Project 418 Report

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~261 days ~430 commits ~1.65 commits / day

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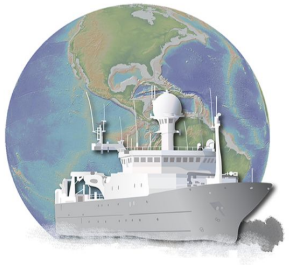

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Project 418 The Basics

- Publish via web architecture
- Schema.org and community vocabularies to provide context
- Consume (subscribe) published data through web architecture
- Indexes & services

A Full stack prototype to explore the potential

Use the Web

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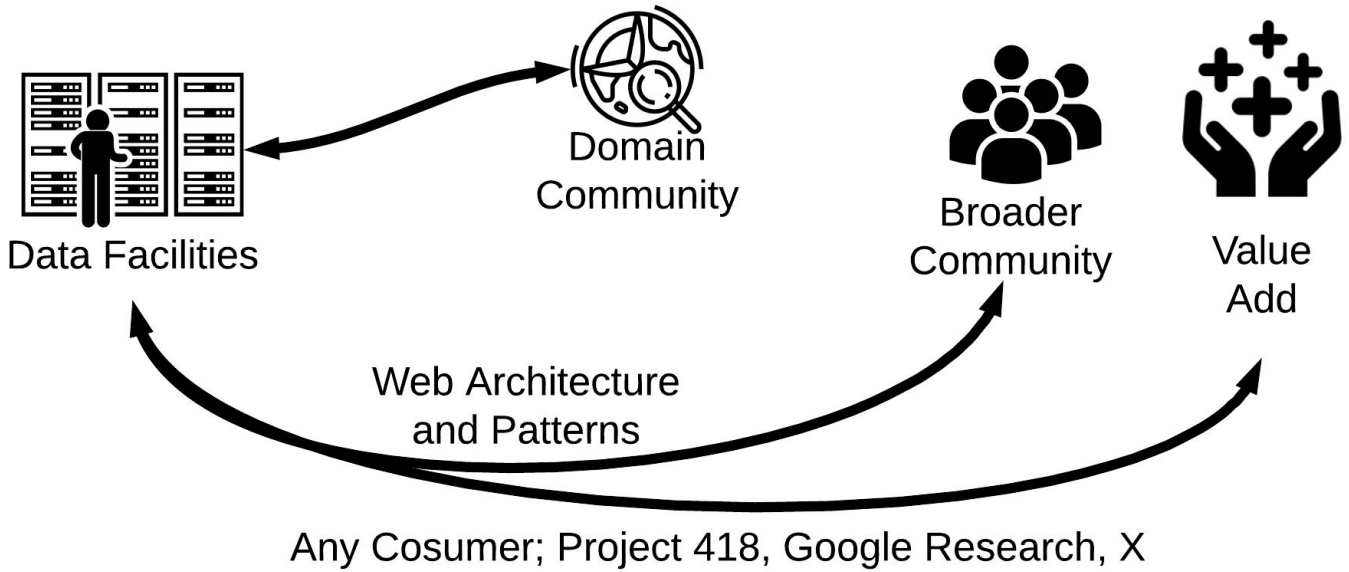
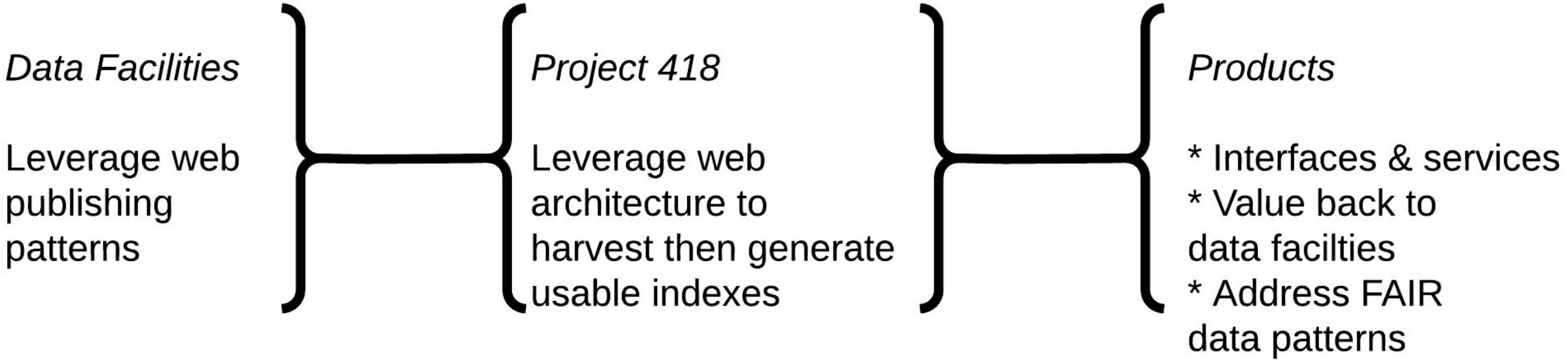
High Level View

