the de in decentral

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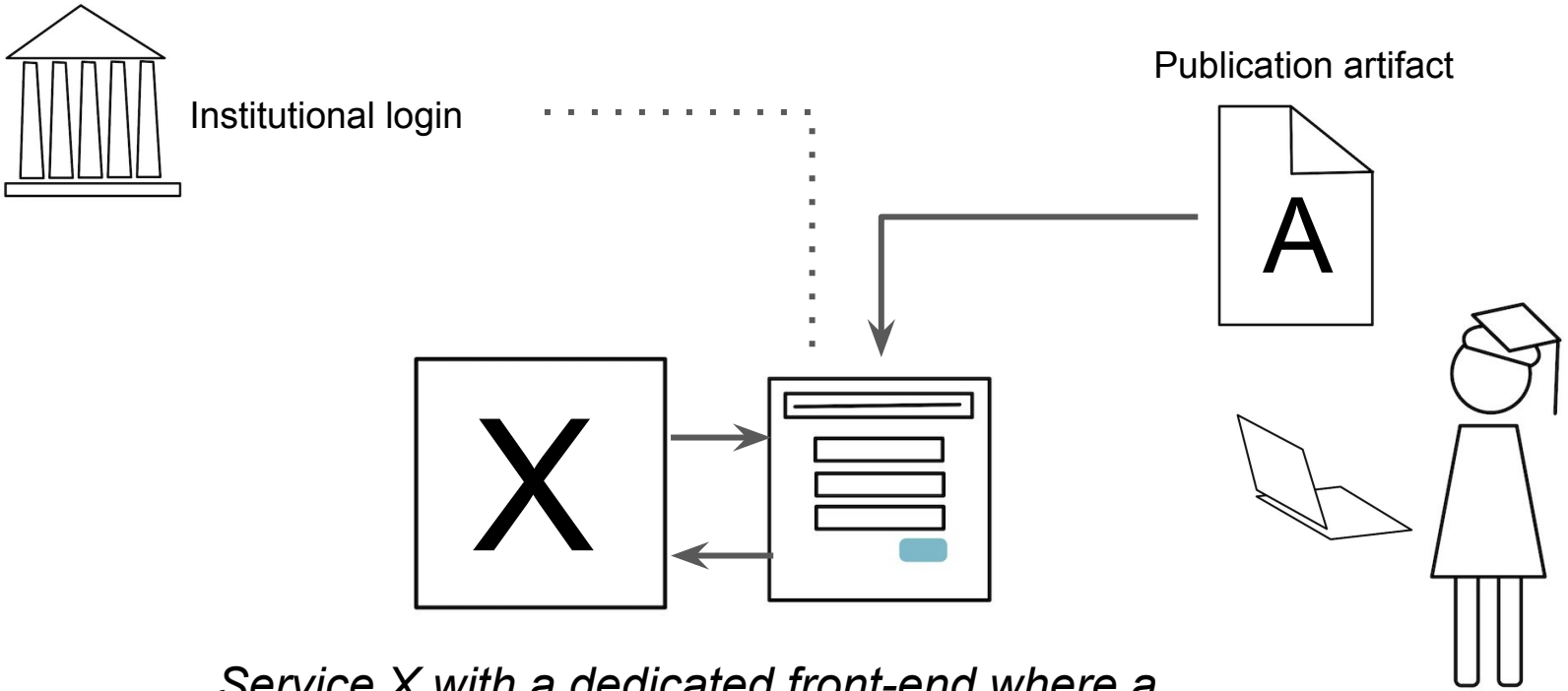
https://patrickhochstenbach.net/profile/card#me

Het Decentrale web en Solid: scenario's voor de toekomst. 14 juni 2023
Koninklijke Bibliotheek, Den Haag

