NIEDERSÄCHSISCHE STAATS- UND UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN

MathArc

Cornell University

Co-operating Preservation Archives
Sharing Collections Among Dissimilar OAIS Repositories

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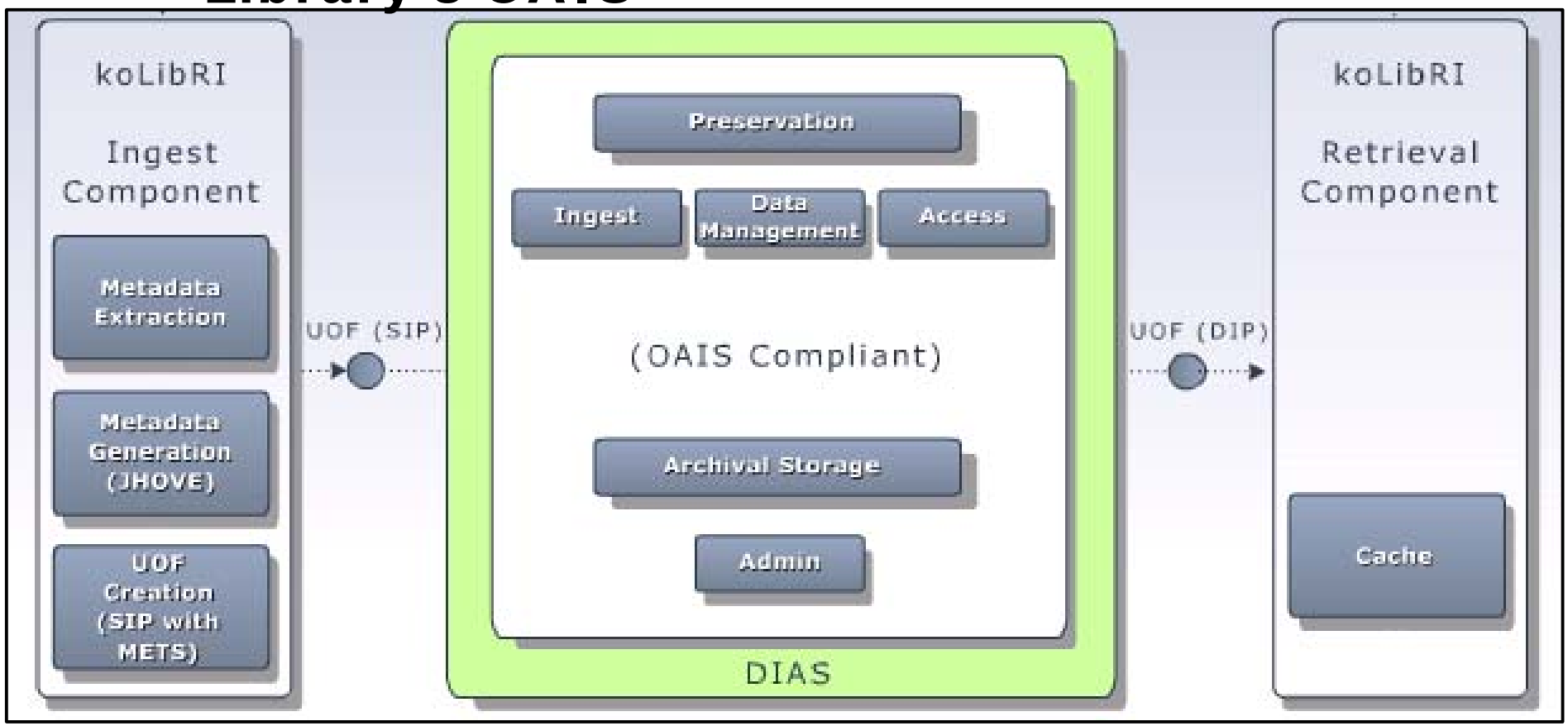
OAIS types

- Stand-alones
- Similar systems sharing content
- Dissimilar systems sharing content

Göttingen State and University Library's OAIS



IBM-Netherlands/IBM-Germany's DIAS system provides the back end.