Reach broader community & feed value back to facility

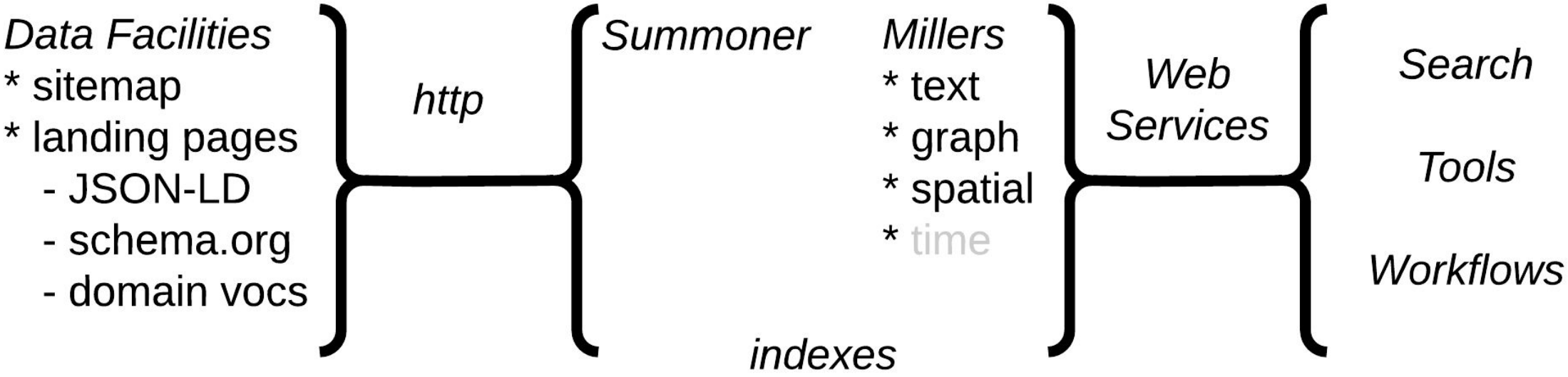


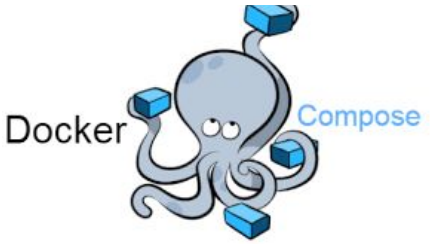
Players with their actions

Players again, with actions



Players… with a bit more detail….





P418: Implementation (vs Philosophy)

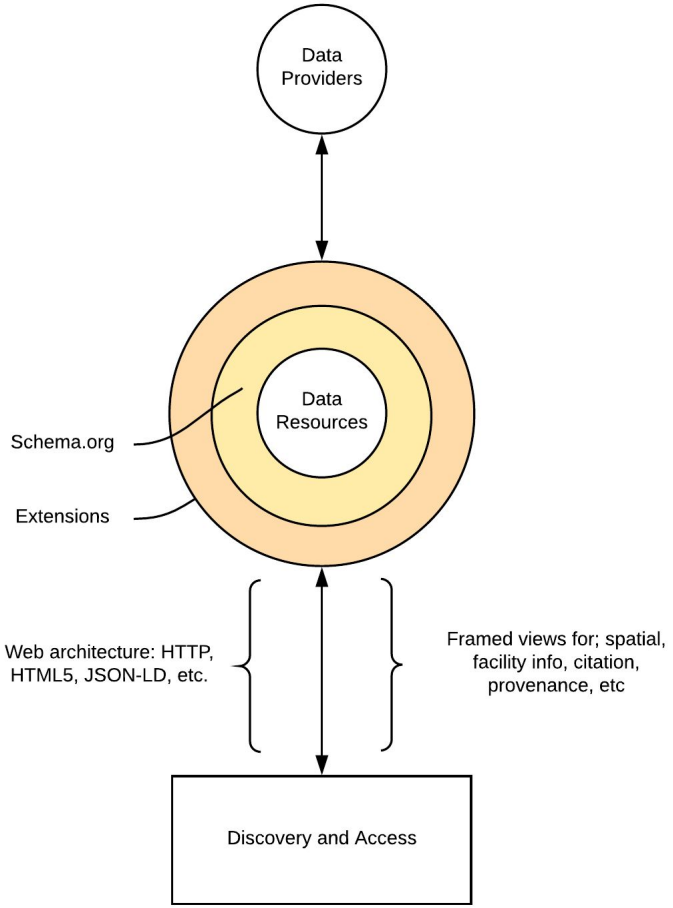
SCOPE: Working with a set of NSF data facilities to *demonstrate publishing approaches* for schema.org/Dataset and extensions (special thanks to them!)

Use schema.org as a base vocabulary with extensions to connect metadata publishing workflows to community vocabularies.

