

Event Notifications & COAR Notify

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Three topics

1. Why are we doing all these things
2. Event Notifications
3. COAR Notify

1. Why the need is so pressing or important?

<i>Economic</i>	Business cycles that resembles more an oligopoly than a highly competitive market in combination with decreasing funding in R&D.
<i>Metrics</i>	Metrics that sustain this business cycle by evaluation researchers based quantity instead of quality.
<i>Affordability</i>	Artificial scarcity of irreplaceable, high-ranking journals that drives up costs.
<i>Trust & Integrity</i>	Replication crisis, surveillance publishing and politicization risks.
<i>Infrastructure control</i>	Centralization of <i>all</i> functions of scholarly communication.
<i>Functionality</i>	Functions that are tightly coupled, custom protocols and vendor lock-ins.

What could be done better?

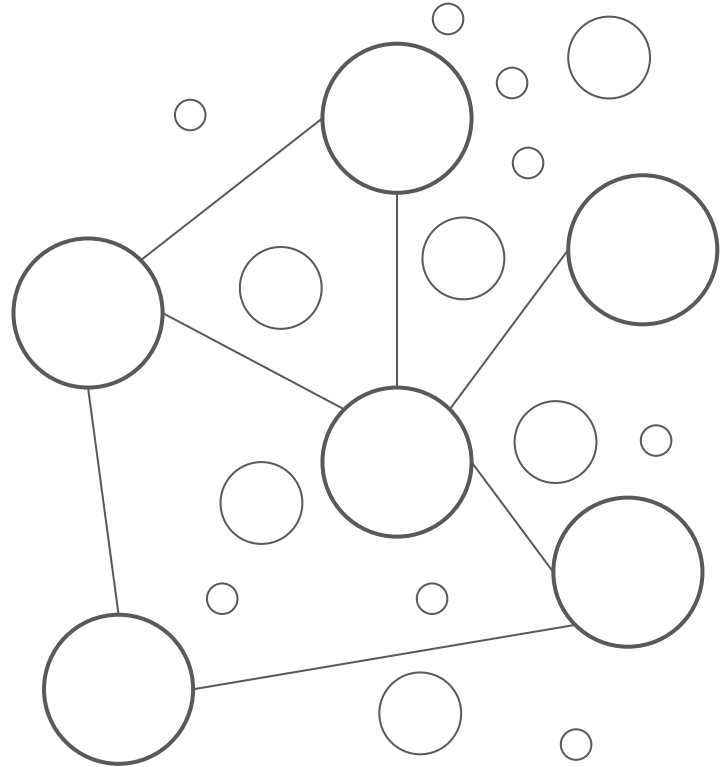
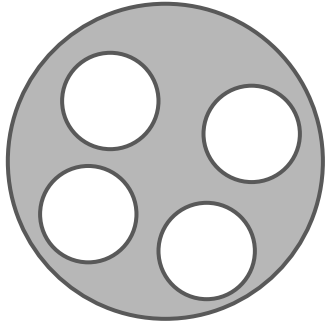
<i>Economic</i>	Healthy worldwide competition and robust funding.
<i>Metrics</i>	Contribution-based and diverse qualitative metrics.
<i>Affordability</i>	Open access and fair distribution.
<i>Trust & Integrity</i>	Open science, transparent & accountable workflows.
<i>Infrastructure control</i>	Distributed governance, institutional and community ownership.
<i>Functionality</i>	Decoupled, interoperable, open standards, open source

Which functions are we talking about?