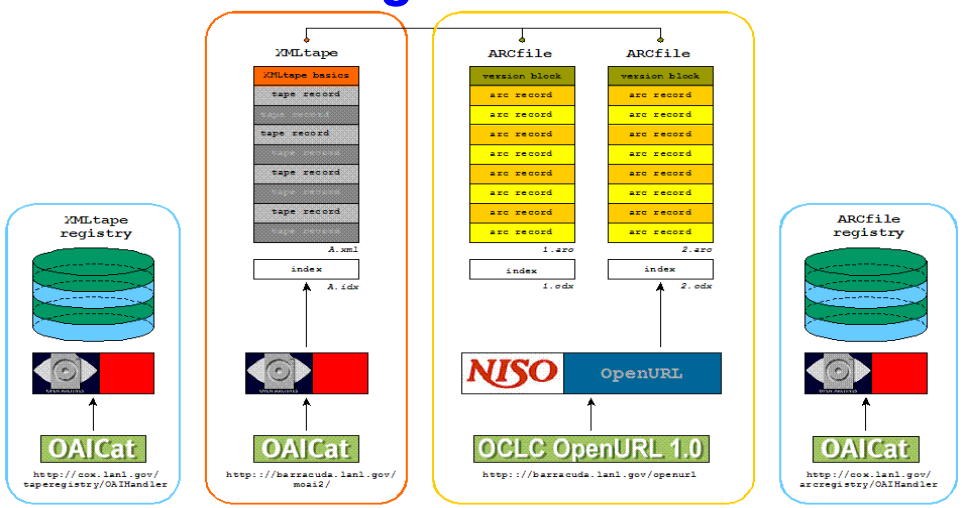
Cornell University Library's OAIS

Data management
- MySQL

Access
- Django

Ingest
- Java
- METS
- PREMIS
- OAI_DC
- OAI-PMH
- JHOVE
- XMLBeans
- iBatis

Archival Storage: aDORe



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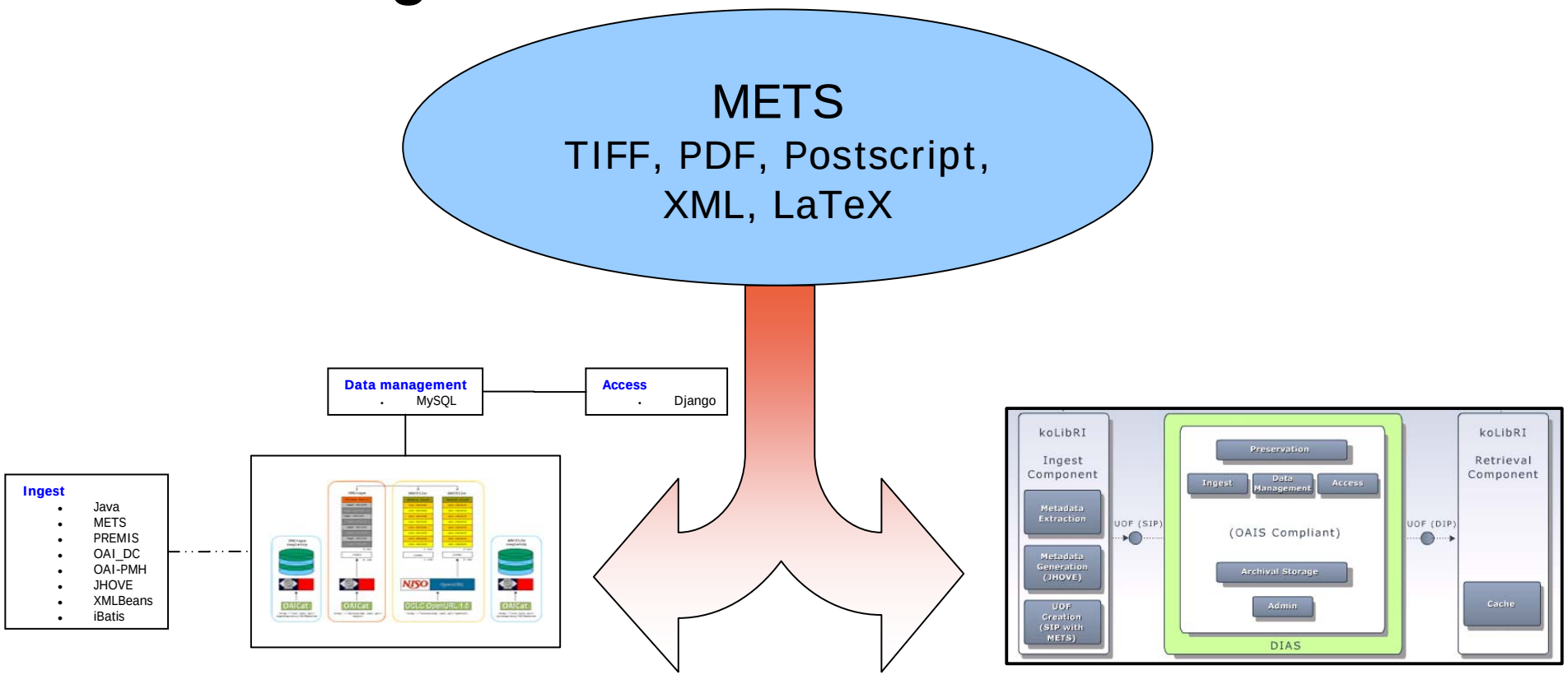
OAI-PMH metadata and file exchange