SCOPE: *Implement harvesting and interface packages* to further explore the full pipeline and provide feedback.

https://geodex.org (an implementation of Project 418)

- API listing
- UI Gallery
- Links to docs, vocs and code



Data In Context

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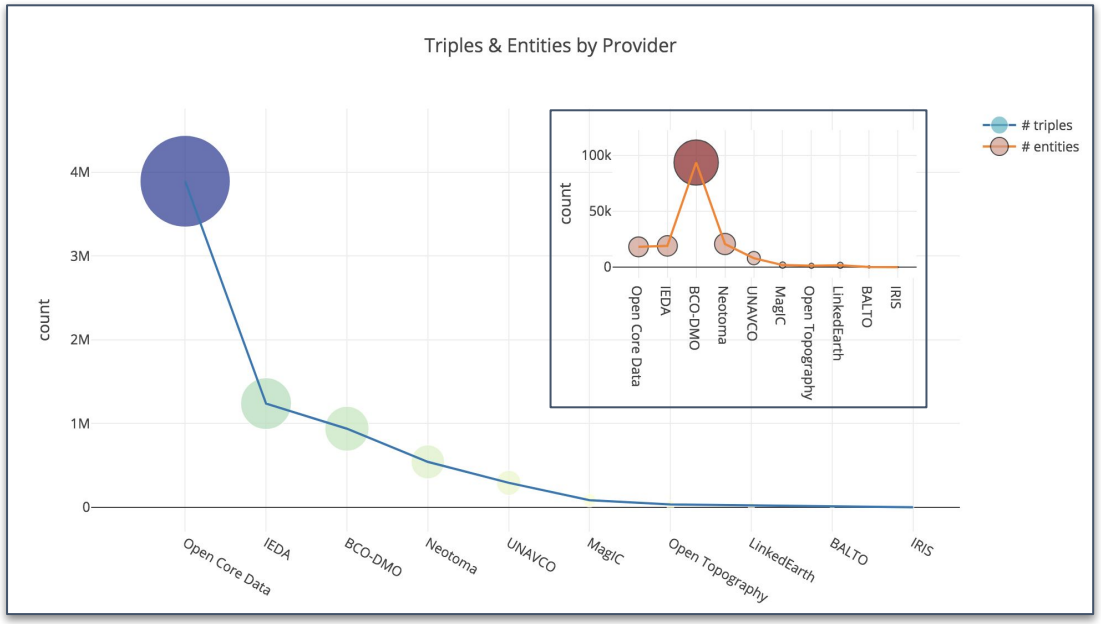
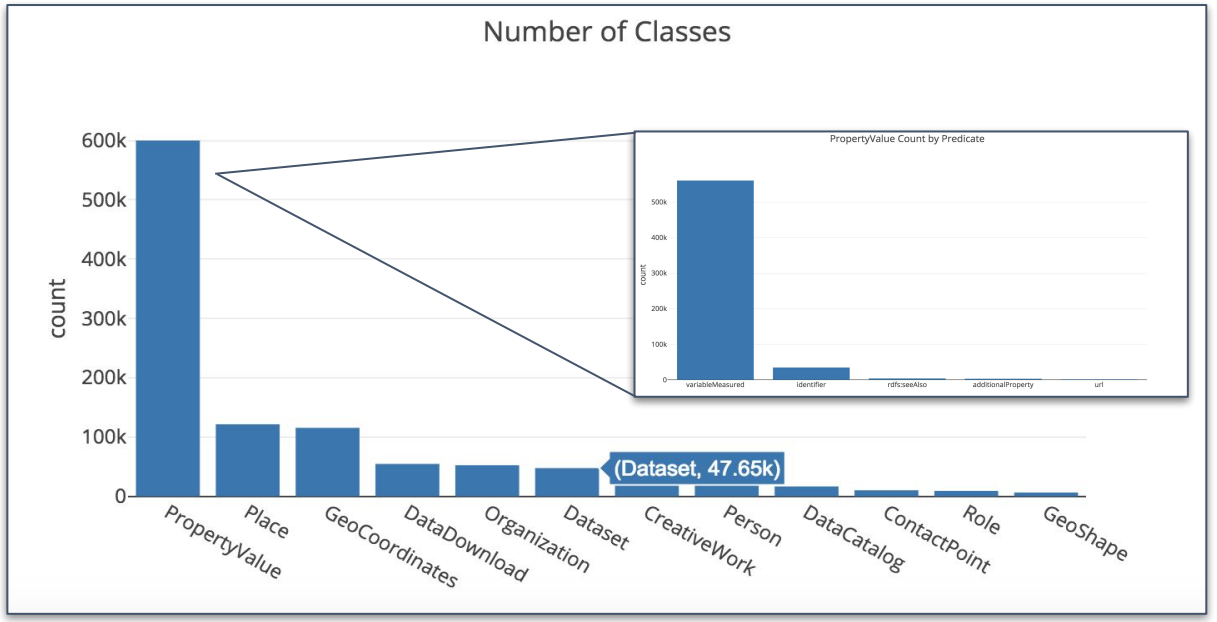
Summary Statistics