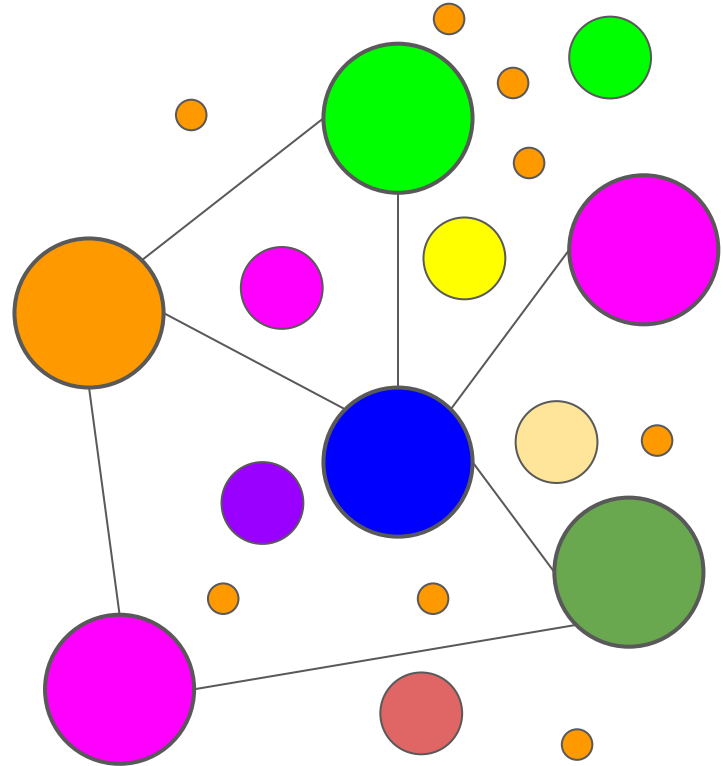
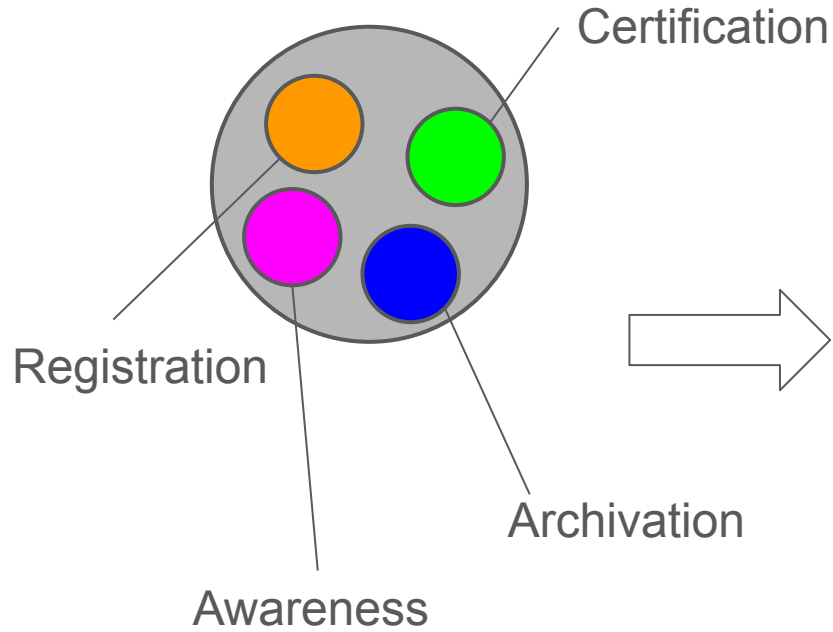
Ironically, two Elsevier researchers identified in 1997 the five essential functions of any scholarly communication system:

1. **Registration**: to proof the priority of a research output
2. **Certification**: to establish the quality and validity of the output (e.g. peer review)
3. **Awareness**: to ensure the accessibility of the output (e.g. FAIR)
4. **Archiving**: provide availability for future use
5. **Reward**: provide proofs for recognition and compensation

Decentralization

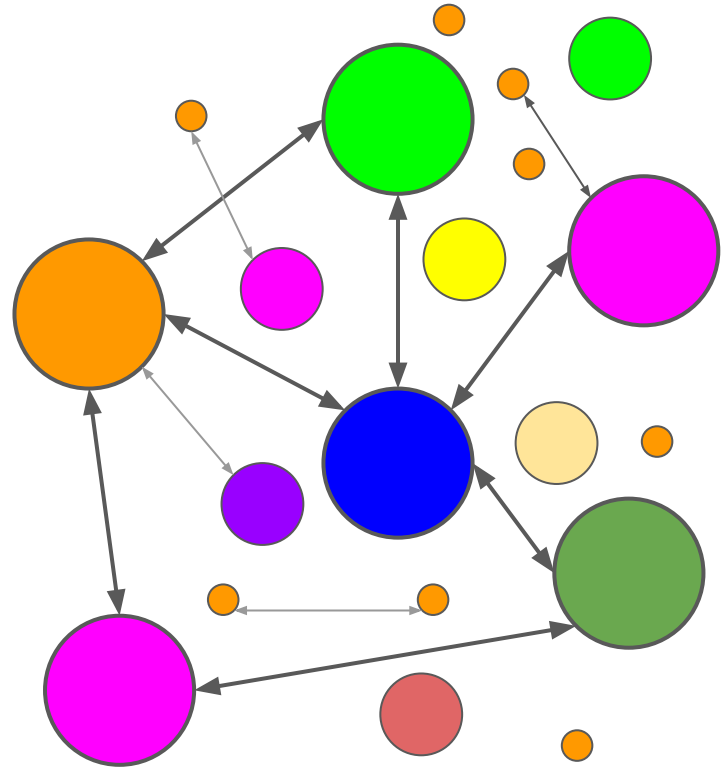


Decoupling



Linking

Explicitly engraving the *value-chains* that exist between scholarly objects into the fabric of the Web.



There is momentum to do this

- ***Registration***

- Institutional, subject and data repositories
- Trusted timestamping services

- ***Certification***

- Independent peer review as a service (PCI Peer Community In, PREreview)

- ***Awareness***

- Overlay journals (Episciences)
- Indexes (OpenAIRE)