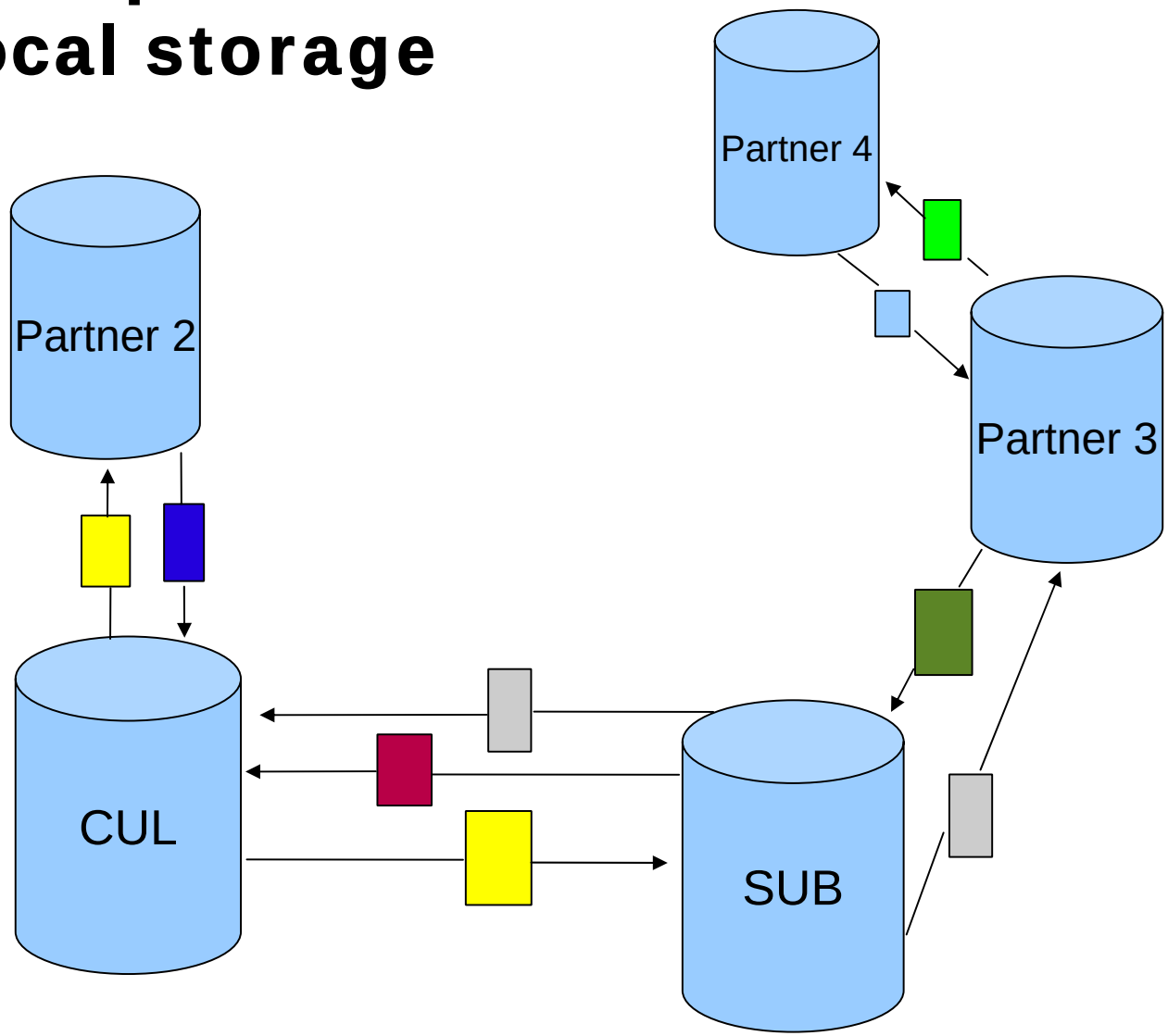
A Trade-off

Base64-encoded packages make audits simpler.