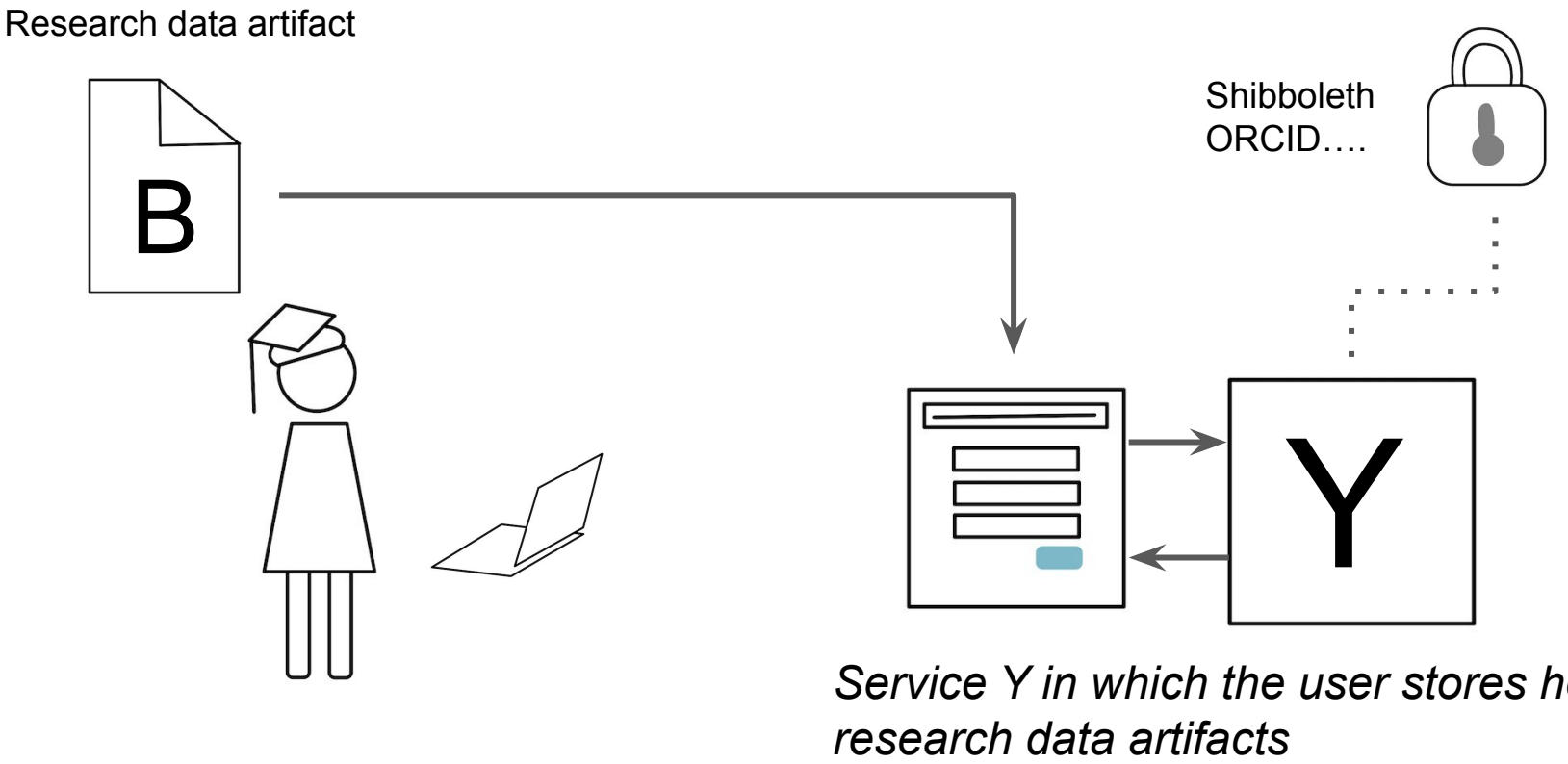
Solid recap

How we currently build our websites



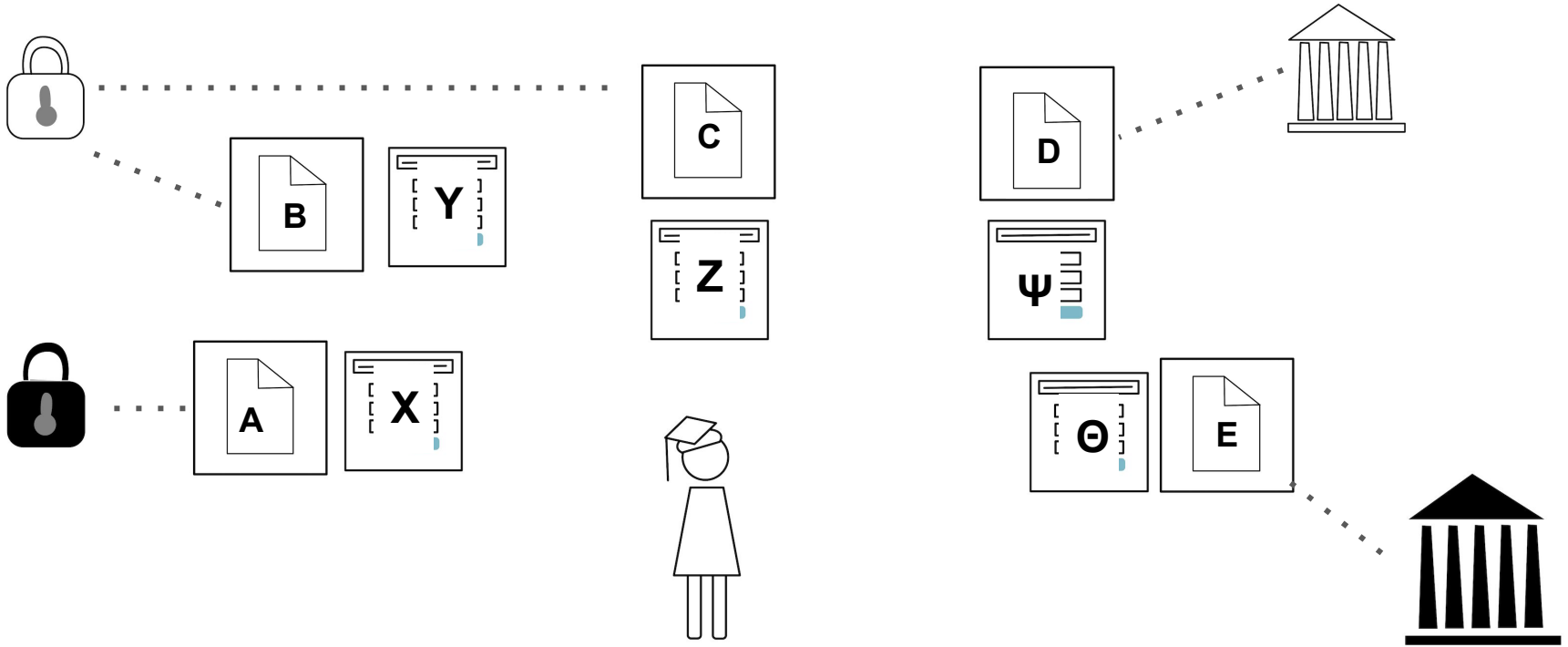
Service X with a dedicated front-end where a user can store publication artifacts

Store your artifact B (of different type) in service Y

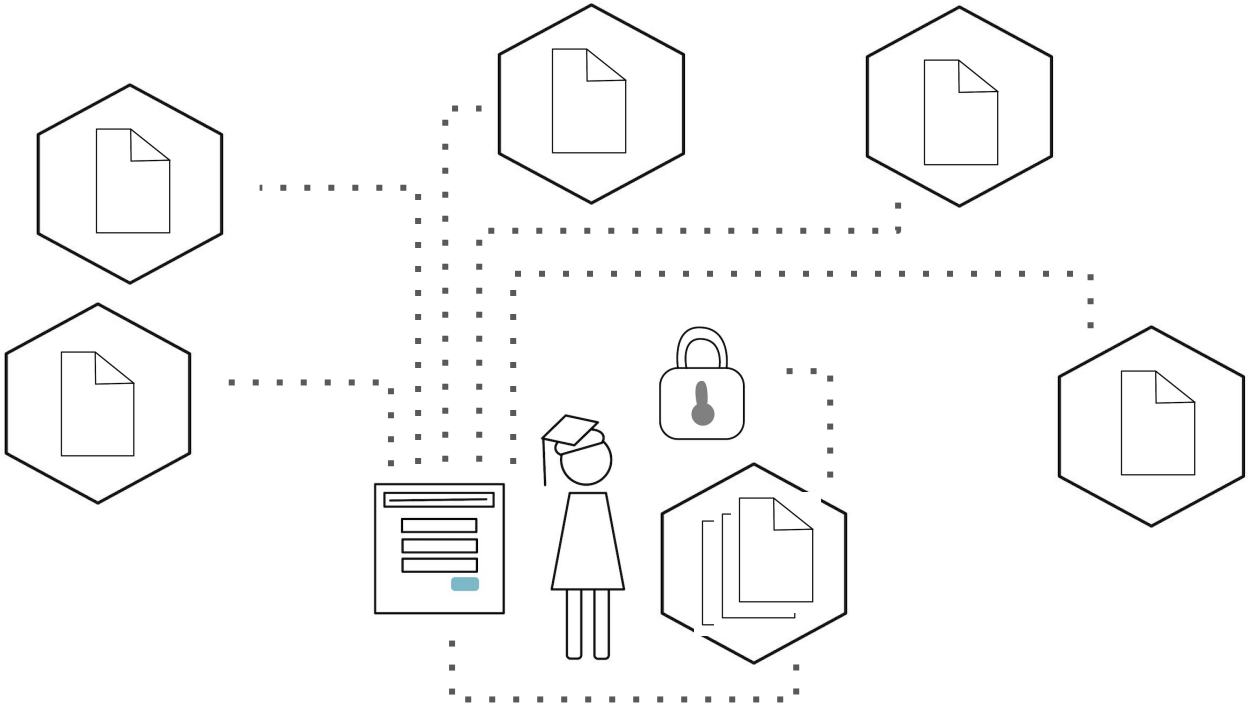


Service Y in which the user stores her research data artifacts

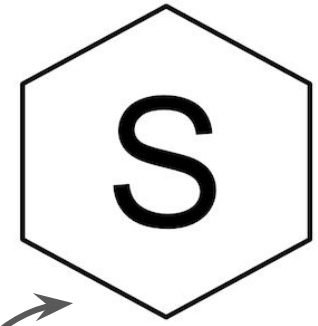
Decentralization: your data everywhere, different interfaces, different ID/authentication/authorization techniques



The Solid way : as decentralized as you want, but with a **uniform** interface



Solid : a collection of specifications

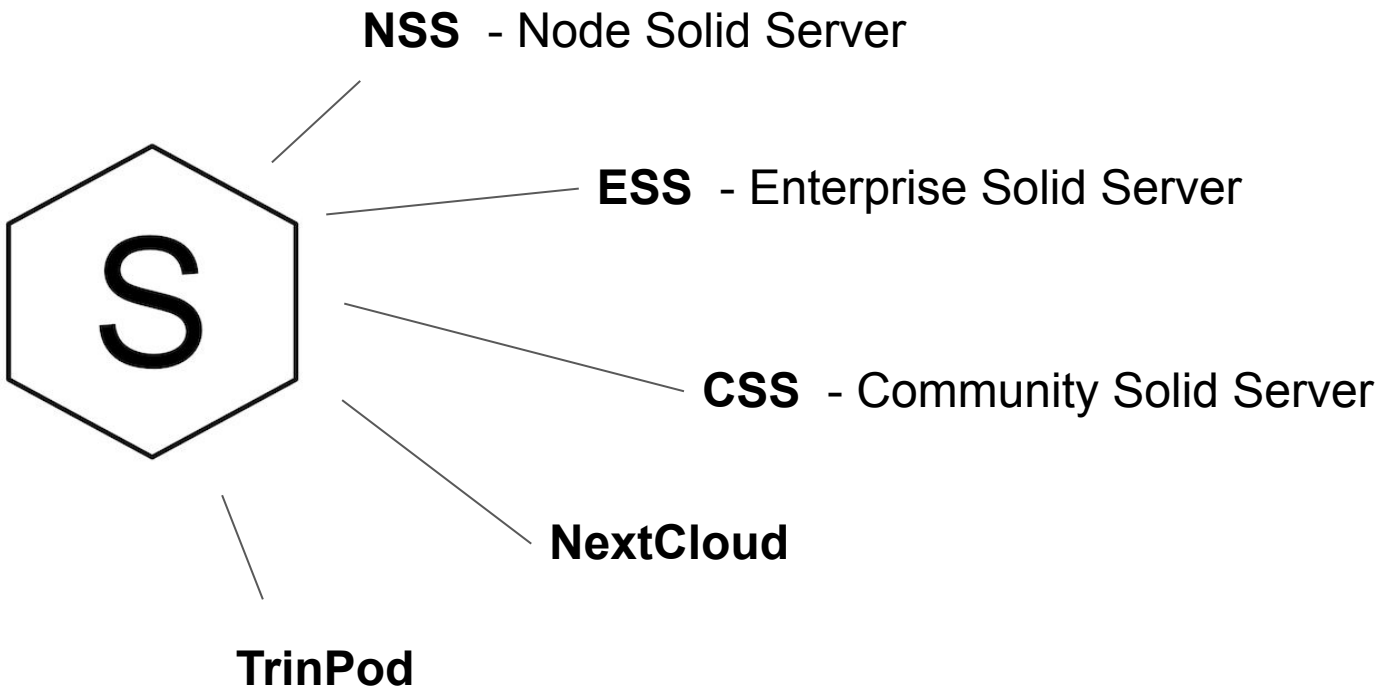


- Reading/Writing resources
- Identity
- Authentication
- Authorization
- Messaging
- …