- ***Archivation***

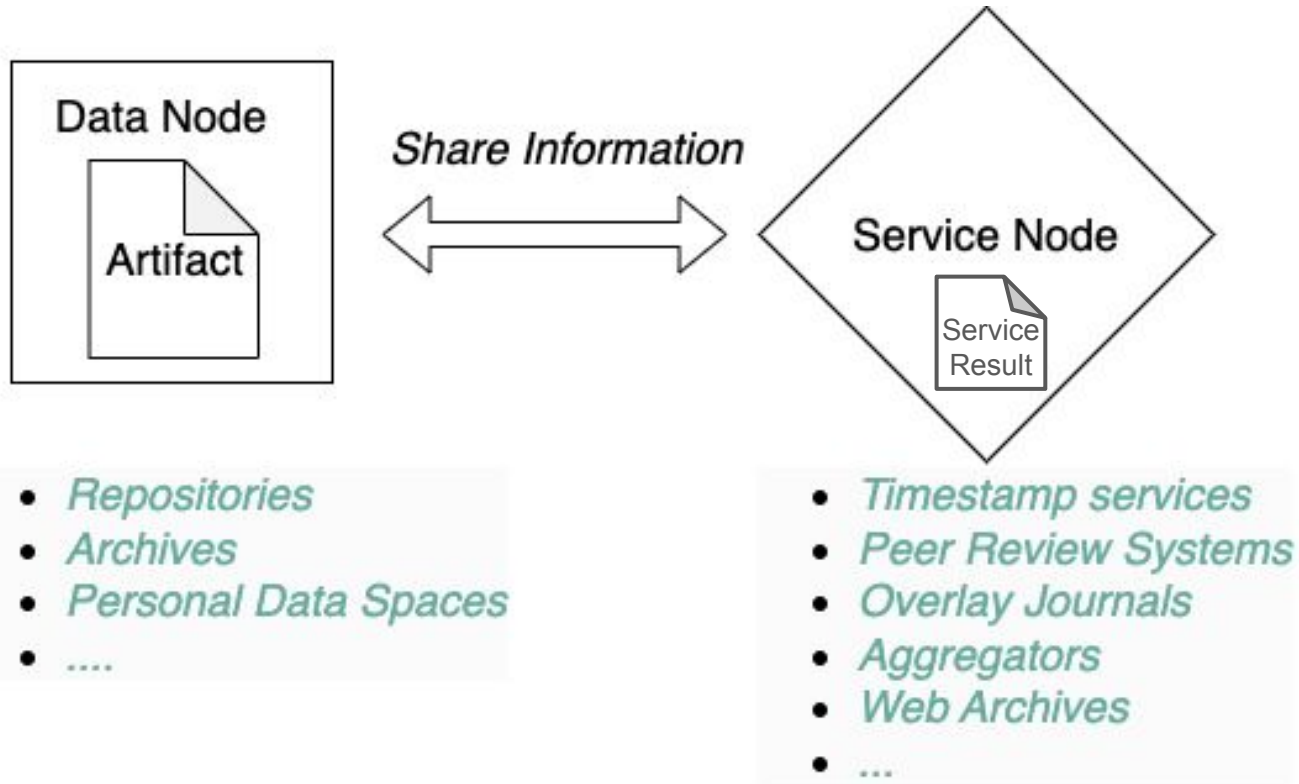
- LOCKSS
- EOSC-DICE
- Dutch Digital Heritage Network

2. Event Notifications

The Event Notifications protocol was created because we saw:

- Communities keep making significant investments in the **Web** framework
- No generalized strategy to exchange and discover information about **value-added events** on the Web
- Challenges facing possible **automation** of parts of decentralized and decoupled (scholarly) workflows.
 - Need to facilitate long running workflows that can span many months
- Not just scholarly communication
 - Discovery of linkages between literature/data artifacts
 - Archiving workflows
 - Research assessment workflows