1,113,210 entities
7,087,380 triples





47,650 Dataset
54,665 DataDownload
599,960 PropertyValue
~ 35k Identifiers
~560k Dataset Variables

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Vocabulary Use - Google Recommended

Dataset Properties	Google Requires / Recommends	Provider Usage	Dataset Coverage	
			Implemented	*Overall*
@context	**Required**. Set `@context` to "http://schema.org/"	**80%**	omitted ending slash: 'http://schema.org'	
@type	**Required**. Set `@type` to "Dataset"	**100%**	**47,650 datasets**	*n/a*
name	**Required**. A descriptive name	**80%**	99.9%	73%
description	**Required**. A short summary	**70%**	97%	69%
url	*Recommended*.	**70%**	100%	62%
citation	*Recommended.*	**60%**	100%	36%
keywords	*Recommended.*	**70%**	99.9%	66%
spatialCoverage	*Recommended.*	**80%**	92%	91%
temporalCoverage	*Recommended.*	**10%**	15%	<1%
variableMeasured	*Recommended.*	**30%**	83%	40%
version	*Recommended.*	**40%**	95%	25%
sameAs	*Recommended.* Same data, different URL.	**10%**	100%	<1%

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https://developers.google.com/search/docs/data-types/dataset

80 - 100%	50 - 79%	0 - 49%

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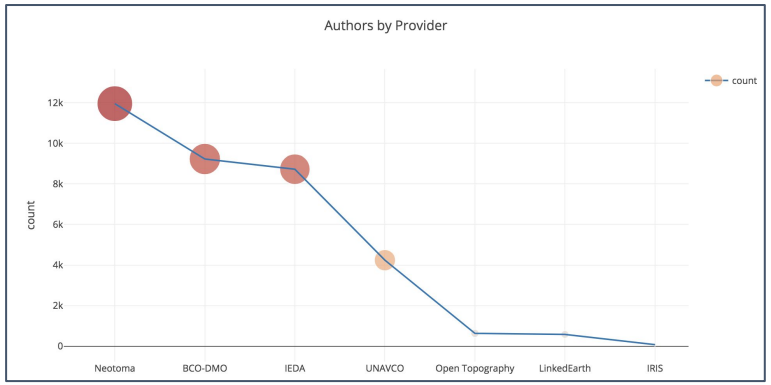
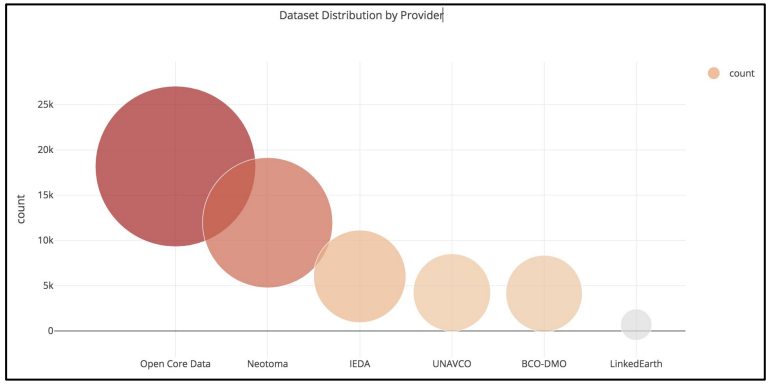
Vocabulary Use - P418 Recommended

Dataset Properties	Provider Usage		Dataset Coverage	
			Implemented	*Overall*
identifier	**30%**	10,556 datasets	100%	22%
author/creator/contributor	**80%**	28,765 datasets	98%	69%
funder *(not awards)*	**30%**	4,069 datasets	78%	9%
distribution	**60%**	45,221 datasets	100%	95%
license	**70%**	42,523 datasets	98%	89%
hasPart *ex: linking PhysicalSamples to Datasets*	**10%**	122 datasets	2%	<1%





"*What about Data APIs?*"

- **3 providers**: Search endpoints, SWAGGER, SPARQL, VoID, OGC CSW

80 - 100%	50 - 79%	0 - 49%

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github: [earthcubearchitecture-project418/p418Vocabulary]

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Vocabulary Use - External Vocabularies

- Some providers used external vocabularies
  - EarthCube Building Blocks - EarthCollab & GeoLink
  - Datacite Ontology - DOIs and ORCID
  - ViVO Ontology - Datasets

Opportunity to improve search precision

- Geoscience Standard Names,
- SWEET Ontologies,
- GCMD Keywords,
- etc.