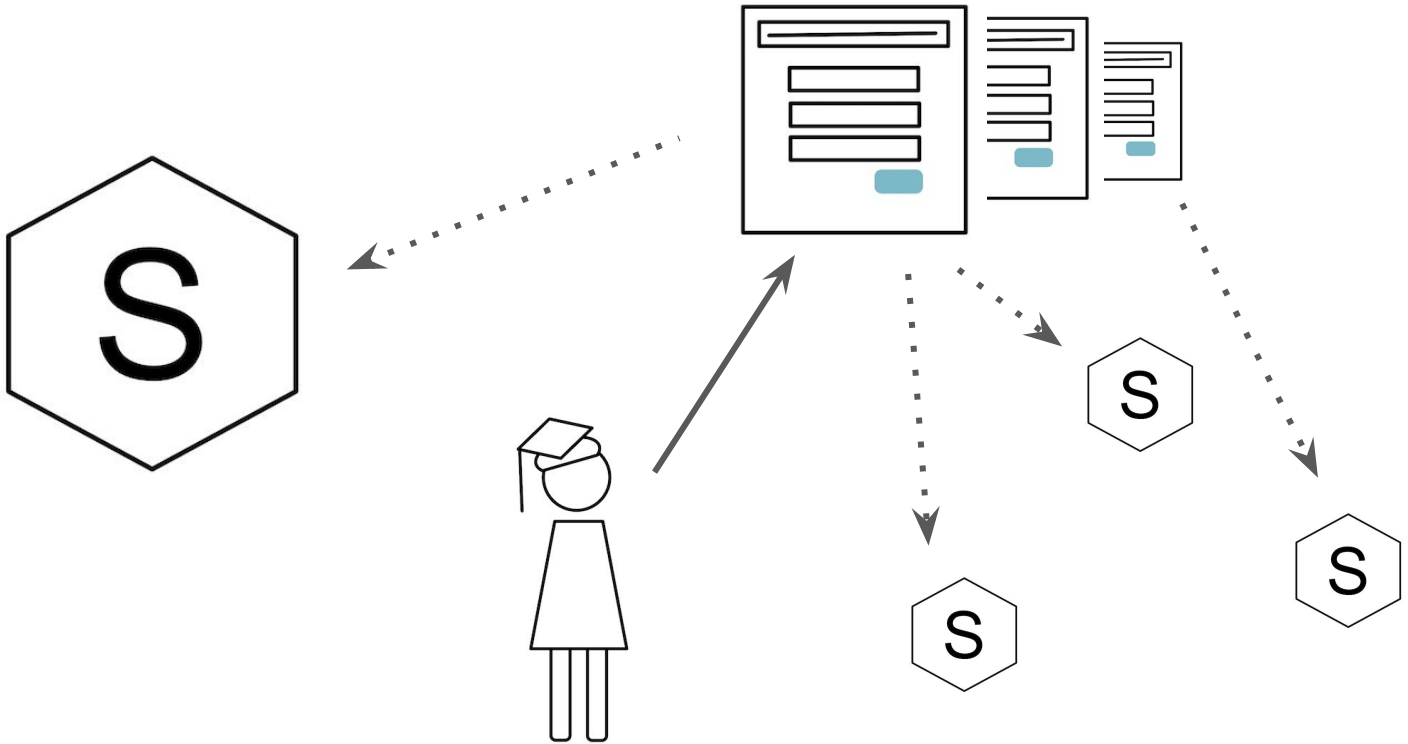
This is a Pod

It implements some or all of the Solid protocols

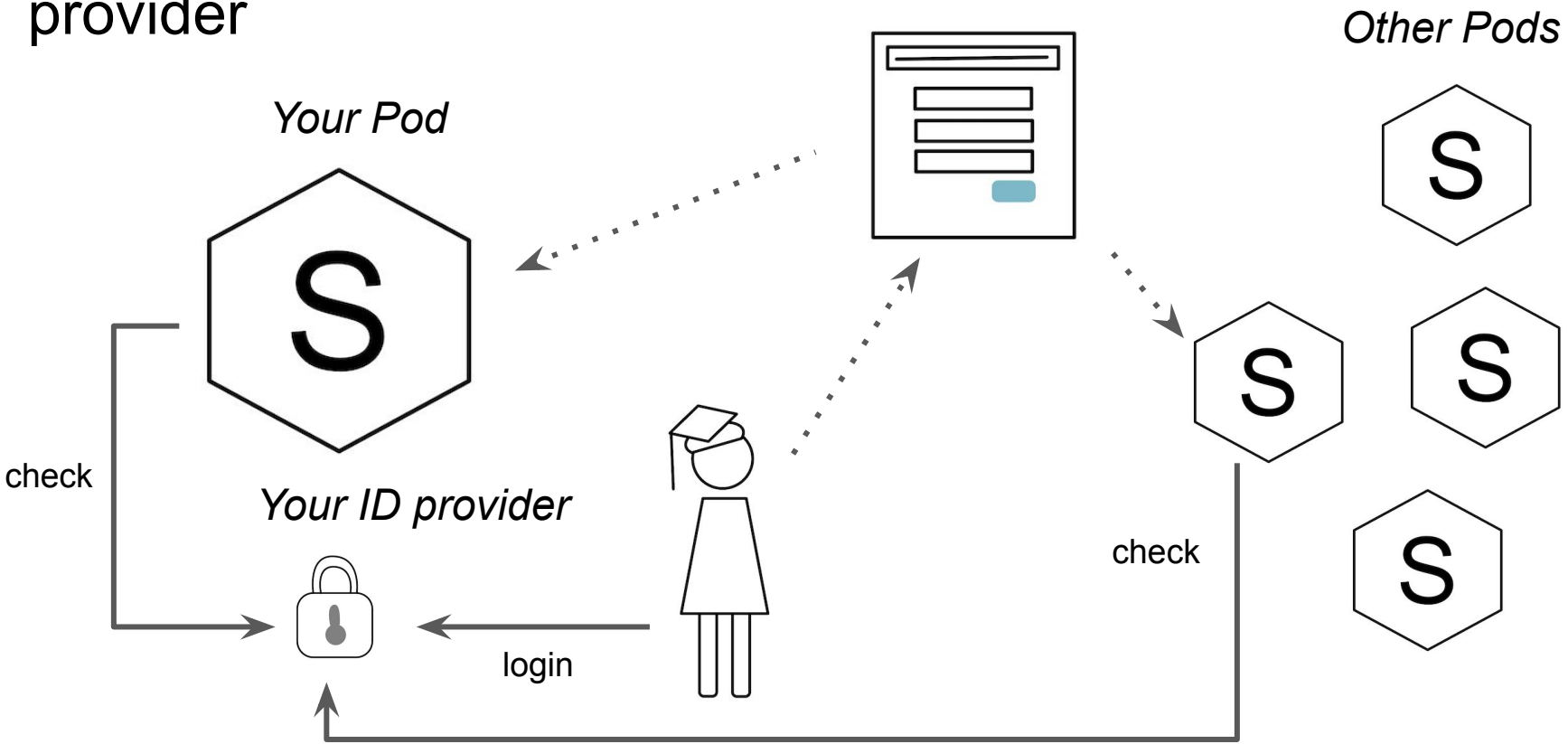
Solid specifications implemented in many ways



Instead of installing frontends, users have **web apps** that they can use on **any** Pod

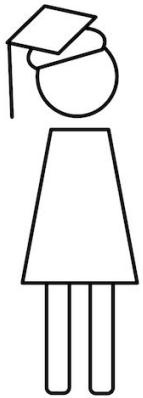


Instead of many ID providers, user have their **own** ID provider

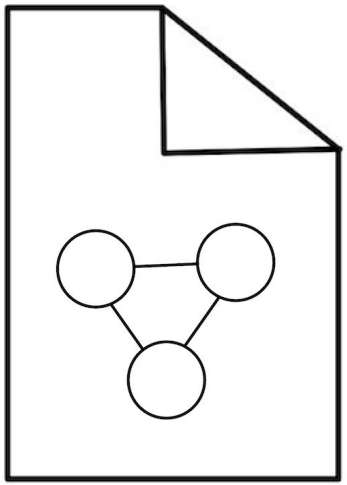


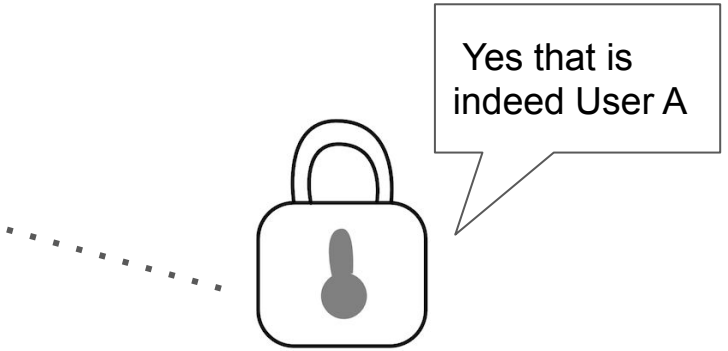
Users have a WebID to connect them all

- **Persistent ID**
- **RDF** Document
- **Describes** Researcher A
- **Preferences**
  - *Location ID provider*
  - *Location of LDN inbox*
- Can be stored **anywhere** on the web