Abstraction of the objects and roles in the network



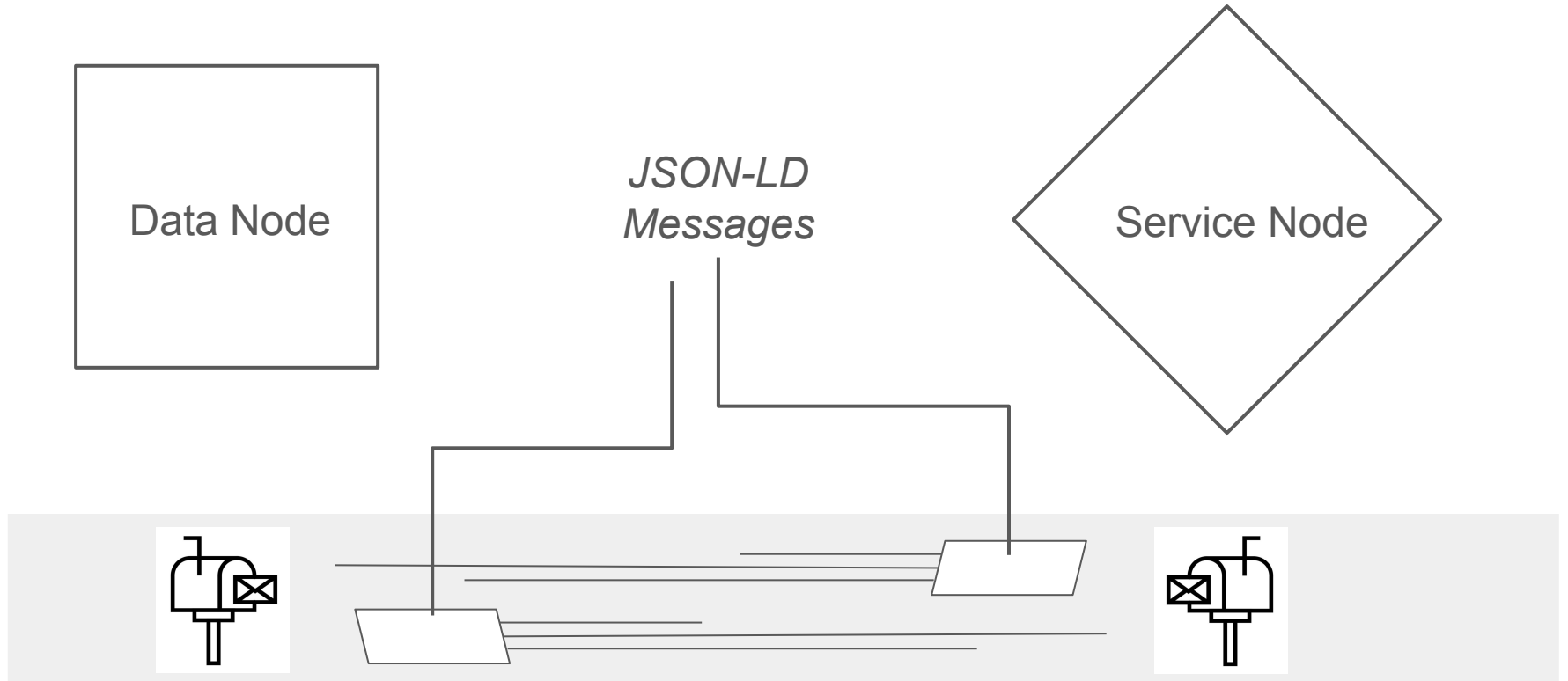
Abstraction of the messages in the network

- Based on widely accepted W3C standards
 - Linked Data Notifications (LDN) with ActivityStream2 (AS2) payloads
 - Cost-effective implementations using existing infrastructure
- Point-to-point; asynchronous; pushed based
- Using notification messages that are **lean**
 - Not a data exchange protocol
 - Linking to (meta)data about the artifact rather than carrying (meta)data
 - With "follow your nose" auto-discovery to learn more about artifact (Signposting, WebIDs,...)

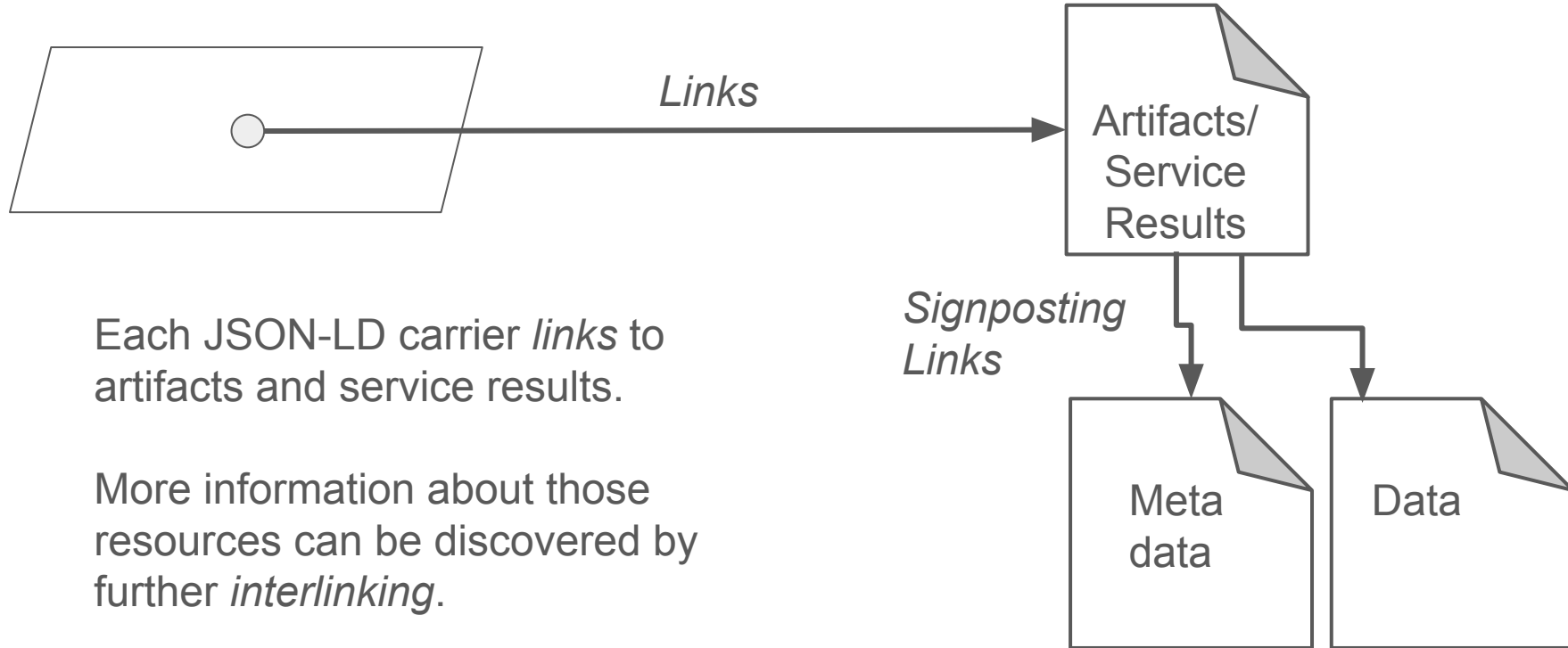
Extension points supporting diverse communities

