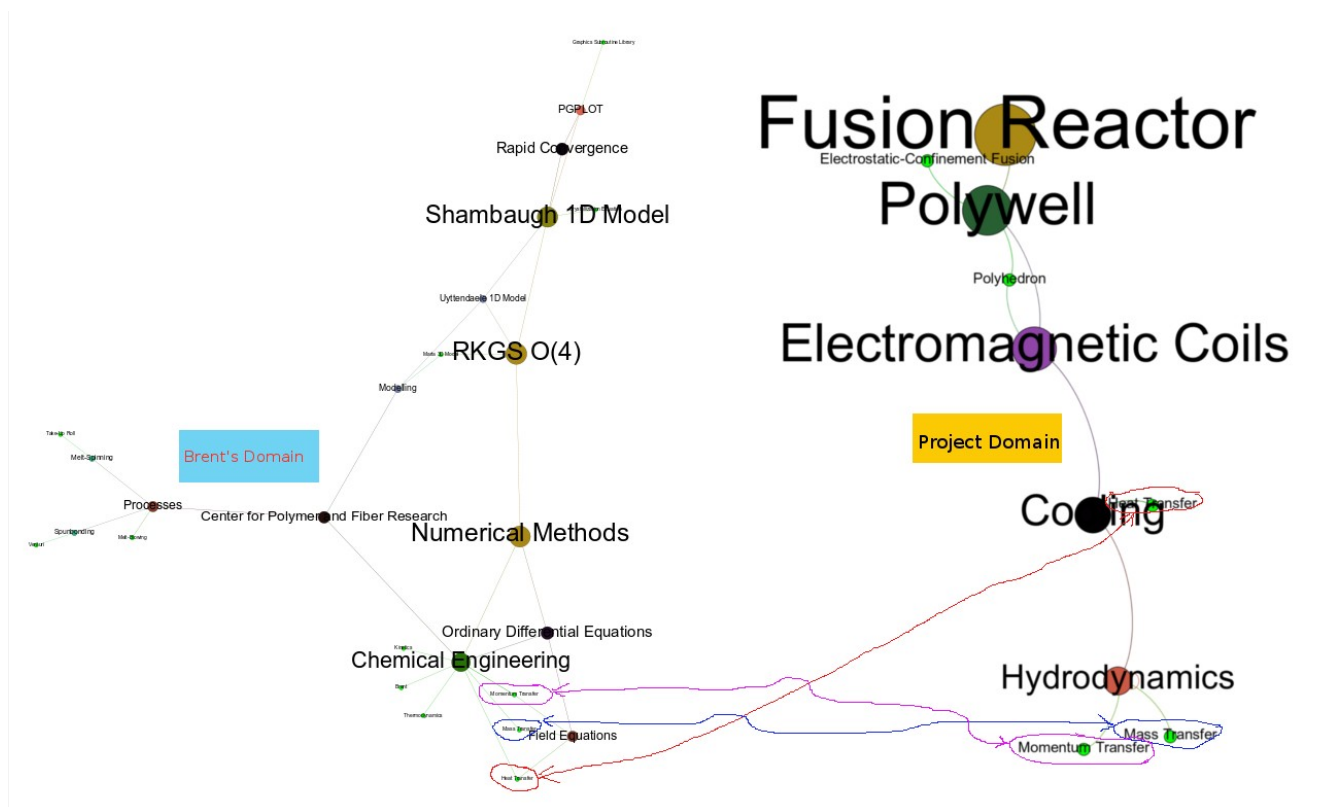
Now consider the case where all the links are preserved, but I remove all parts of the connected RDF graphs except for those that have one degree of separation from the connected nodes. From this I can see relations between the graphs to one degree of separation. This may make more sense later with an application.



In addition, if I only want the parts of the RDF graphs that are connected to each other, I can also do that.



Now consider the case where I let one RDF graph be some reflection of what connections I see between what I know (Brent's Domain), and another graph be the connections between things relating to a project (Project Domain).



Does this seem useful? Now if I draw connections between URIs that are common to both Brent's Domain and the Project Domain I can see the things I know that apply to the project. Moreover, if I allow a few degrees of separation I can relate what I know to any URI describing the project. In this way, I may be able to come up with a plan of what I need to learn to understand a particular part of the project.

I could take this idea further. What if I replaced the Project Domain graph with an RDF graph describing another person?

This really is nothing new. Liyang Yu describes A Smart Data Integration Agent in the first chapter of his book, A Developer's Guide to the Semantic Web. His description mirrors the presented idea in form. Moreover, Liyang Yu describes the linking of URIs as distributed information aggregation.

There is one issue that must be considered of course. The URIs we choose must be describing the same thing. Perhaps something like regular expressions are in order would help people do this. Could the paper, "[Processing SPARQL queries with regular expressions in RDF databases](#)" by Lee et. al be useful?