User A

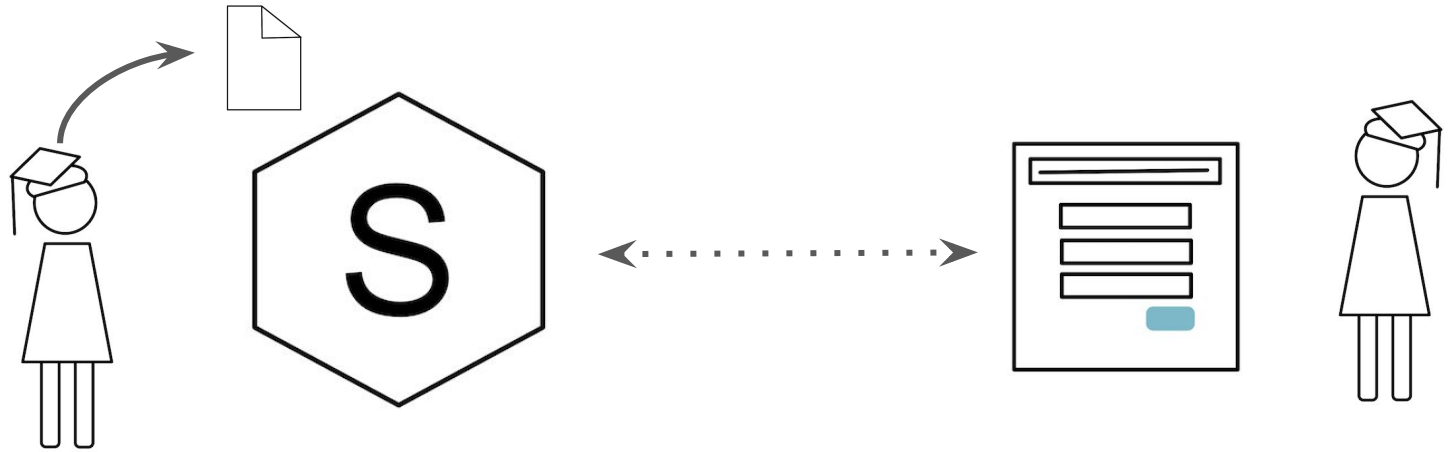




Her ID provider can prove User A is owner of this Web Profile

Solid for Research(ers)

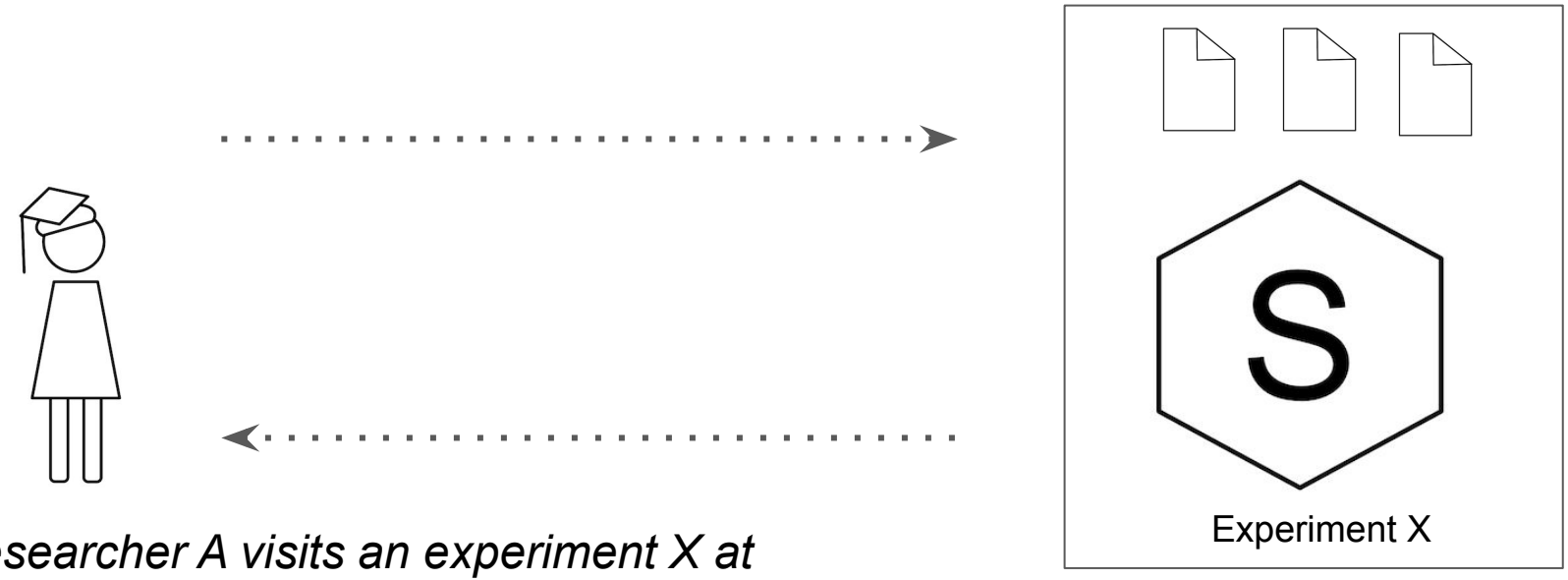
Use-case 1 : personal repository (ResearcherPod)



Researcher A add artifacts and allows collaboration with Researcher B somewhere else in the world.

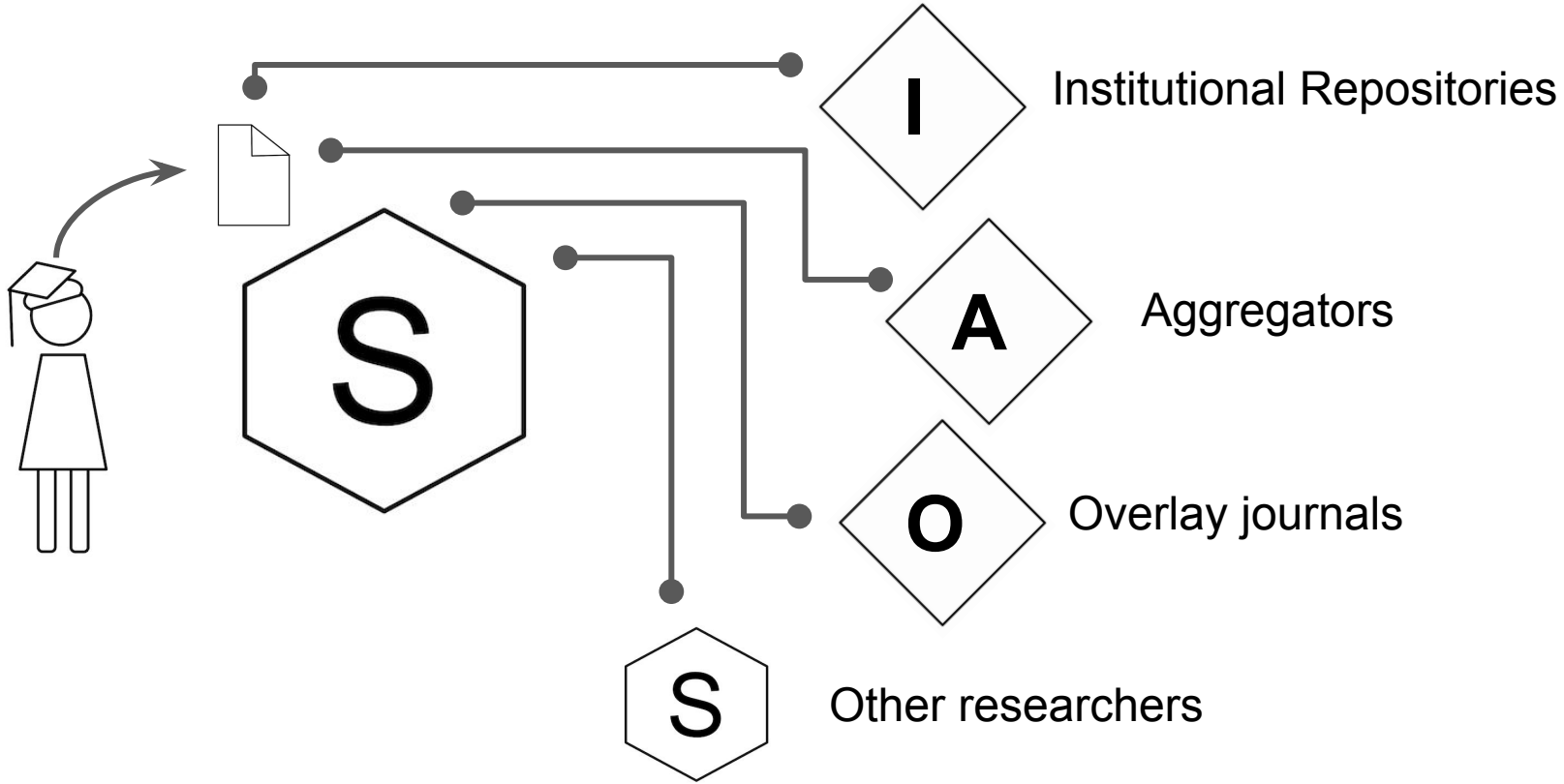
Researcher B

Use-case 2 : remote access (NaMiDaS)



