The COAR Notify Initiative

Patrick Hochstenbach & Paul Walk
COAR Notify Initiative

● Accelerating community adoption of standards and protocols for a decentralized approach to scholarly communication

● Current focus
  ○ Linking research outputs from a network of (data) repositories with resources from external service providers
    ■ Overlay journals
    ■ Peer review services
Who is involved

- **Principal investigators**
  - Kathleen Shearer (COAR)
  - Paul Walk (Antleaf)
  - Martin Klein (LANL)
  - Eloy Rodrigues (University of Minho)

- **Technical Advisors**
  - Herbert Van de Sompel
  - Patrick Hochstenbach

- **External funding**
  - 4-year, $4 million grant from Arcadia Foundation began July 1, 2022

- **Implementing Partners**
  - CSIC - Spanish National Research Council
  - Episcience
  - HAL
  - Harvard Library
  - Humanities Commons
  - LA Referencia
  - Open Scholar
  - Peer Community In
  - PREreview
  - RCAAP & Pub In
  - Redalyc
  - Sciety

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Discussions with repository platforms
Current landscape

service providers

repositories
Current landscape
Current landscape

(+)
- Relative easy for producer
- Works on massive amounts of data
- Scales
- Easy to query

(-)
- Latency
- Relative hard for consumer
- Single Point of failure
- Data control

- Centralization
- Informational and positional advantages
- Limiting innovation
- Constraining competition
- Expensive
- …
Design principles

- **Linking** resources in repositories to related resources in other Data Nodes and services providers (named *Service Nodes* from now on).
- Service nodes add (scholarly) value to artifacts
  - *Registration* - Allows claims of precedence for a scholarly finding
  - *Certification* - Establishes validity of the claim
  - *Awareness* - Allows actors in the system to remain aware of new claims
  - *Archiving* - Preserves the scholarly record over time
- Resource oriented (named *Artifacts* from now on)
  - Pass information about artifacts by reference
  - Use the Web esp. Linked Data Principles
- Decentralized
Technologies

- **Linked Data Notifications** (LDN)
- **Activity Streams 2.0** (AS2)
- Related to projects such as:
  - Dokieli (Carven Capadisli)
  - Researcher Pod (Mellon IDLAB Gent)
  - ErfgoedPOD (DANS)
  - DICE DDPS (DANS)
  - ActivityPub (Mastodon, Peertube, …)
Data/Service Nodes & Linked Data Notifications

Data Node → LDN+AS2 Notification → Service node
Artifact + Data Node

Repository

Data Node

LDN Inbox

Artifact

context

LDN+AS2 Notification

Agent
Artifact + Data Node

- **Artifact** is a *research output* (preprint, dataset, book)
  - Can be a simple object (a PDF)
  - But in general complex of landing page + PDF + metadata + …
  - Identifiable with a URL
  - Visiting this URL one can learn more about the artifact
    - Esp. find the location of an **LDN Inbox** for the artifact
- **Data Node** is a system that hosts **Artifacts** + **LDN Inbox**(es)
- A **Data Node** has one or more **Agents** that send/receive **LDN+AS2 Notifications**
Service Result + Service Node

- **Service Result** is the *output* provisioning a *value-add service* pertaining to an *Artifact* on a *Data Node*
  - An ephemeral inline resource (a calculation result, a note, …)
  - An web resource with a URL (simple, complex)
    - Visiting this URL one may learn more about the service result
    - Doesn't require to have an **LDN Inbox** associated with it

- **Service Node** is a system that provides
  - Value-adding services pertaining to artifacts on **Data Nodes**
  - Optionally, hosts **LDN Inbox(es)** to request value-adding services for artifacts

- **A Service Node** has one or more **Agents** that send/receive **LDN+AS2 Notifications**
LDN+AS2 Notifications

Points to artifact by reference

Describes Who did/asked What activity on Which artifact/service result

Points to service result by reference

Point to artifact context by reference
AS2 Activities used in COAR Notify

- **Offer** - one system offers one of its resources for some activity to be conducted by a second system.
  - E.g. offer for peer review
- **Accept | Reject** - acknowledge an offer activity, indicating acceptance or otherwise
  - E.g. a peer review service may first evaluate the offer
- **Announce** - announce the outcome of an activity, sometimes (but not always) linking an original resource to a new, related resource.
  - E.g. notifying the availability of a peer review of an artifact
- **Undo** - undoing a previous activity - for example rescinding an offer.
  - E.g. cancelling an offer for peer review
LDN + AS2 Notification in JSON-LD

Announcement (standalone)

Properties
The @context must include:

- Activity Streams 2.0
- Notify

id
Notify/notifications must describe an AS 2.0 activity. The activity has an id which must be a URI, and the use of URN:UUID is recommended. An HTTP URI may be used instead, but in such cases the URI should resolve to a useful resource.

type
The activity has a type which should include at least the value Announce from AS 2.0.

actor
The activity should have an actor describing the party responsible for initiating this activity. The actor:

- has an id which must be an HTTP URI.
- has a type which should be one of: Application, Group, Organization, Person or Service from AS 2.0.
- may have a name

context
This activity has a context. The context has:

- An id which is the HTTP URI of the "landing page" for the resource.
- A type.
- An @idcite-as which contains the persistent HTTP URI (sometimes called the "PID") which is to be used to cite or link to the resource.

object
This activity has an object. The object has:

Example JSON-LD Payload

```
{
  "@context": {
    "https://www.w3.org/ns/activitystreams",
    "https://purl.org/coar/notify"
  },
  "actor": {
    "id": "https://generic-service.com",
    "name": "Generic Service",
    "type": "Service"
  },
  "context": {
    "id": "https://some-organisation.org/resource/001",
    "@idcite-as": "https://doi.org/10.4598/12123487",
    "type": "Document"
  },
  "id": "urn:uuid:94ee435-efcd-4192-8550-22c71647e23f",
  "object": {
    "id": "https://generic-service.com/resource/1234",
    "@idcite-as": "https://doi.org/10.9357/123883",
    "type": "Document"
  },
  "origin": {
    "id": "https://generic-service.com/system",
    "inbox": "https://generic-service.com/system/inbox/",
    "type": "Service"
  },
  "target": {
    "id": "https://some-organisation.org/system",
    "inbox": "https://some-organisation.org/system/inbox/",
    "type": "Service"
  },
  "type": "Announce"
}
```
Event Notifications in Value-Adding Networks
Living Document, 17 October 2022

This version:
https://www.eventnotifications.net

Latest published version:
https://www.eventnotifications.net

Previous Versions:
https://www.eventnotifications.net/0.1/

Issue Tracking:
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Inline Spec

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Abstract

This document lists the possible notifications that can be used in the network.

Feedback welcome: value-adding-networks@googlegroups.com.
COAR Notify Scenarios

Peer-review

This use-case is concerned with peer-review of repository-based resources, initiated either by the repository, or by a peer-review service. This use-case encompasses a range of forms of peer-review, including open-peer-review.

The COAR Notify concept of review may be extended to a more general concept like endorsement or certification with no changes in underlying technology/framework. In the digital age, we do not need to rely on a journal for reviews of research outputs, and we are seeing a trend towards the formation of peer review communities. These communities can exist on their own and undertake peer review independently (PRerreview), or contribute to peer review activities of existing journals (PCI example), or be attached to institutional and national research assessment activities. This scenario will involve working with CLACSO, which represents a large community of scholars in the humanities and social sciences, to develop and support communities of scholars that will undertake reviews of research articles and other types of content in repositories.

Example scenarios involved in peer-review

<table>
<thead>
<tr>
<th>ID</th>
<th>Scenario</th>
<th>Use-case(s)</th>
<th>Participating Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Author requests review with possible endorsement (via overlay journal)</td>
<td>Peer-review, Endorsement</td>
<td>Overlay Journal &lt;-&gt; Repository</td>
</tr>
<tr>
<td>2</td>
<td>Author requests review with possible endorsement (via repository)</td>
<td>Peer-review, Endorsement</td>
<td>Repository &lt;-&gt; Overlay Journal</td>
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<tr>
<td>3</td>
<td>Overlay Journal Announces Review and Endorsement of Pre-print to Aggregator</td>
<td>Peer-review, Endorsement, Dissemination</td>
<td>Overlay Journal &lt;-&gt; Aggregator</td>
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<tr>
<td>5</td>
<td>Repository requests review (on behalf of corresponding author)</td>
<td>Peer-review</td>
<td>Repository &lt;-&gt; Review Service</td>
</tr>
<tr>
<td>6</td>
<td>Author submits to overlay journal using repository to host resource and reviews</td>
<td>Peer-review, Endorsement</td>
<td>Overlay Journal &lt;-&gt; Repository</td>
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<td>Peer-review, Dissemination</td>
<td>Review Service &lt;-&gt; Aggregator</td>
</tr>
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<td>8</td>
<td>Review Service Announces Review of Pre-print to Repository</td>
<td>Peer-review</td>
<td>Review Service &lt;-&gt; Repository</td>
</tr>
<tr>
<td>9</td>
<td>Author requests reviews from review service, via repository</td>
<td>Peer-review</td>
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https://notify.coar-repositories.org/usecases/
COAR Notify Scenarios

Endorsement

This use case is about endorsement of repository resources, involving an endorsement service of some kind. One common example may be the publishing of repository-based resources in overlay journals, initiated either by the repository, or by the overlay journal.

Overlay journals

In the overlay publishing model, a journal performs peer review and endorsement of an article or preprint, but it doesn’t publish articles on its website. Rather, the journal’s website links to final article versions hosted in an online repository. In some cases, the final article versions may also be mirrored on the journal website. The overlay publishing process usually involves a number of steps that can be automated using the Notify technologies.

Example scenarios involved in endorsement

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<td>4</td>
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[https://notify.coar-repositories.org/usecases/](https://notify.coar-repositories.org/usecases/)
# COAR Notify Scenarios

## Dissemination

This use-case is about those services which wish to use, classify, aggregate or otherwise process other activities (such as reviews or endorsements) that have generated resources related to repository-based resources.

### Example scenarios involved in dissemination

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<td>10</td>
<td>Repository announces relationship between local resource and second resource hosted on another repository</td>
<td>Dissemination</td>
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[https://notify.coar-repositories.org/usecases/](https://notify.coar-repositories.org/usecases/)
Further potential scenarios considered

- Pre-print <-> data/code repository linking
- Audit, transparency in scholarly communication service (see U Ghent)
  - Notifications sent from all involved systems about all (most?) occurring events
  - Audit consumer to offer value-added services
- (peer) review on micro-publications, blog posts, tweets, etc.
  - Maybe as simple as an authenticity check
- Citation notification
- Pre-print <-> journal version linking
Social Challenges

Community Acceptance

The post-publication review model is disruptive

Academic conservatism/inertia reinforced by current assessment practices

There is perceived value on current formatting of articles in traditional editorial processes
Next steps

Over the four year time frame for the project, the Notify project will provide implementing partners technical support and, where appropriate, funding to assist them in the adoption of the Notify technologies and protocol (linked data notification functionalities) and develop the workflow for managing the notifications in their platforms and services. The end result will be several clusters of interrelated services that are using Notify to manage the interactions related to peer review on repository resources.
Thank you

Questions?