BUT

They make larger transport packages.

Partnerships: Reciprocal storage



MathArc Protocol: Purpose

Brief recap:

- **Goal:** The MathArc protocol enables different OAIS implementations to automatically ingest each others digital objects.
- MathArc is used by repositories that have agreed to partner for the purpose of sharing custodial responsibilities for those digital objects.
- The primary custodian that owns the collections being harvested controls the access and rights of each partner to those collections.

MathArc Protocol: Registry

- A **registry**, implemented as XML files stored on a private LOCKSS network, stores partners, rights and local processing information:
  - A global partners.xml file describes each partner, administrative details, and access mechanisms.
  - Files specific to each partner describe:
    - what collections that partner owns, and the rights of the other partners to harvest those collections
    - metadata describing how to harvest collections from other partners

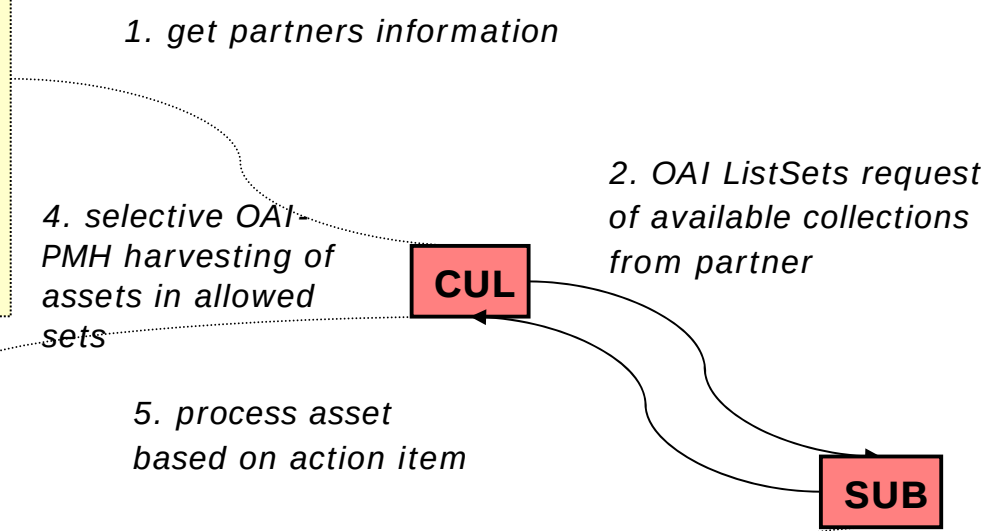
MathArc Protocol: Harvesting

- The registry drives protocol requests and responses:
  - protocol implemented around standard OAI-PMH harvesting
  - METS is the digital object metadata format
  - embedded PREMIS metadata within METS contains versioning information, which triggers custom ingest functions

Harvesting Göttingen (SUB) assets from Cornell (CUL)

(partners.xml from private LOCKSS network)

```
<partner>
   <identifierPrefix>SUB</identifierPrefix>
   <name>Niedersächsische Staats- und
Universitätsbibliothek</name>
   <service_provider_IP>
      134.76.176.172
   </service_provider_IP>
   <data_provider_URL>
      http://gdz-srv3.sub.uni-goettingen.de:8081/matharc/
   </data_provider_URL>
</partner>
```



(cul.xml from private LOCKSS network)

```
<harvestedSets>
    <harvestedSet status="active" id="SUB:Mathematica">
      <latestHarvestDate partner_id="SUB">
                  2007-08-01T12:00:00+01:00
      </latestHarvestDate>
      <action_item eventType="migration">
                  ingestAsset
      </action_item>
      <action_item eventType="updateAssetMetadata">
                  ingestAsset
      </action_item>
      <action_item eventType="replacement">
                  ingestAsset
      </action_item>
      <action_item eventType="inconsistencyDiscovered">
                  verifyAsset
      </action_item>
  </harvestedSet>
</harvestedSets>
```

(sub.xml from private LOCKSS network)

```
<accessinformation partner="SUB">
   <ownedSets>
      <ownedSet id="SUB:Mathematica">
         <allowed_partners>
            <partner_identifierPrefix status="active"
shareable="yes">
               CUL
        </partner_identifierPrefix>
         </allowed_partners>
      </ownedSet>
   </ownedSets>
</accessinformation>
```

MathArc Characteristics

- A protocol for exchanging and managing complex digital objects among custodial partners
- Preserves digital objects, not access systems
- Supports asymmetric distribution of collections among partners

http://www.library.cornell.edu/dlit/MathArc