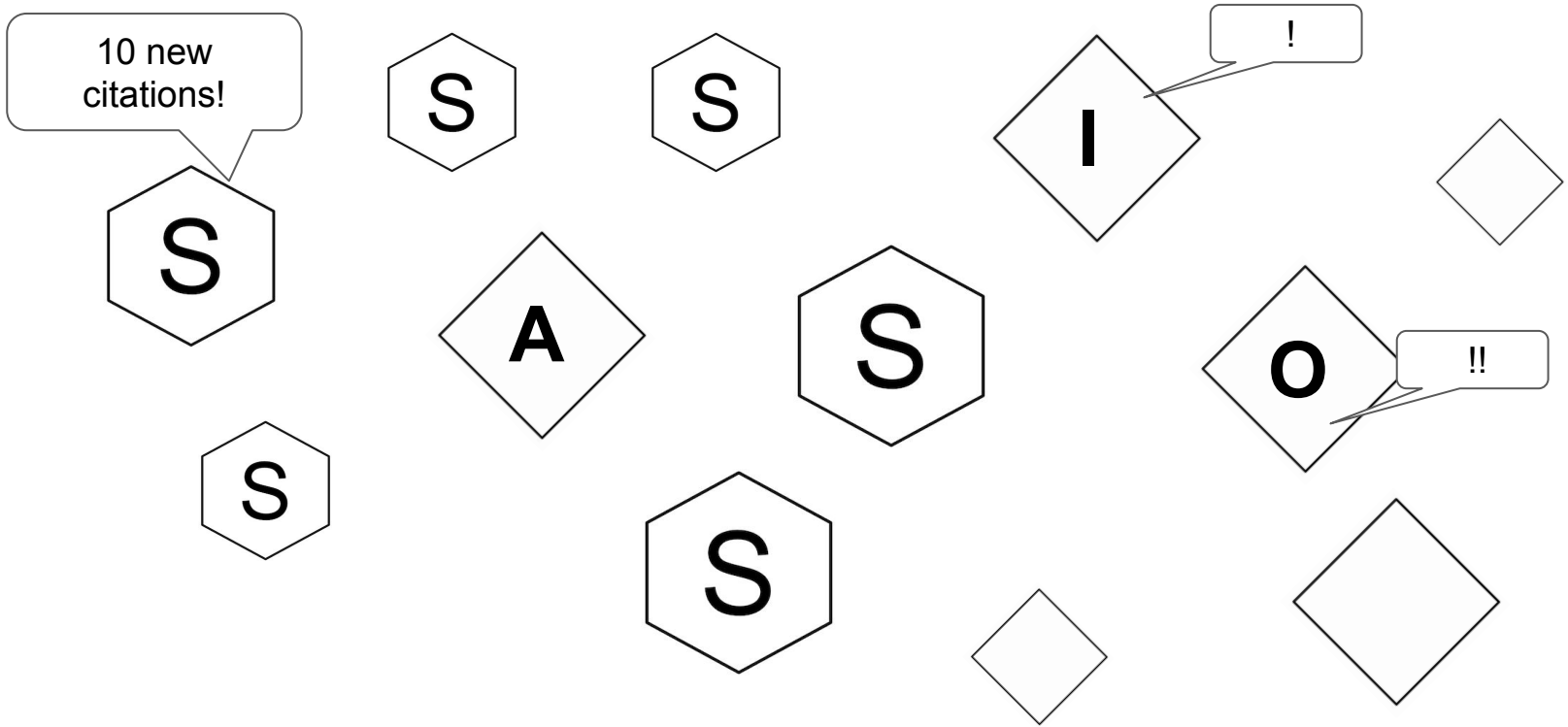
Researcher A visits an experiment X at a remote location which produces some data, which she wants to access when she is back at her own institute

Use-case 3: scholarly communication (Mellon)

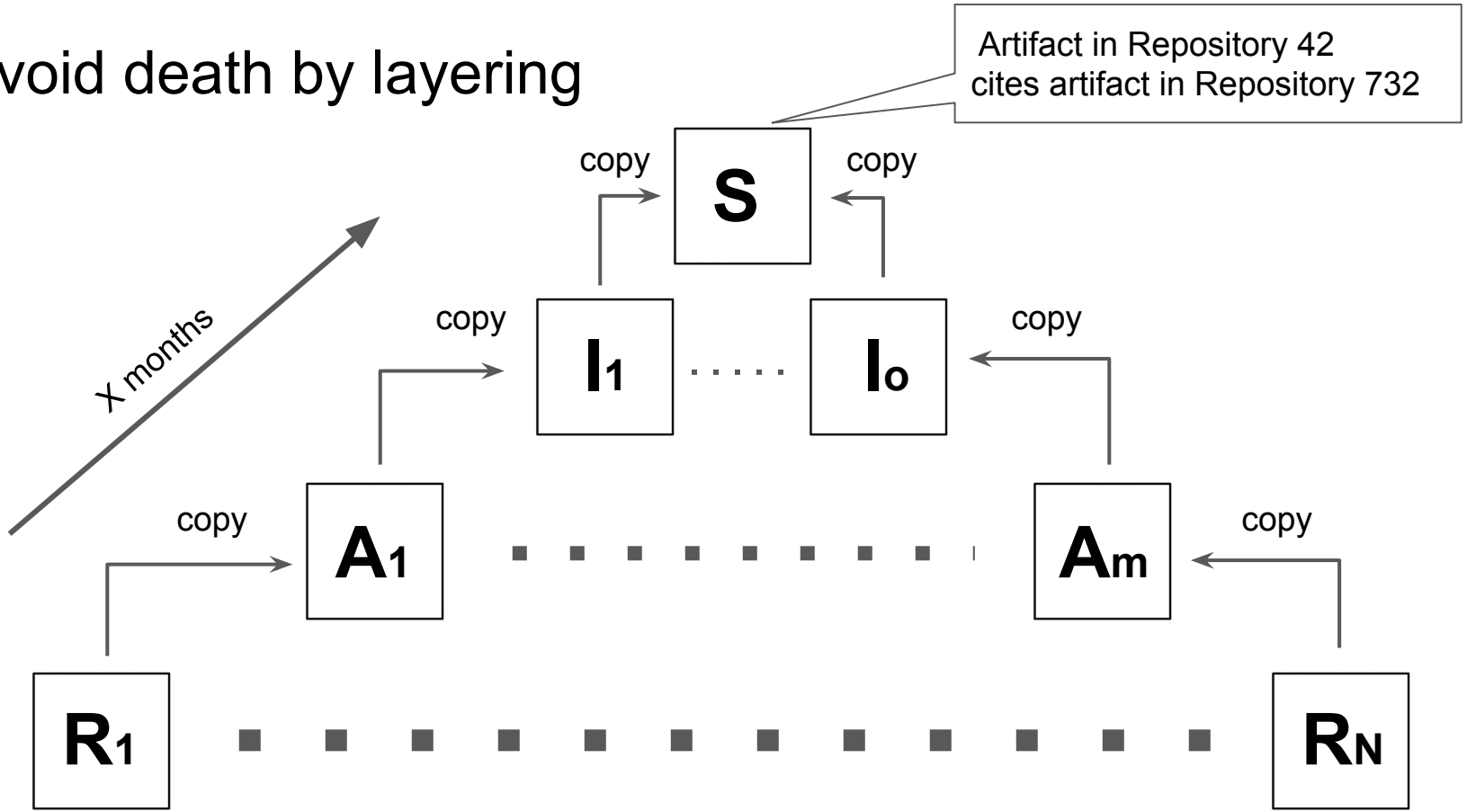


Event Notifications

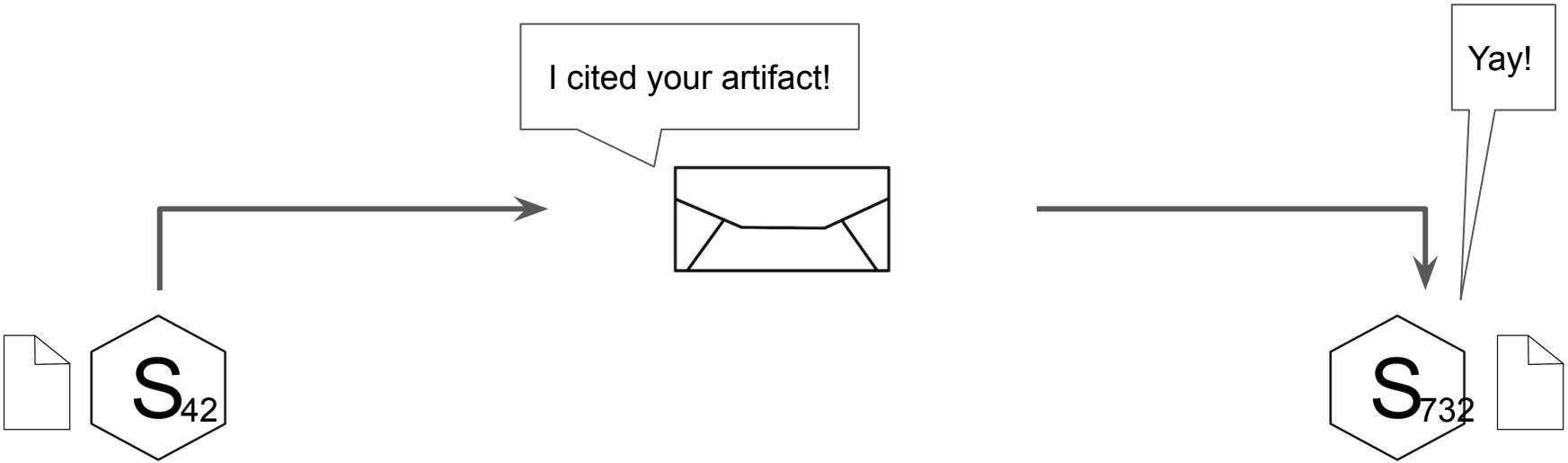
How to discover what is happening on this decentralized network in near real time?