- Event Notifications is a profile of the more generic W3C LDN and AS2 specifications
 - Notifications are about *artifacts*, not about *people* (as is done in e.g. ActivityPub)
- Can be further specialized using *community profiles*
- Most advanced community is *COAR Notitfy*

Technical overview - inboxes and JSON-LD messages



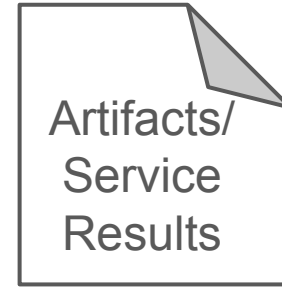
Technical overview - linkages and types



Technical overview - message types



Two categories of
JSON-LD messages



State messages

Messages about the state of
an artifact.

Can be fully automated.

*E.g. when is an artifact: created,
updated, deleted,....*

Service messages

Messages about value-added services
pertaining to an artifact.

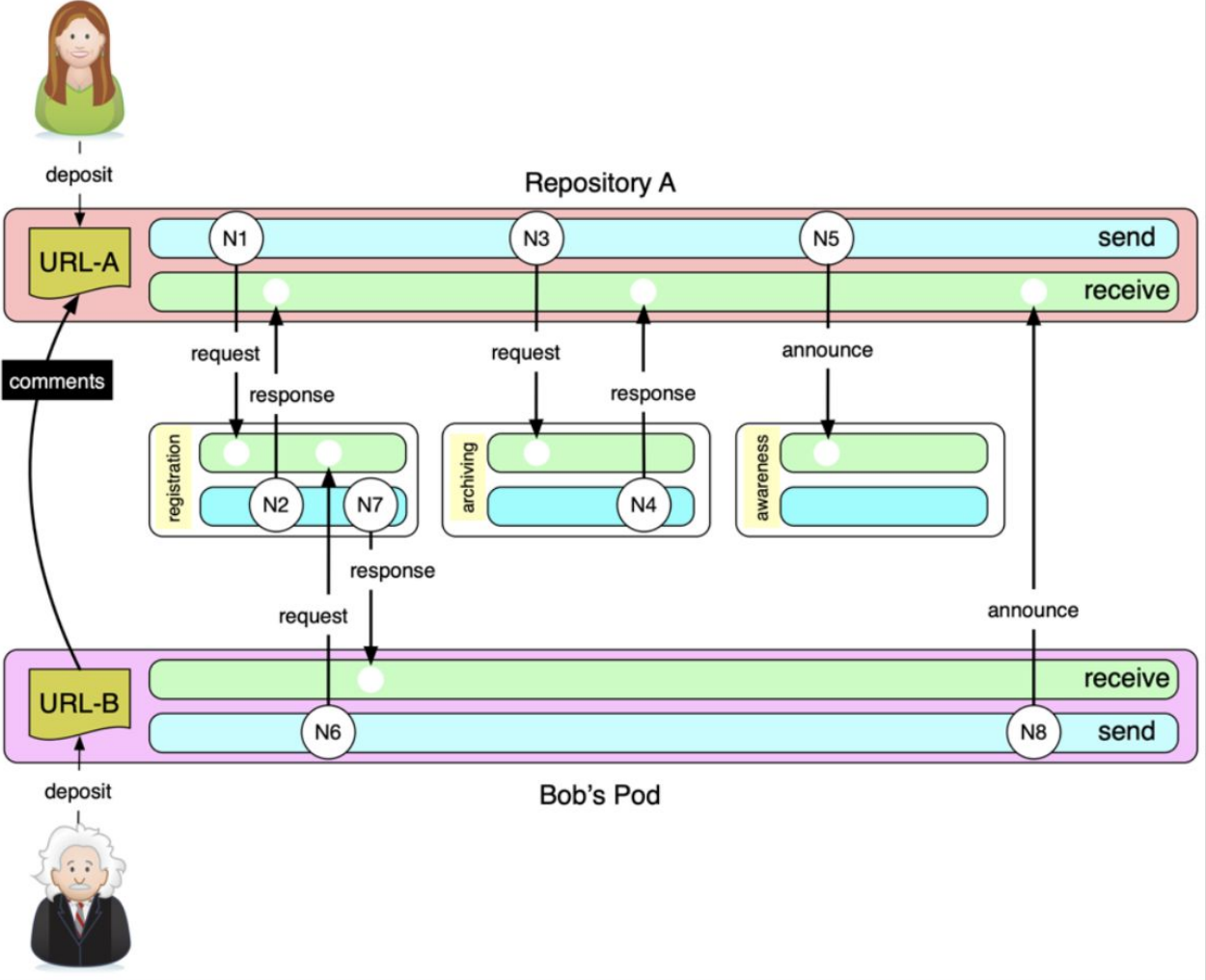
Often human triggered.