github: earthcubearchitecture-project418/assay-data

Principles Over Project

Philosophy over Implementation

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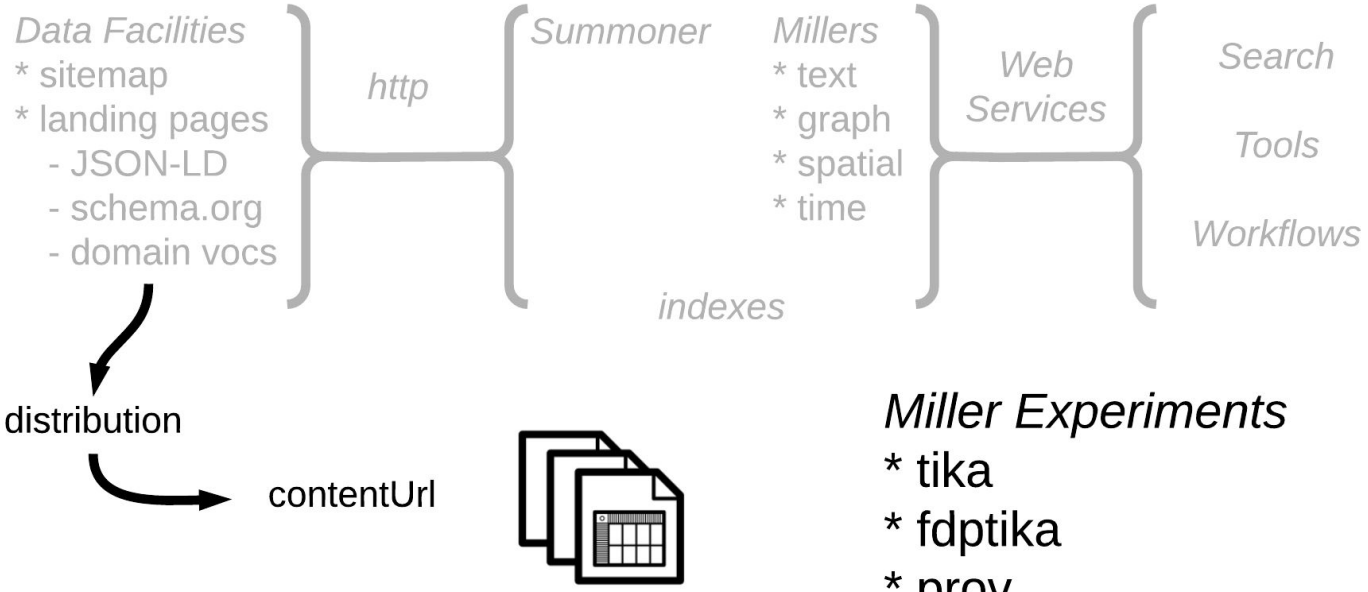
Project 418: It does more than just indexes!

Once you have a simple architecture that gateways machine readable resources

There is a LOT you can do!

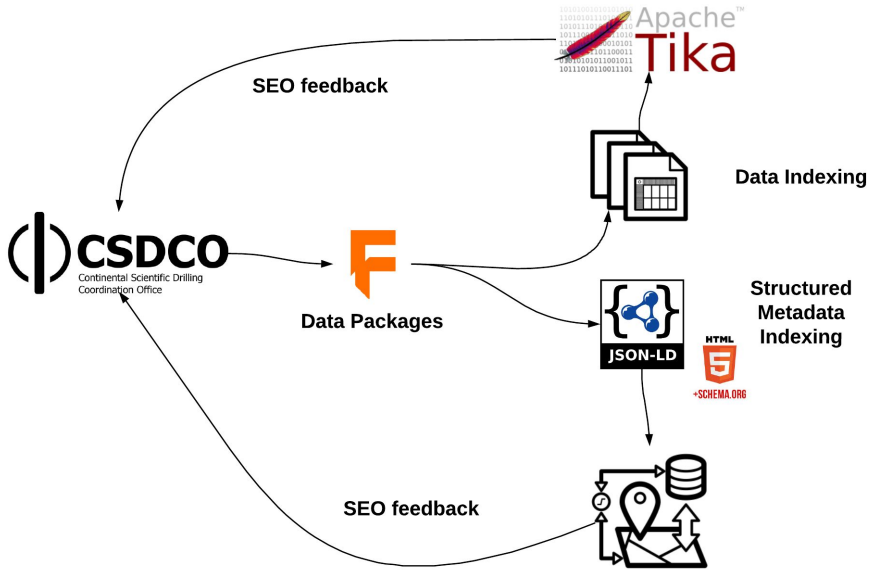
Pervasive Data Mobility

Leverage the structured metadata to identify and act on distribution links



Miller Experiments
* tika
* fdptika
* prov
* logs (from services, not a miller)