Avoid death by layering



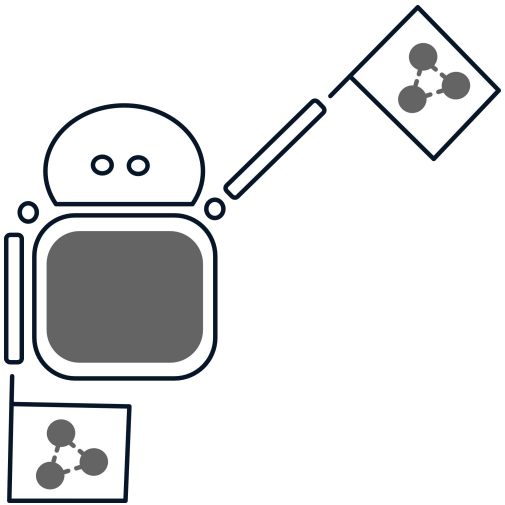
Just send a notification!



Messaging provides enough read/write capabilities for many use-cases

- Messaging is provided as part of the Solid protocols
  - WebSockets (good for short term communication)
  - **Linked Data Notifications** (good for messaging with long time intervals)
- Linked Data Notifications (LDN) is relatively easy to implement
  - Need to accept a HTTP POST message with a RDF (JSON-LD) body
- Provides the opportunity to send and respond with structured messages to a data / service node
- But, what messages to send?

Event Notifications in Value-Adding Networks



- **LDN** profile
- Exchange of **JSON-LD** messages
- About **Value-Adding events** in the lifetime of an artifact, triggered by:
    - *Increases the scientific/cultural value: Registration, Certification, Citation, Publishing, Indexation, Archiving,...*
- Near **real-time**
- **Push-Based**
- Passing information **by reference**

https://www.eventnotifications.net

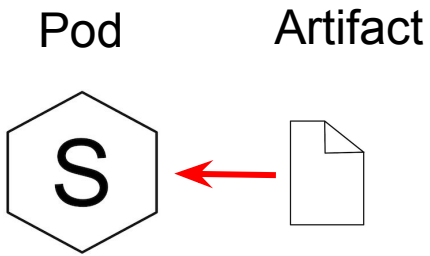
Event Notifications in Value-Adding Networks

- Used by the COAR Notify Initiative
  - Confederation of Open Access Repositories
  - Institutional Repositories
  - Peer-Review
  - Overlay Journals
- Implemented by project partners such as Harvard, HAL, Zenodo, OpenScholar…
- Implemented by DataVerse in their 5.14 release
- Mellon research for use-cases such as:
  - Archiving
  - Citation
  - Publishing
  - …

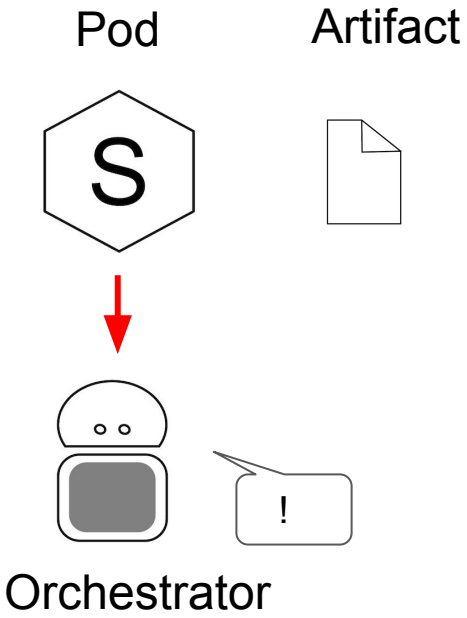
https://www.coar-repositories.org/notify/

Citation Relay Experiment (CRE)

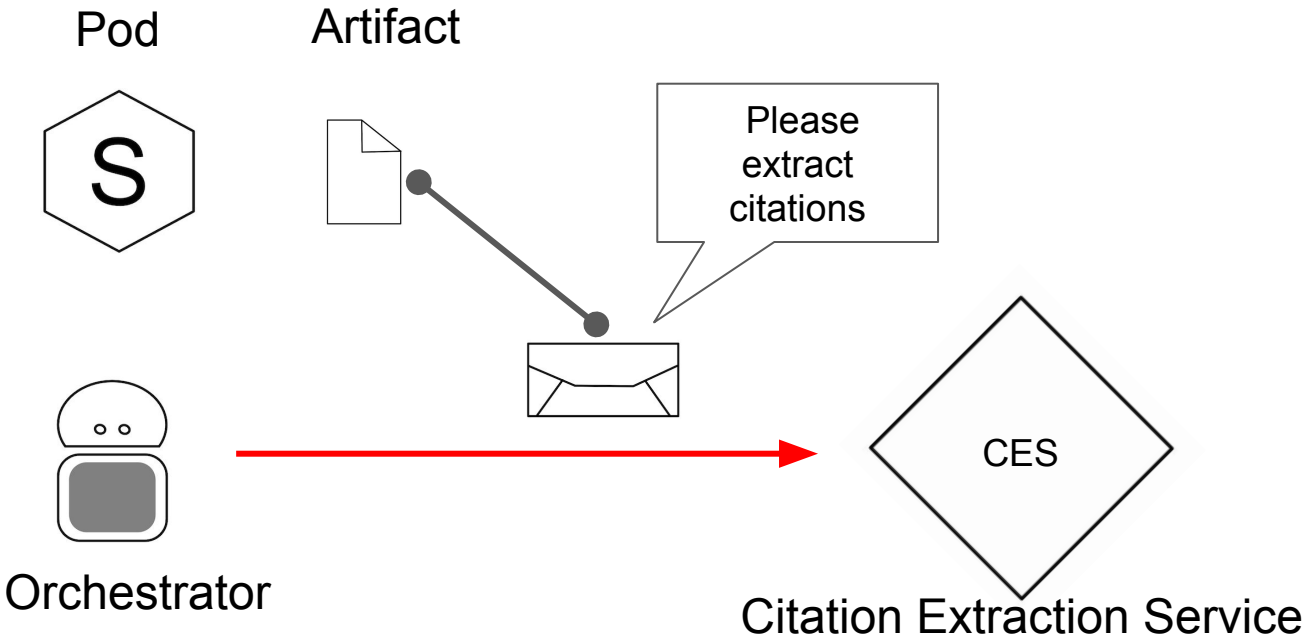
CRE - An artifact is added to a Pod (Researcher/Institution)



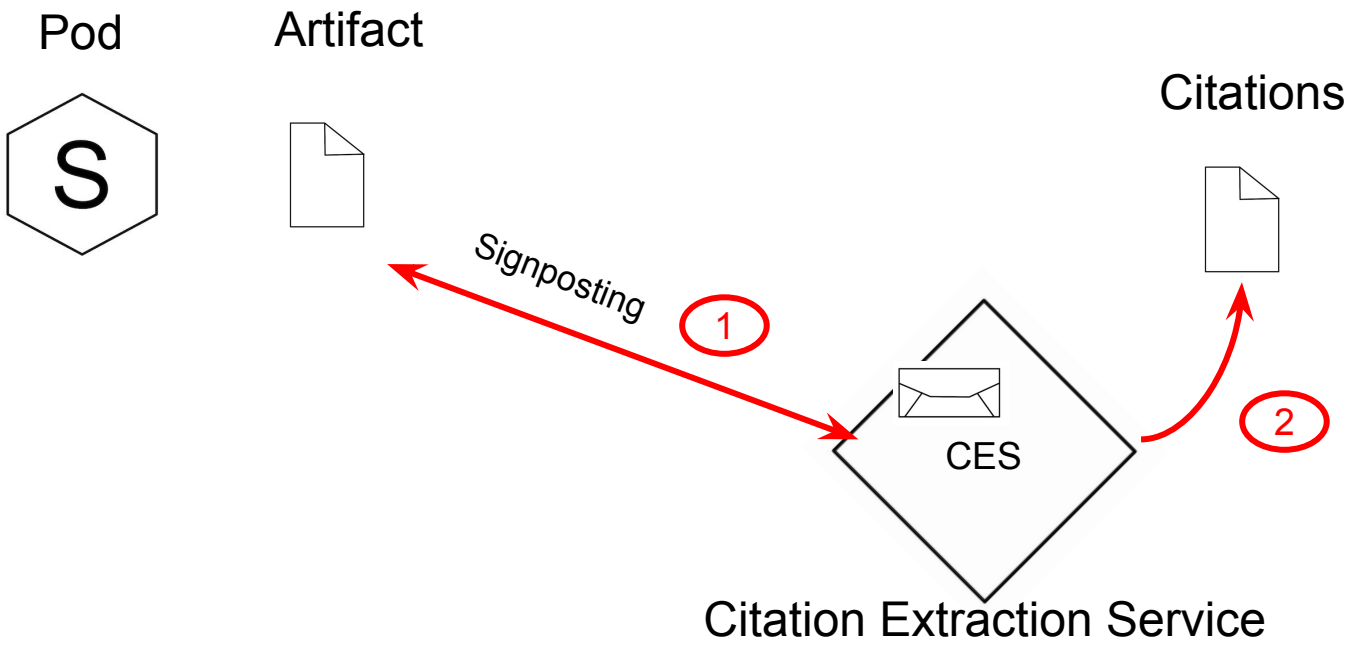
CRE - An dedicated orchestrator discovers new artifact