*E.g. requesting peer-review, submitting to a
journal, ...*

Technical overview - not covered here

- Network communication patterns
 - Classification communication patterns
- Discovery of endpoints
- Serialization patterns
- Error handling
- Service description

Example



3. COAR Notify

- Origins in the *COAR Next Generation Repositories* report
 - Creation of a scholarly grid of ***interoperable repositories*** connected to ***value adding service providers***
 - Establishment of ***bidirectional links*** by exchanging ***activity metadata***
- Focus on ***certification*** and ***awareness*** functions of scholarly communication
- Employing a profile of the Event Notification protocol for concrete real world use-cases
 - Connecting repositories with peer-review services
 - Connecting repositories with overlay journal services
 - Connecting institutional repositories with data repositories

Global impact of COAR Notify

 Preprints.org

 bioRxiv
THE PREPRINT SERVER FOR BIOLOGY

The
 Dataverse®
Project

 DASH
DIGITAL ACCESS to
SCHOLARSHIP at HARVARD
DASH.HARVARD.EDU

 DIGITAL.CSIC
OPEN SCIENCE

 DSPACE

 EPIsciences
revues en accès libre

 eprints
repository software

 HAL
science ouverte

 Kotahi by Coko

 nakala

PCI
Peer Community in

 PREVIEW

 SciELO Preprints

 society

 ARCADIA

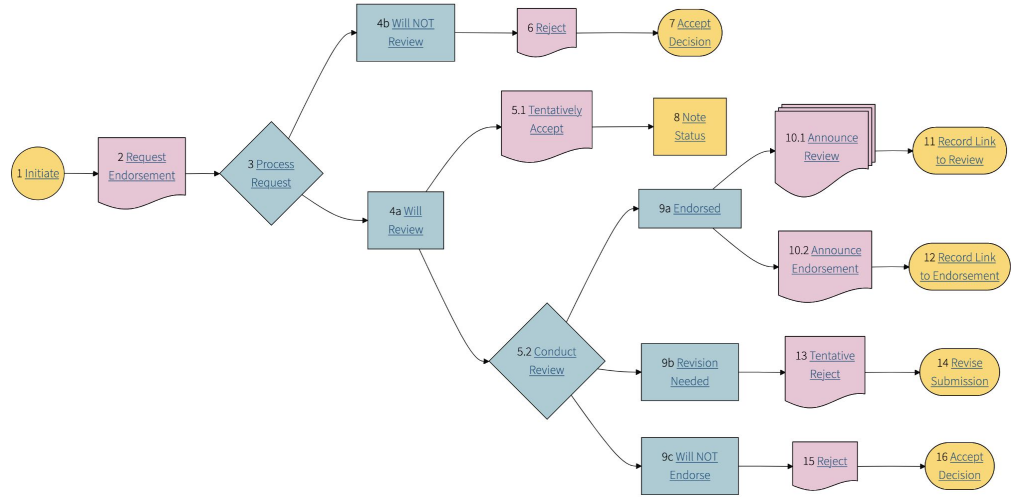
Technical - Specifying JSON-LD messages for...

- Peer review workflow
 - Requesting a peer review
 - Accepting/rejecting the request
 - Announcing the review
- Publishing workflow
 - Requesting an endorsement
 - Accepting/rejecting, announcing
- Ingestion workflow
 - Offering a resource to a repository
 - Accepting/rejecting, announcing
- Discovery of linkages workflow
 - Announcing, "hey I found a relation between your and my resource"

Technical - catalog of workflows

Certification and endorsement workflows are not uniform. Every service provider might require different type of message exchanges.