- Shows the need for PIDs
- Prov to address “implicate triple” issue



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Aggregators Dilemma

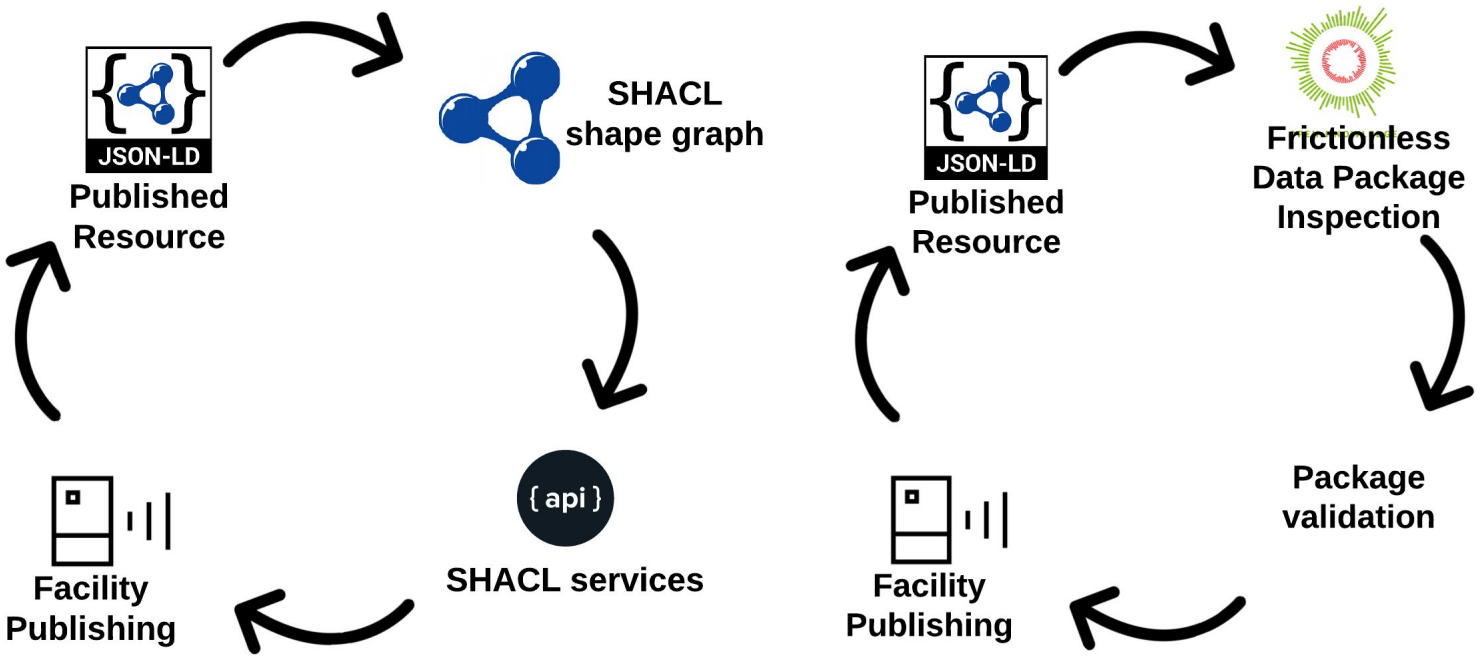
- Aggregate to server a larger community than each individual provider
- Enage a broader community while *not disintermediating existing community* relationships of these authoritative providers
- Aggregation should be a Value Add Service (VAS). The “cost” of being aggregated must be less that benefits
  - drive traffic (likely not enough)
  - provide assessment (alignment to community expectations)
  - provide a means to form and/or engage new communities
- Explicate vs Implicate triples (drove us to prov)

PROV: A quick note

- JSON-LD encoding can easily lead to a need for implicate triples
  - We are trying to avoid adding any data
- Prov allows us to connect resources to the providers via organizational information (avoid generating implicate triples)
- A working point with the facilities to potentially remove this?
- The PROV graph does offer some information back to the facilities and connect log info back
- Potential point of interaction with the ESIP Lab's PROV work

Value Add Services examples (Data SEO)

"Millers" for shape testing and package inspection (more than just indexes)



- Shape graphs can be defined by a community
- Engages the science, publishing and data facility communities
- Addresses a process issue exposed in P418