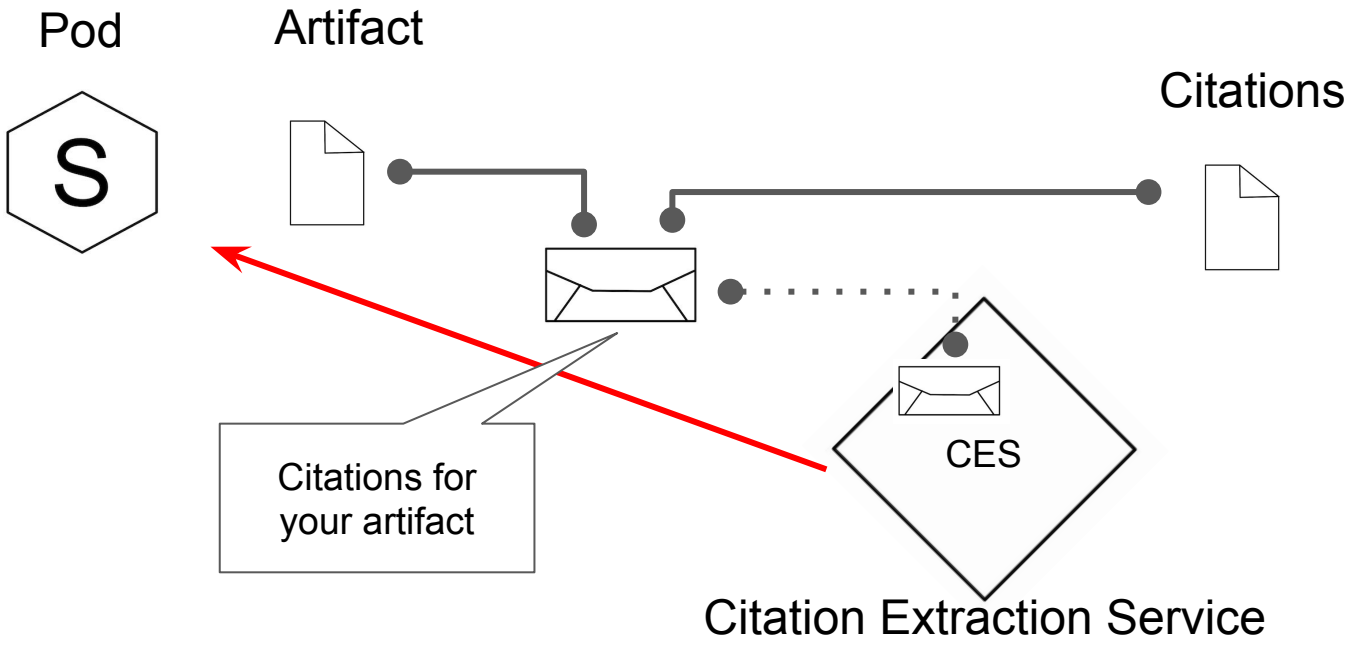
CRE - Orchestrator sends notification to CES



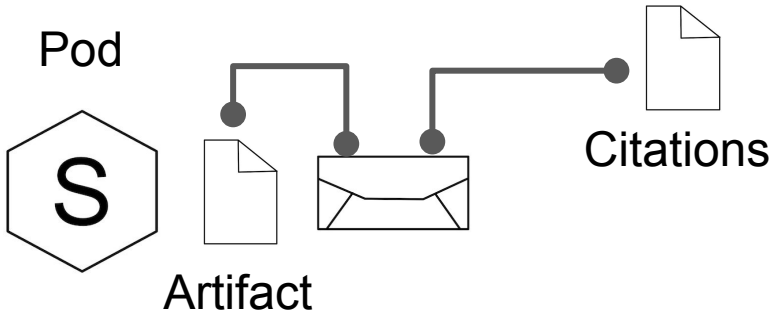
CRE - CES extracts citations from the artifact



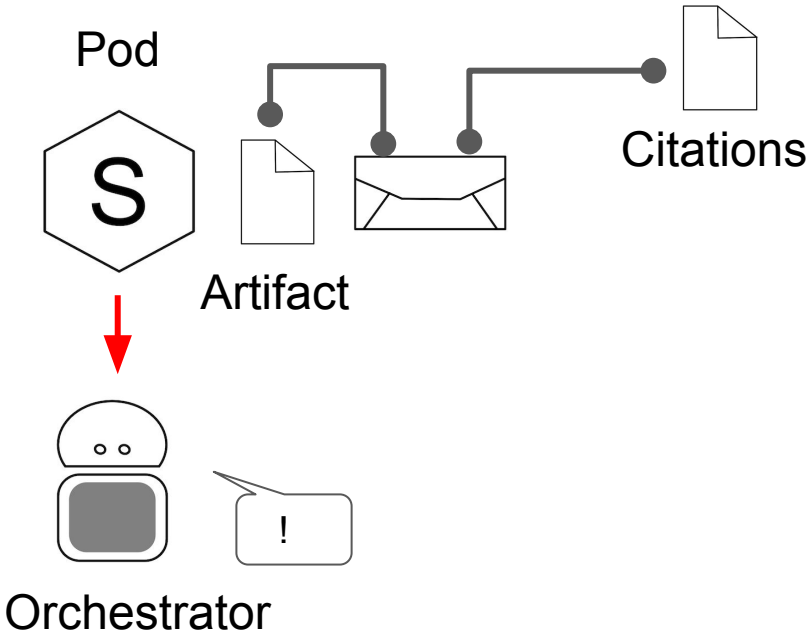
CRE - CES sends notification about citations to the Pod



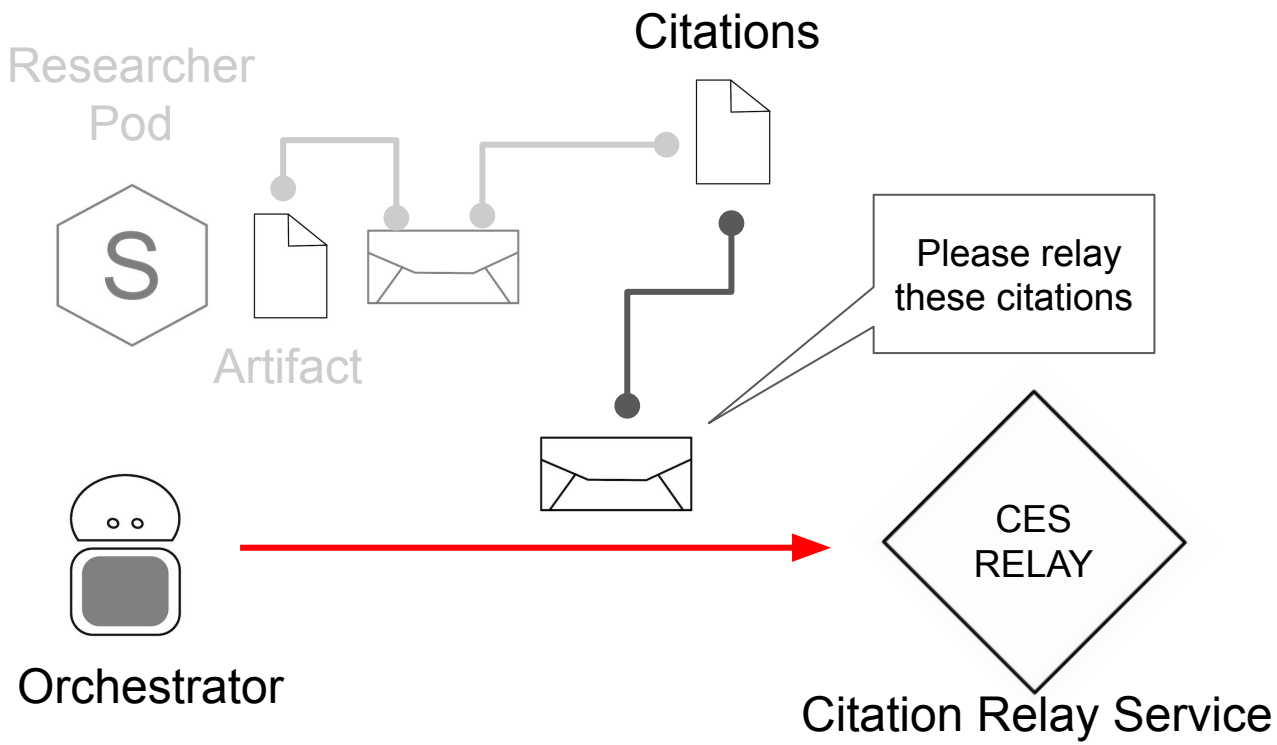
CRE - Pod processes citations (e.g. updating metadata)