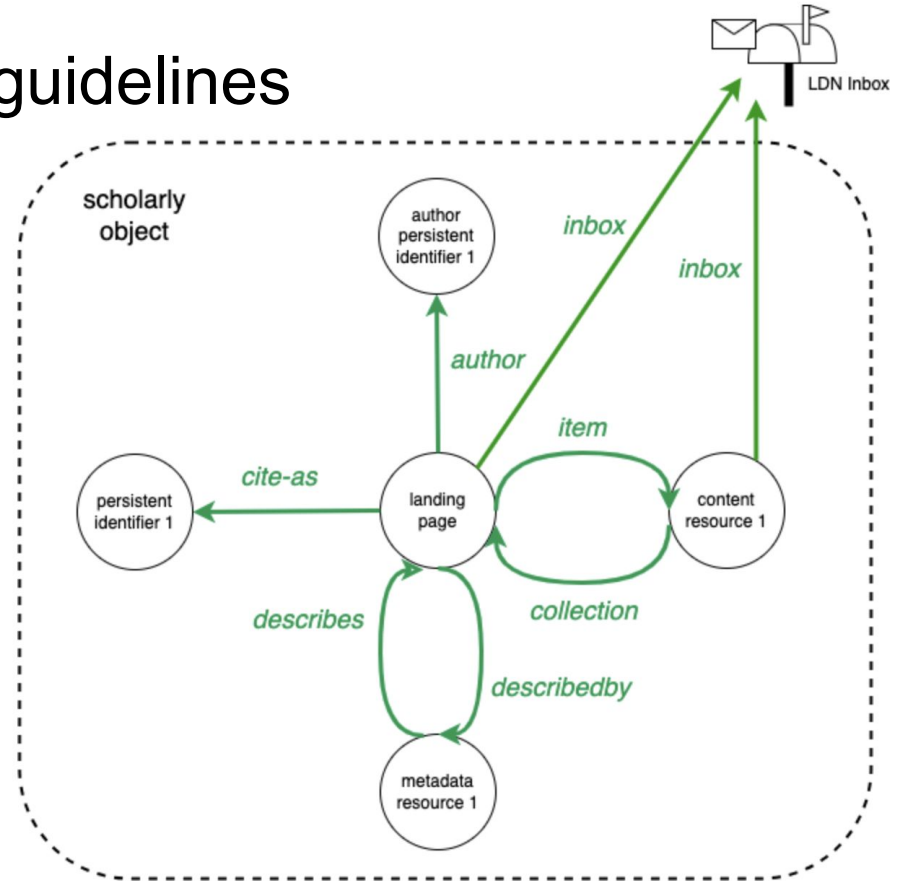
COAR Notify provides a catalog of typical communication patterns for real world use-cases.



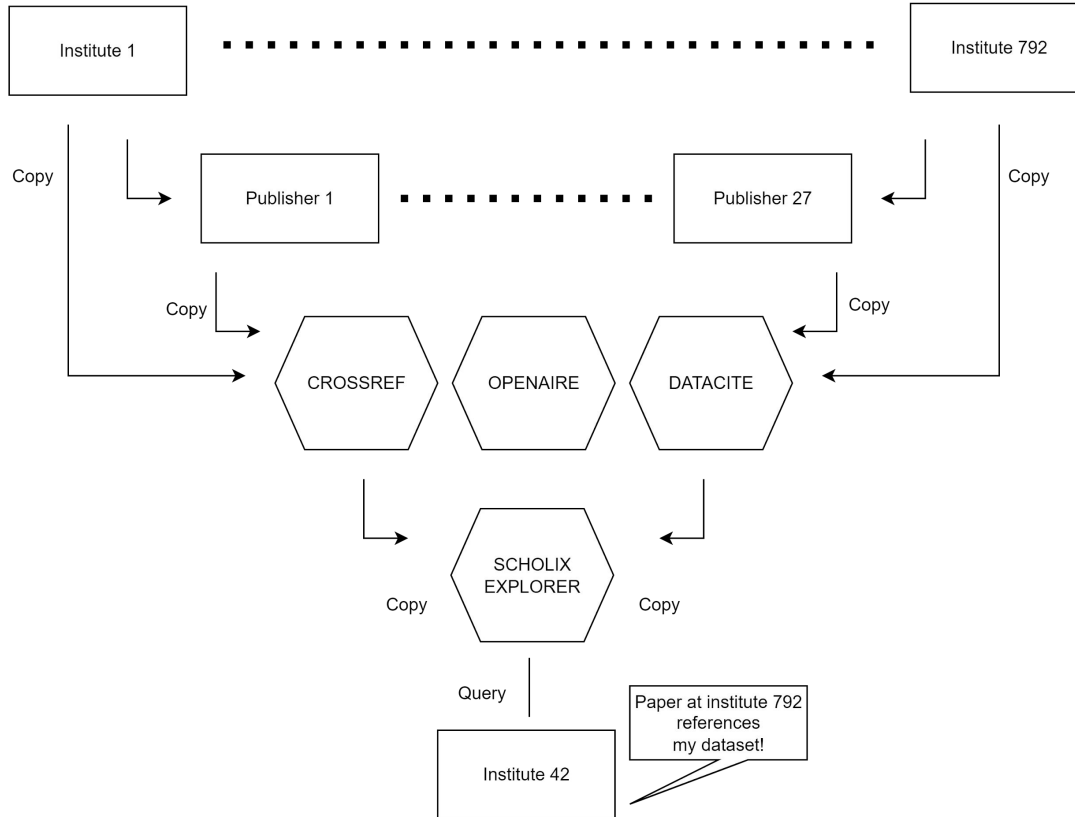
Technical - concrete linkage guidelines

Crucial for:

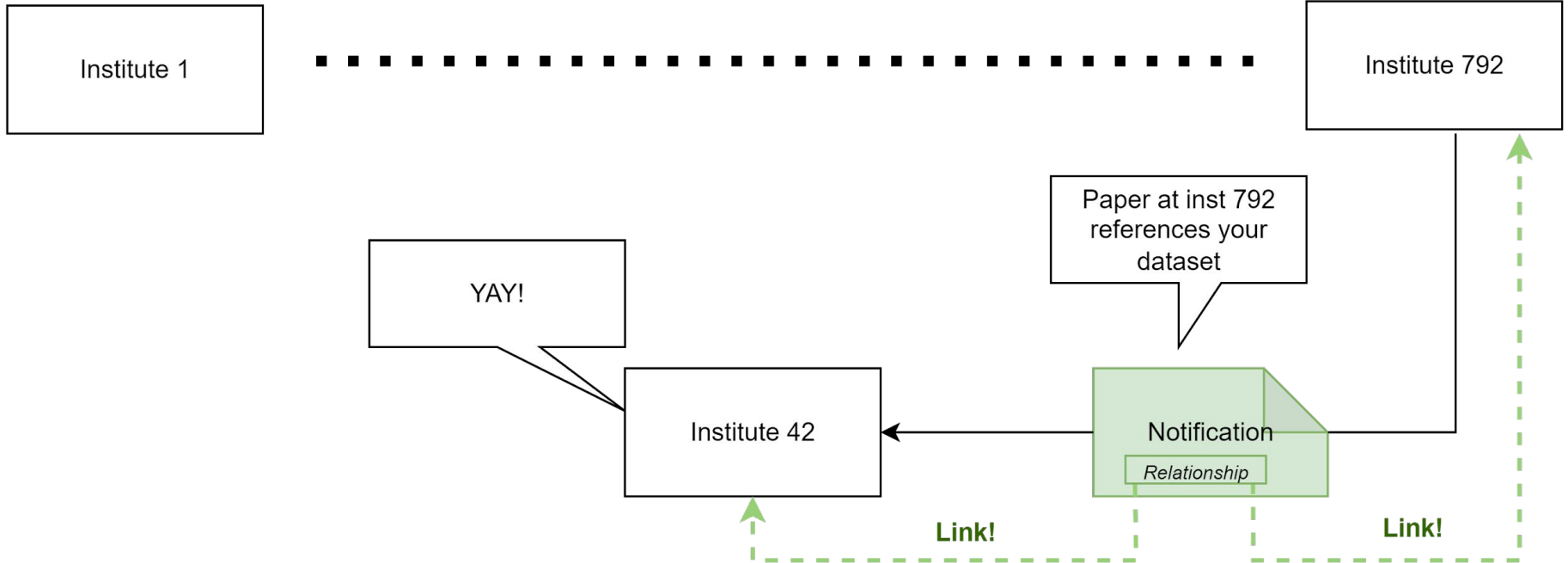
- Avoiding data silos (no copying of data)
- Discovery of resource and services
- Maintaining the origin as "single source of truth"
- Providing transparency and trust signals into the scholarly communication process



Example - data/literature linkages



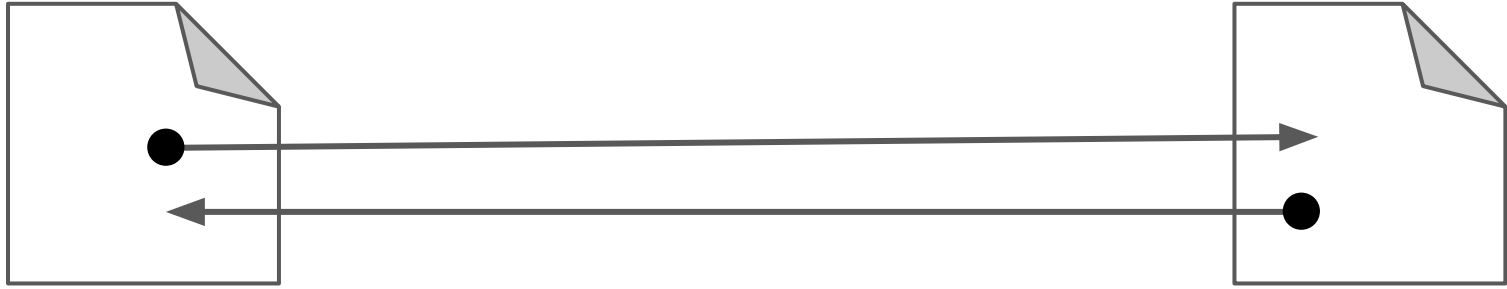
Example - data/literature linkages



Example - Concrete JSON-LD message

```
{
  "@context": ["https://www.w3.org/ns/activitystreams", "https://coar-notify.net"],
  "id": "urn:uuid:94ecae35-dcfd-4182-8550-22c7164fe23f",
  "type": ["Announce", "coar-notify:RelationshipAction"] ,
  "actor": { ... information about who send this message } ,
  "target": { ... information about to whom this message was sent },
  "origin": { ... information about the remote host } ,
  "context": { ... information about the remote artefact } ,
  "object" : {
    "id": "urn:uuid:74FFB356-0632-44D9-B176-888DA85758DC",
    "type": "Relationship"
    "as:subject": "https://research-organisation.org/123/",
    "as:relationship": "http://purl.org/vocab/frbr/core#supplement",
    "as:object": "https://somewhere.org/datasets/456/"
  }
}
```

Example - Desired result after linking



<https://research-organisation.org/item/123/>

<https://somewhere.org/datasets/456/>

Thanks! Questions?

- <https://www.eventnotifications.net>
- <https://coar-notify.net>