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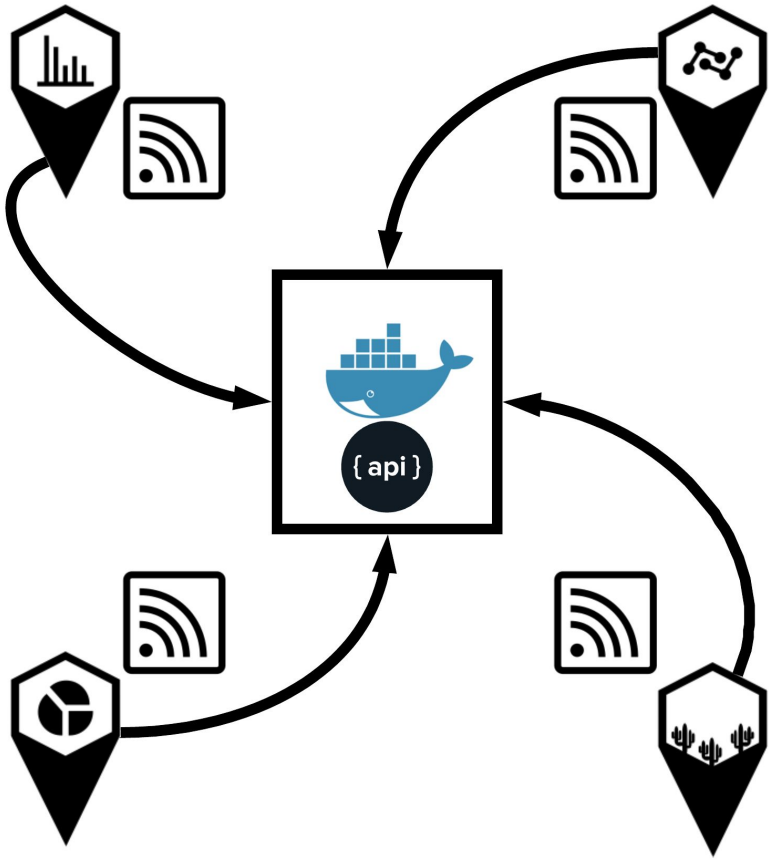
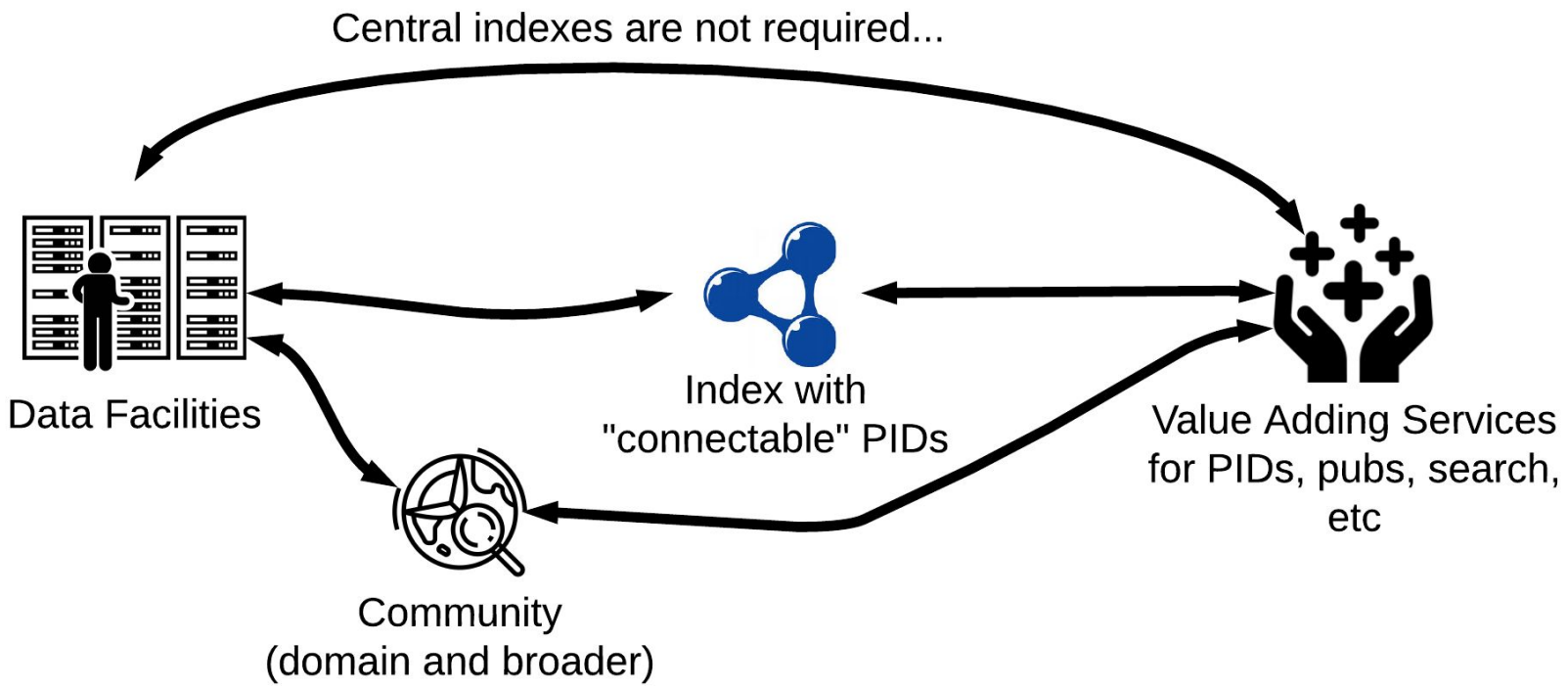
µP418 why scale up.. when you can scale down



- full P418 stack runs on my laptop
- raises question of distributed interop (RDA is on this too)
- P418 could be used by domains of practice to build shared indexes to enhance and align a particular community experience

Aggregators, Platforms and Networks



If we enable N indexes, we want to think now about sharing connections and affordances of indexed resources