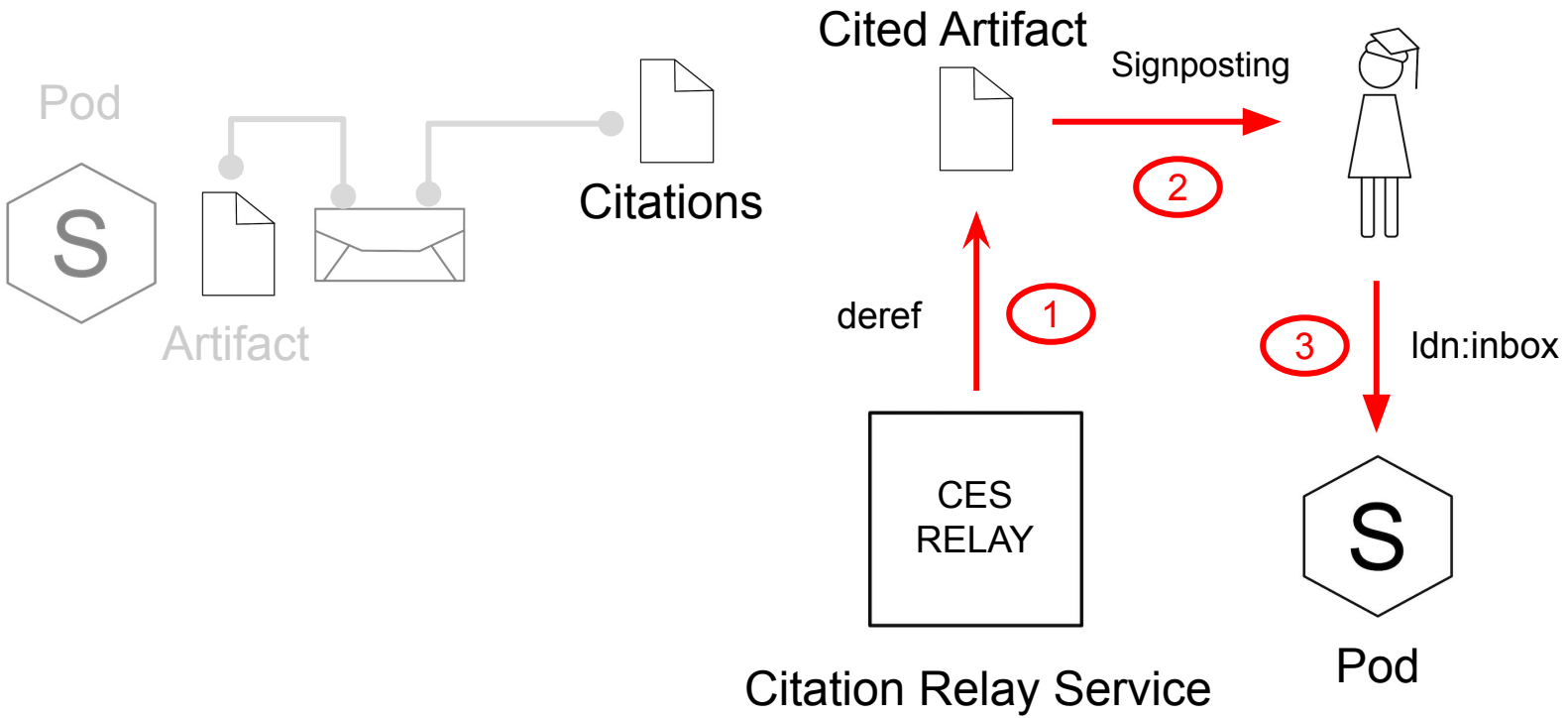
CRE - Orchestrator also discovers this notification



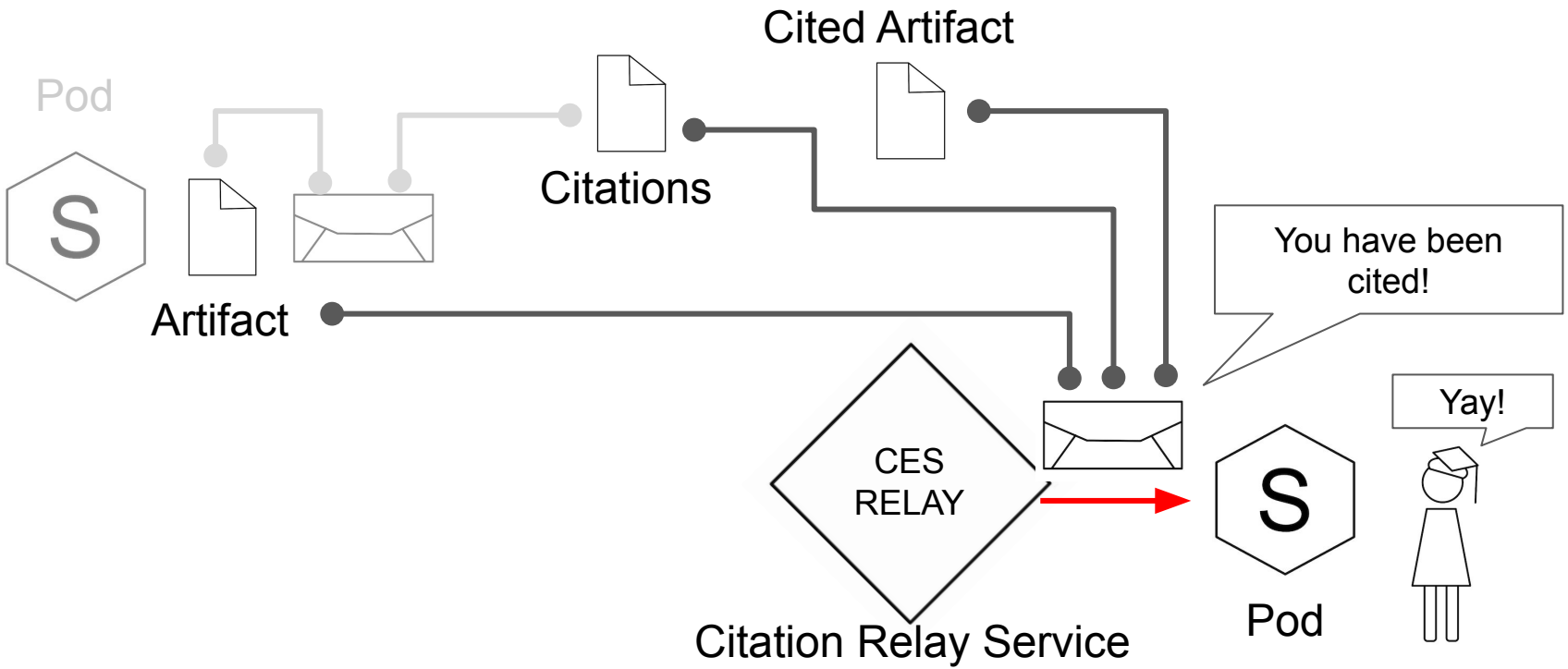
CRE - Orchestrator send to CES RELAY a request to relay the citations



CRE - CES RELAY discovers the Pod of the author

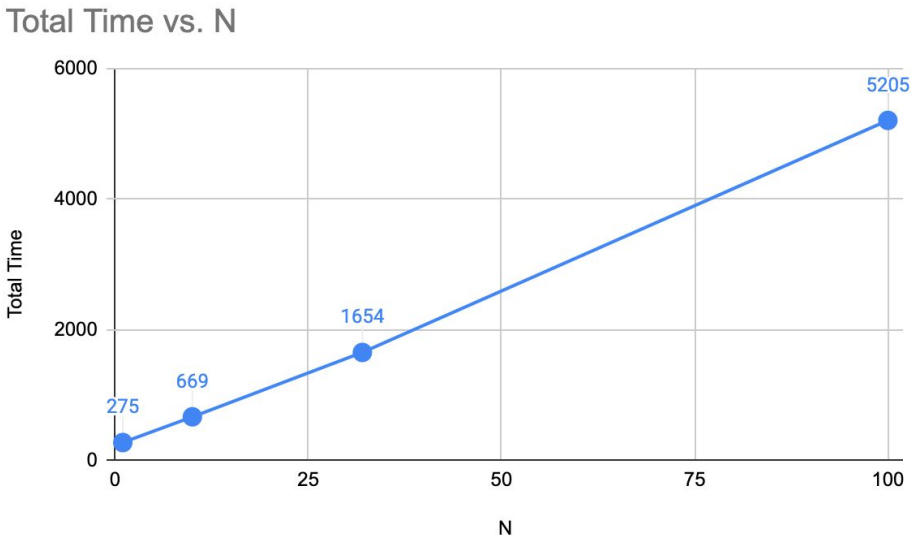


CRE - CES RELAY sends a notification to the Pod



CRE - Results

- Experiment with Dutch repositories
- Using OAI-PMH to Event Notifications Bridge
- Command line implementations of CES and CES-RELAY
- Extracting citations from PDFs that contains DOI-s or HTTPs
- Demo network of nodes



Hochstenbach, P. , Van de Sompel, H. , Vander Sande, M. , Dedecker, R. , Verborgh, R. :
"Event Notifications in Value-Adding Networks" 2022 TPDL [Springer] + [arXiv: 2208.00665]

Event Notifications in Value-Adding Networks : https://www.eventnotifications.net

Mellon Scholarly Communication : https://knows.idlab.ugent.be/projects/mellon/

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Thanks to

Mellon Foundation