A Process and a Philosophy, not a Product

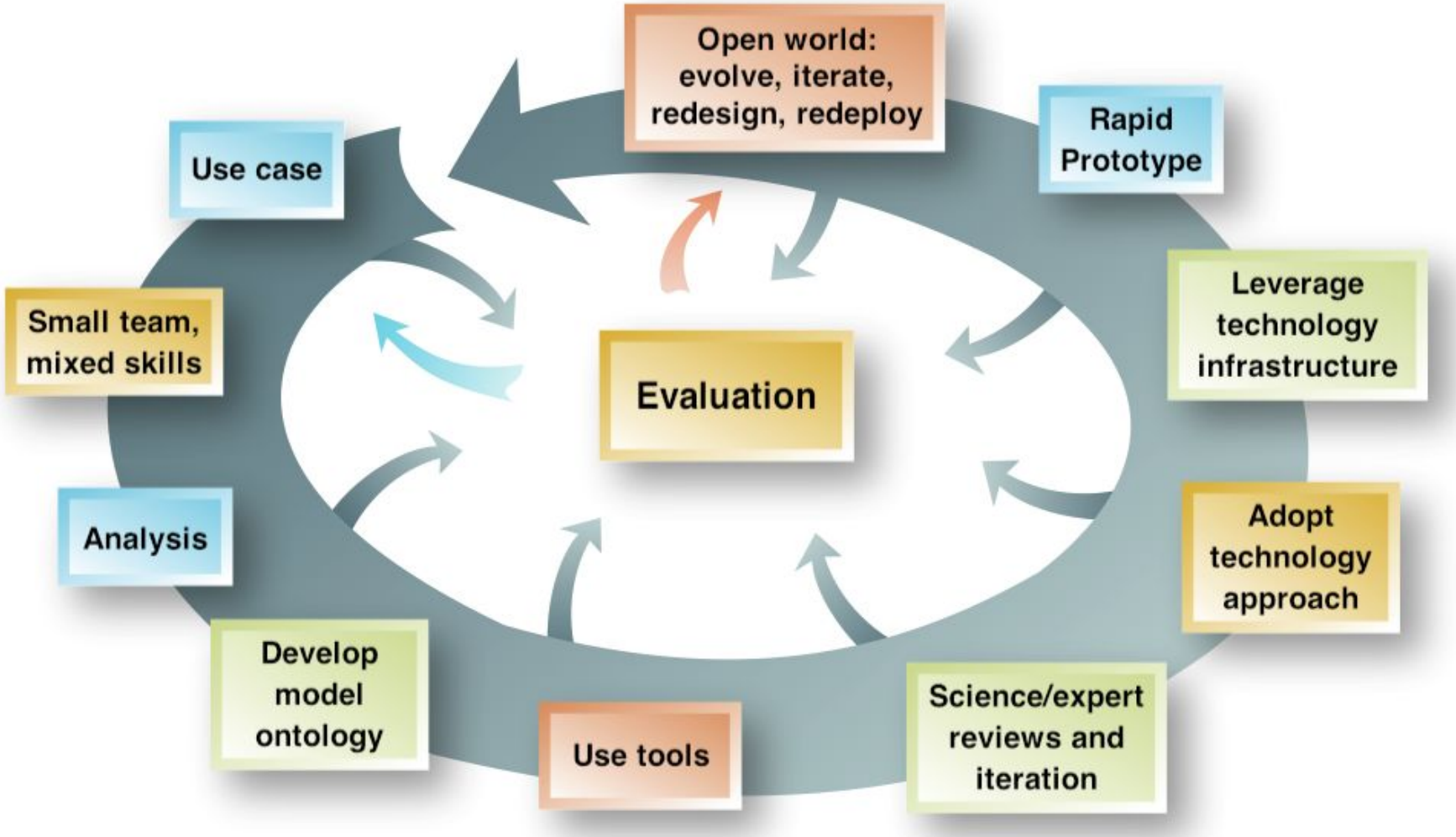


Image credit: Peter Fox https://tw.rpi.edu/web/doc/TWC_SemanticWebMethodology

- I've been seeing Peter's image for years… I've come to really appreciate it in this project

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Use The Web
Data In Content
Principle Over Project

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https://www.earthcube.org/group/project-418

https://github.com/earthcubearchitecture-project418
https://geodex.org

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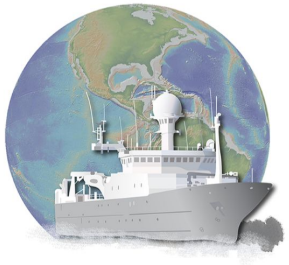

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Thanks Also To

ESSO

XSEDE
Extreme Science and Engineering Discovery Environment

Research at Google

Project 418 Project Advisory Team

Rick Benson - IRIS
Fran Boler - UNAVCO
Matt Mayernick - NCAR
Tanu Malik - DePaul University
Sarah Stamps - Virginia Tech
Steve Kuehn - Concord University

ESIP

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RESEARCH DATA ALLIANCE

EarthCube Community

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Thanks